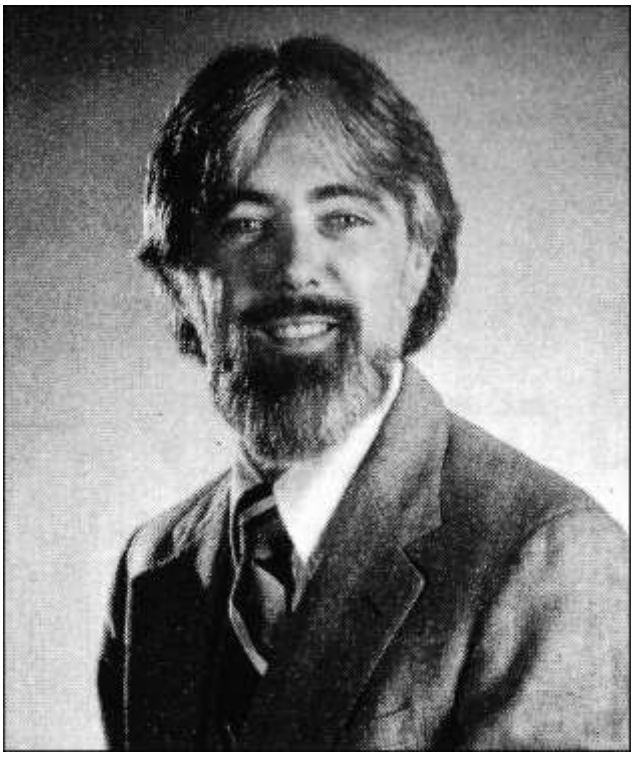


1989 portrait of Ken Burke from AMI *Muli-Images* magazine.

MULTI-IMAGE HISTORY | 1900-1972

Masters Thesis and *Anthology of Multi-Image* by Ken Burke | President, AMI

Supplement to

An Incredible Epic

Memoir of A Multi-Image Maestro

A Confabulation Based on the Author's Autobiography

For Audiovisual Aficionados

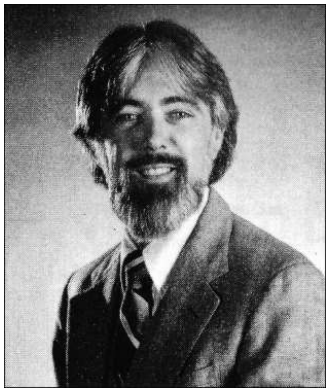
By Douglas Mesney — As Told to Himself

File Under: Geriatric Narcissism

Continued from

An Incredible Epic

Volume Nine



Multi-Image History | 1900-1972

Masters Thesis and *Anthology of Multi-Image* by Ken Burke | President, AMI

Supplement to
An Incredible Epic
Memoir of A Multi-Image Maestro

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An Incredible Epic is a confabulation[1] based on the circumstances of my life. No part of this book may be used or reproduced without written permission except in the case of brief quotations to be used in critical articles and reviews. The electronic form of this book can in no way, partially or entirely, be copied, reproduced or forwarded. For exceptions, licenses, permissions and other information, contact the author: douglas@mesney.com

Fourth Edition | February, 2025

Written, Designed and Published by:

Douglas Taylor Mesney

Volume Ten | ISBN: 978-1-7770734-8-0

Produced and published in Canada

The author has researched the information contained in this book to check accuracy.
The opinions expressed in this book are solely based upon the author's own experience.
The author assumes no responsibility for errors and inaccuracies.
Resemblances to persons living or dead may be coincidental.
Some names may not be real.

Unless otherwise credited, photographs and artwork are the work of the author.

Multi-Image history written by Dr. Ken Burke | Photo: AMI *Multi-Images* magazine.

[1] In *The Trip to Echo Spring* by Olivia Laing, confabulation is described as "so-called 'honest lying' or false memories."
I would add that, we remember (and edit) selectively what we like and repress what we don't. Wikipedia defines the term as: "… a memory error defined as the production of fabricated, distorted, or misinterpreted memories about oneself or the world, without the conscious intention to deceive."

Notes to Reader

- *An Incredible Epic* was started ten years ago, in 2015. It is a work in progress; being expanded and upgraded as new articles and pictures become available. New versions are periodically published. You can see your Edition Number on the title page (iii).

- Volume Nine is filled with pictures that relate to the first six volumes. Volume Eleven has even more, woven into a 1982 treatise called "Confessions of A Multi-Image Maniac"; that is a precursor to *An Incredible Epic* about how to produce multi-image shows. Volume Thirteen, currently in the works, is a 'catch all' for additional material being continually re-discovered in my archives.

- Videos of forty-one Incredible slide shows can be seen on Vimeo (search for 'Mesney') or www.imcredibleimages.com, threaded into an abbreviated biography. Additional shows by other producers have been restored and curated by Steve Michelsen and can be seen at www.youtube.com/@AV_archaeology/videos.

- As the Epic has evolved materially, so too has the refinement of its style(s). Please excuse the small inconsistencies you will encounter. And please don't fret about any spelling errors; they are elusive little buggers; but let me know about them, please.

- The original Epic was split into seven parts when the size of the single volume overwhelmed Microsoft Word (I should have used Adobe InDesign). The index (Volume Eight) could not be split and ceased being updated. Thus, the index is of limited usefulness, covering only the content in the original manuscript – about 80% of Volumes One through Seven.

- Although unable to contact every person or publisher about the reproduction of their likeness or work, this book is a non-profit treatise written for historical and educational purposes. [Under fair use, another author may make limited use of the original author's work without asking permission. Section 107 of the Copyright Act of 1986 (17 U.S. Code § 107) states that fair use of copyrighted material "for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright."] I hope nobody is unduly offended for their contribution(s) to this confabulation.[1] Please notify me of discrepancies, inaccuracies, and/or omissions.

[1] Confabulation has been variously described as so-called 'honest lying' or false memories fabricated, distorted, or misinterpreted about oneself or the world, without the conscious intention to deceive. I would add that, we remember (and edit) selectively what we like and repress what we don't.

In memory of these mentors, colleagues, and friends, who departed during the production of *An Incredible Epic*:

Phillip Augustin
Carl Beckman
Kirk Beeler
Wynn 'Kaj' Berry
Max Bjurhem
Gene Butera
John Connolly
Wiley 'Crash' Crockett
Jane Dauber
Hans Falkenhagen
John Guild
Peter Grunert
Nils Gunnebro
Lars 'Tummen' Haldenberg
Kurt Hjelte
Burt Holmes
Ira Holmes
Brad Hood
Doreen Jacklin
Eric Jerring
Ed Just
Chuck Kappenman
Bryan King
Tony Korody
Doug Kornbrust
Alan Kozlowski
Stas Kudla
Craig 'Buddha' Law
Thomas Leong
Tom & Anita 'Bea' Lorentzen
Jimmy McCann
Chris McDevitt
Art Milanese
Martin Mohr
Don O'Neill
Geoff Nightingale
David Nolte
Bob Peterson
Lindsay Rodda
John Sacrenty
Jim Sant'Andrea
Rick Sorgel
Larry Spasic
Charlie Spataro
John Stapsy
Christine Ströman
Donald Sutherland
Randolf Taylor
Glen Tracy
Duffie White
Randy Will
Mike Yuhas
Constantine Zacharious

With appreciation for their contributions
to my life and well-being.

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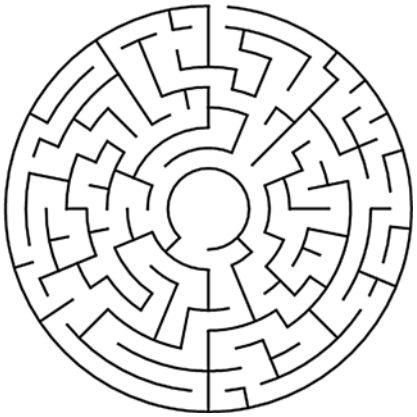

"You have to go where the story leads you."

Stephen King (PBS interview)

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Backstory

I wasn't born the King of Slides; I was given that moniker by the late Bob Peterson in 1983, when we worked on a Boeing show together. The five previous volumes of *An Incredible Epic* traced my life up to 2007, the fateful year I committed AV suicide after working for 198 blue-chip clients in 68 countries.

Born in Brooklyn, New York, on January 28, 1945, I'm an Aquarian with Scorpio rising, Moon in Leo and Venus in Pisces. That should tell you all you need to know. But there is more….

Dorothy Mesney, my mom, was the daughter of a prominent New York judge, Franklin Taylor and Kathrine Munro, a socialite from Montréal, Canada. My dad, Peter Mesney, was the offspring of Roger James Mesney, the British chief engineer of the Anglo-Dutch Mining Corporation, and London actress Marjorie Unett.

I grew up in the affluent Long Island [New York] neighborhood of Douglaston. Grandpa Taylor died when I was five; he had been supporting the family and after that they struggled. Dad couldn't keep up with mom's spending. From the age of eight, I worked at various jobs to earn my own money, starting with door-to-door selling of pot-holders and jewelry that I made myself, then greeting cards and eventually pictures.

I was brought up by theatrical parents (left). Dad went to the Royal Academy of Dramatic Arts [London] and Mom was a piano teacher and singer of gospel, spiritual and folk music. I had piano lessons in grade school but switched to a trombone in junior high and as a *Froshman* (cross between Freshman and Sophomore—I was in an accelerated junior high school program and did high school in three years instead of four) I was a member of the band and orchestra at Bayside High School until my trombone got stolen.

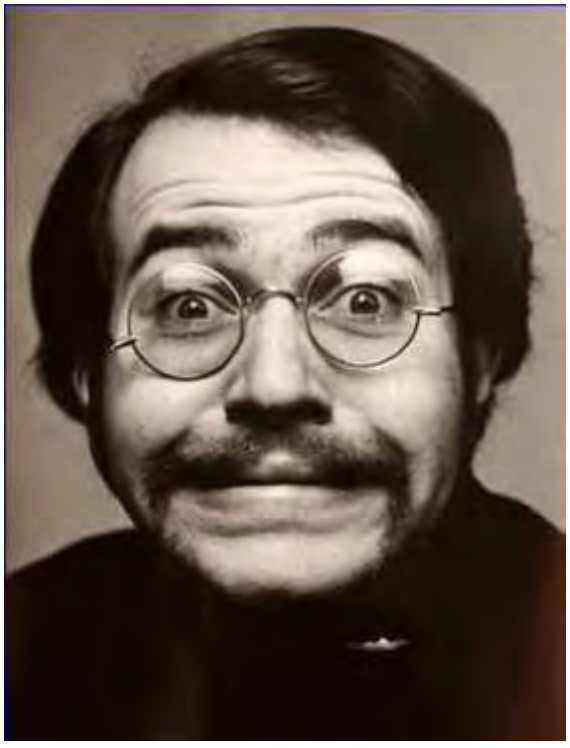
Six weeks after that, Grandpa Mesney (right) visited America from England and gave me a professional-grade Minolta SR-2 camera. I got hooked on taking pictures. My science class term project was a series of two dozen slides illustrating the growth of a bean plant from seed to sprout, including shots taken with a microscope adapter. Then a neighbor, Glen Peterson, gave me a summer job at his photo laboratory in New York (Peterson Color Laboratory, favorite among New York's advertising agencies). I learned about the advertising business by delivering work to Mad Men. I used the money to build my own darkroom in the basement of the family house.

I was mentored by my alternate father, Bob Banning and Life magazine photographer, Ted Russell. In my sophomore year at Bayside High School, I teamed up with David Nolte, a fellow student. Mesney-Nolte Photographers shot portraits, weddings, bar mitzvahs and whatever other jobs we could land.

I spent my first year of college at St. Lawrence University. I had a scholarship but had to borrow most of the money for tuition and room & board (~$15,000 1962 dollars) because my folks were going broke. I learned all about the ravages of debt watching my parents flounder and quit St. Lawrence in favor of more affordable Queens College [City College of New York (CCNY)]. Tuition was only ~$2,000 and I could live at home in Douglaston. I attended classes at night and worked days to pay off my student loan.

My first jobs were in the advertising business. I learned the ropes of the PR business from Louise Friscia first, then at J. DeBow and Partners. After that I worked as a "board man" for Seymour Levy at a little ad agency called J. Charles David, Inc. I enjoyed doing layout and paste-up work and Seymour let me take pictures for a few of his ads—a huge motivator. Seymour also loved to take pictures; he understood my passion for pictures.

Next I worked for an industrial advertising agency called Basford, Inc. where I re-learned how to write (think) under the tutelage of Burt Holmes, one of my top three mentors. Holmes also allowed me to photograph my own projects (fact sheets for the American Iron and Steel Institute). Throughout this period, my photo kit and expertise ramped up. I continued to do private assignments outside of the office and began selling pictures to magazines; Car and Driver became a steady customer.



As the Viet Nam War dragged on and the Beatles started dropping acid, so did I. Starting in high school, in 1959, I smoked weed on a regular basis. I led a double life; most people thought I was a drinker (I was that, too). My hair got longer and I grew a Fu Manchu mustache. That irritated Burt Holmes' boss, department head John Paluszek, who subsequently fired my ultra-efficient secretary because he was a black man (in a world where secretaries were normally female and frequently hired for their looks and other benefits). That was cause for my resignation.

By that time (1967), I was ready to move on. Paluszek had been getting on my case ever since Burt allowed me to shoot my own jobs; in his opinion, photography interfered with my work as an assistant account executive and copy writer. Then, stodgy old industrial Basford got bought by a dynamic young consumer agency called Creamer-Colarossi. *Vive la difference.*

Other account execs asked me to shoot for their projects, and that really pissed off Paluszek. But I was sleeping with Don Creamer's secretary (so was Don) and she

arranged for her boss to put Paluszek in his place. I did more and more photography and those assignments, plus time spent with other Basford colleagues in the art department, particularly Kurt Boehnstedt, reinforced my desire to be a photographer.

After Paluszek fired me, the agency's other partner, Ben Colarossi, arranged to get me an office space at small film-production company run by Bob Gurvitz at 346 East 50th Street—a prestigious address. I worked out of there for the first year. My wife, the former Leslie Shirk, supported me. We married in 1966. She had a cushy job as a systems analyst for a burgeoning young enterprise-computer-software company called Management Assistance Incorporated [MAI].

Along the way I met Justine Reynolds in 1969. She was opening a school for aspiring models called Justine Model Consultants. She offered me the opportunity to share a large loft space at 23rd Street and Madison—it was the heart of New York's so-called Photo District at the time, a perfect location and a great opportunity to expand into fashion photography, where there were big bucks to be made (and beautiful girls to be laid).

However, I couldn't do it without Leslie's financial support—and my relationship with her was dicey; she caught me cheating and subsequently ran off with a surfer for half a year. I convinced her to return and try again; she did and helped me build the new studio. On the night we finished, after the champagne toasts, she announced that she was leaving me and moving to Virginia with her boss, who two years earlier bought my 1963 split-window Corvette. (!)

By then I was on my feet, generating enough income to support my newly expanded operation; but I was working my ass off to do it, days at my profession and nights screwing models.

As Volume One ended, I had just thrown a studio-opening party for Mesney's Mad Medicine Show (the name of my company) called the Mad Ball. It was the kind of event you might see in a movie. Justine and I collaborated; the guests included a bevy of her beauties. The darkroom was set-up as a sangria bar; red, white and rosé sangria were mixed in and served from the 3½-gallon [~16-liter] stainless steel film-processing tanks. Slide projections, color lights and a mirror ball illuminated my half of the loft; the shooting stage became a dance floor; Justine's space was the chill zone. Business doubled shortly after the Mad Ball, and that's where the story picked up in Volume Two.

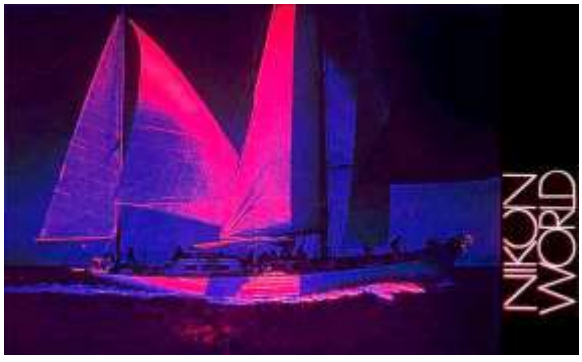
Volume Two covered three transformative years: 1970-1972

The decade began with an influx of new business generated by my promotional efforts; those included the *Exposure* newsletter, Pixies, and most recently the Mad Ball. The work was dominated by automotive assignments. Working with Tom Ridinger (right) and Gene Butera, some of my best pictures were made for *Car and Driver* magazine and *Cycle.*

Ridinger and I collaborated with Art Guererro to produce an award-winning ecological ad campaign for the Motorcycle Industries Council.

One of five MIC ads. Model, Richard Faye

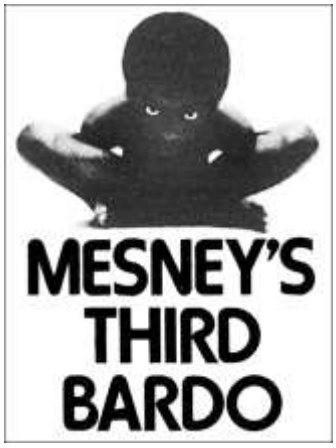
As my reputation spread, I got hired by "bigger" magazines like *Penthouse* and *True*. The editorial assignments generated interest from some of the heavyweights. I was hired by Ogilvy & Mather to shoot a Mercedes Benz ad campaign (above, right) and for Burson-Marsteller I photographed a Rolls-Royce Camargue.



Following the same path, I launched my career into the boating business. When my pictures appeared in Boating and Rudder magazines, Nikon used my work for a promotional display at the New York International Boat Show and a spread in *Nikon World* magazine (left). That led to my first slide show, for the National Association of Engine and Boat Manufacturers [NAEBM], sponsors of the New York Show.

Burson Marsteller became a new client. Geoff Nightingale hired me to build a model city for Armco Steel's Student Design Program (left). That lead to a widening stream of business from Owens-Corning Fiberglas.

Although business was good, it wasn't generating enough income to support both my apartment in Queens and the studio in Manhattan. I rolled the dice, ditched both of those and moved into a smaller space at a much classier address on Embassy Row: 23 East 73rd Street, the former Wanamaker mansion.



That was the smartest move I ever made. Business boomed after that.

I took over another floor in the building and convinced Tom Ridinger to leave Car and Driver and work with me.

The business was renamed Mesney's Third Bardo.

By the end of 1972, work from the Burson-Marsteller agency began to dominate our order book.

As Volume Three begins, I am on the cusp of an entirely new career, as a producer of multi-image slide shows and aviation photographer.

Executive Jet Aviation [EJA] ad, 1974.

Rapid growth characterized the rest of the 70s, as detailed in Volume Three.

1973 was our penultimate year of publishing. Ridinger and I produced more than sixty covers for Beeline Books while also packaging the design and production of Show and Gallery magazines and producing record-album covers for Willie Nelson.

'73 was also the year of the Arabian Oil Embargo. The economy went into recession. Starved of advertising revenues, magazines that had been my bread-and-butter client base struggled; their assignments evaporated.

However, audiovisual business filled my purse, made possible by technological advances in slide-show control equipment, particularly by Audio Visual Laboratories, with whom I established a symbiotic liaison that enriched my technological prowess and reputation.

Falcon Jet, 1974

Character actor Jan Leighton in AVL Christmas ad.

Burson-Marsteller acquired new business from an array of aviation companies.

We produced both print work and slide shows for Executive Jet Aviation [now called Net Jets], Piper Aircraft, Falcon Jet, Alia Airlines and Arab Wings.

Yours Truly with Cyclopan camera at Yankee Stadium and Mystic Seaport.

Then came Cyclopan, a 360-degree camera that expanded my photographic capabilities and tied-in with the panoramic format of increasingly large slide shows. It became a unique promotional device, if not a profitable business segment.

Nearing mid-decade, I had so much business that I hired Pat Billings to assist (right).

Within five years the staff grew to include 35 people at various points. The slide shows we made required more and more people as they got increasingly complex.[3]

Big AV projects for Burger King and World Book funded my company's rapid expansion into audiovisual production. I put the profits back into more gear and R&D (research and development). That investment—and my ongoing promotional efforts—paid off in spades. By the end of the 70s, Incredible Slidemakers became one of the top ten multi-image companies in the world.

In the latter half of the decade, the beauty industry became our dominant market segment. What started with a six-projector show for a Long Island salon called Peter's

[3] Incredible Slidemakers at studio party. Left to right: Michael Chan, John Leicmon, Tim Sali, Yours Truly, Jim Casey (kneeling) Fred Cannizzaro and Rocky Graziano.

Place led to prestigious shows for Vidal Sassoon, Clairol, Ardell, Zotos and InterCoiffure (an international association of élite hairdressers).

Working for The Village People also did a lot to raise the company's profile; celebrity sells.

Business on the whole was booming; runaway inflation pumped up the bubble economy. When it came to money, it was a case of use it or lose it. Companies spent fortunes on slide shows. By the late 70s, a fifteen-projector show was nothing unusual.

Winning awards at slide-show festivals became my passion; by the end, I earned more than 150 of them. The most prestigious prizes were awarded by the Association for Multi-Image [AMI].

Left, Yours Truly in projection room at 73rd Street studio.
Right, small part of awards display at Brussels studio.

Many of my award-winning shows were made for Audio Visual Laboratories, to demonstrate their cutting-edge gear. Those shows were creative expressions with no holds barred; I could do anything, as long as AVL founder Chuck Kappenman approved. In 1978, Incredible became AVL's defacto ad agency.

Near the end of the 70s, my pet project, Magic Lasers, almost bankrupted the company; I invested too little too late in a technology that was a black hole for investors; but it was fun while it lasted.

Left, ad for Magic Lasers. Right, Incredible Slidemakers stand at National Audio Visual Association [NAVA] trade show in Dallas.

Purchase Point saved the day when I was hired to produce a launch show for Rank Xerox, in London. Getting away from my growing "family" of helpers for that summer-long stint was transformative. I got to compare the workings of my company with those of a bigger and more successful production company. Purchase Point hired "above" themselves, employing people "smarter" than them. I was too insecure to do that, I guess; or too proud (egotistical). Mom said: "You can do anything…." But it dawned on me that my propensity to hire beneath myself might not be a good idea.

At the close of Volume Three, Incredible Slidemakers were producing a show for a prestigious new client, The Washington Post.

By then, the Forox Department, under Fred Cannizzaro, had become a profit center of its own.

Incredible Slidemakers were leading the way when it came to the development of special effects graphics.

[Many Photoshop effects and their ilk derive from the pioneering camera work of The Incredible Slidemakers.]

Volume Four began in 1980, with "A Method In the Madness," a high-profile conference involving the who's who in the slide show business, organized by Yours Truly. More than any of my efforts to date, that event propelled me to the front pages of the trade press, and thus, the attention of the AV community.

With the new decade came more peaks and valleys during the international segment of my roller-coaster ride through life.

Incredible Slidemakers ended on the trash heap of history, taken down by Paul Volker's draconian interest rates, which did more to grind the economy into a halt than, possibly, today's zero-rate and negative interest rate policies.

I moved to Hawaii (right and below) and began a new life as a freelance entity. Things didn't go according to plan. There was next to no production work in Hawaii and a local graphic designer tied-up what little there was.

I should have known better; my mistake was equating staging with production. Everyone wants to go to Hawaii. Why would anyone hire a Hawaiian producer and deprive themselves of a trip there? They wouldn't and didn't. But it wasn't a total loss. I met my future wife, Sandra Sande, on an inter-island Aloha Airlines flight.

Together, we started a new business—Hawaiian Panoramas—selling framed Cyclopan pictures. That business broke even, at best. Just as I was going bust, Australian Lindsay Rodda hired me to produce car-launch shows and train his crew in "New-York-style" multi-image production. Sandra and I ended up Down Under for a year.

Our Australian fortune was re-invested back in Hawaii. Twice unlucky, we found ourselves selling Hawaiian Panoramas on the streets outside of the Honolulu Zoo, where artists and bucksters were permitted.

Our ship was sinking, but Chris Korody threw me a lifeline and we went to work for Image Stream, in Los Angeles. Those were my happiest days in the slide-show business. Image Stream was probably the best multi-image shop in the world, at that time; I did some of my best work there, producing with the support of the "Stream Team" (left).[4]

However, I was seduced away from Image Stream by a Vancouver producer who needed help with an Expo show for Air Canada. We left Image Stream and moved to Vancouver. It was Sandra's home town and I loved Vancouver from the first day I set foot there.

Said producer double crossed me and hired a local to produce the detailed plan that I made on spec (speculation). Silly me; why didn't I know better than to reveal the core creative before getting a signed contract and retainer?

After a dreary winter of incessant rain and no work, pent-up in a North Vancouver apartment, we were at our financial ends again when the phone rang.

Sven Lidbäck was calling, from Sweden, with an invitation to produce a launch show for the Saab 9000 Turbo 16. Within a month we were living in Stockholm and working at Audio Visual Centrum AB (right). AVC gave us a sweet deal. Saab invited me to produce another big show and a two-month gig turned into nearly ten-year-long sojourn in Scandinavia.

During our third year there, AVC went bust owing me beaucoups de bucks. Returning to America or Canada held no prospects; I had no contacts there anymore; that network was gone; and we hadn't the funds to return there, anyway. Instead, I stayed in Sweden and opened my own company—Incredible Imagers AB—across the street from AVC. Saab and a few other AVC clients moved their business to my company; but Sandra moved out—after catching me in an affair with AVC's foxiest secretary.

Then came news that Image Stream went under; Korody succumbed to the same problem I had, five years earlier: overhead too high to withstand an economic downturn. John Emms, who I hired at Sonargrahpics (Australia) and who was subsequently hired by Chris Korody (on my recommendation), was a free agent. I convinced him to join me and together with my new girlfriend—Kodak account executive, Elisabeth Ivarsson—we grew the Swedish incarnation of my Incredible company into the most highly awarded AV studio in history.

[4] The original Stream Team. Left to right: Ted Iserman, Susy Dillingham, Chris and Cathy Korody, Brad Hood.

Between 1986 and '88, three of our shows won consecutive Grand Prizes at the New York International Film & TV Festival, our trophy collection grew to more than one hundred and I was inducted into the AMI Hall of Fame.

Flush with success, more and more of our business was coming from Europe. I moved Incredible's HQ to Brussels, Europe's emerging new capital, to avoid expensive flights from Scandinavia.

To build the Brussels studio I borrowed (aka "leveraged") to the hilt. Svenska Handelsbanken even matched my investment, kronor for kronor; and me not ever Swedish. (!) But business in Europe was booming, while America struggled to get out from under the crash of the S&L [Savings & Loan] banking crisis.

The Belgian company was named Incredible Imagers International. When I left Elisabeth behind, to run the Stockholm "satellite sales office," she left me.

The Belgian business didn't last long. When US President George Walker Bush (the senior) went to war with Iraq, that crashed the European economy (not the American). I let the staff go and liquidated the Brussels company, salvaging just enough to start over.

Saab—my lost loyal client—came to my rescue with a 60-projector Image Wall for the International Motor Show circuit [Frankfurt, Turin and Tokyo], produced in Stockholm (right). Then, Max Bjurhem came through with another show for Scania Bus; and there was more. I was on a roll again, working frugally and mostly alone (camera and audio work were farmed out).

With the fall of the Berlin Wall, opportunities abounded to develop businesses in former Soviet satellite states. After an exploratory trip to Tallinn, Estonia, I tried to open a visitors' center and opened a company in Tallin—Incredible Imagers Estonia.

When I couldn't get financing (the Estonian Kronor wasn't in circulation yet and Stockholm banks did not deal in Rubles, which were the hold-over currency in the country), I decided to move back to the States, to a house I purchased on Vashon Island, Washington, near Seattle (left).

My last job in Sweden was producing a mindblower for Kurt Hjelte, the guy who brought me to Sweden eight years earlier. It was the end of that cycle in the grand arc of my international life. I was burned out on AV and wanted to go into the restaurant business.

Volume Five began with me on the verge of emigrating to Vashon Island but not before nearly turning an avocation into a profession during my last year in Sweden.

My interest in the Culinary arts blossomed when I returned to Stockholm. I built a mini-restaurant in my Stockholm flat and apprenticed at a bread bakery (Vetebullen), then at Nodiska Kompaniet [NK] with Steffan Petersson, an award-winning *patisseur* (left).

On the way back to America, I made a stopover in Seville, Spain, to visit the 1992 Expo., which is where Volume Five began.

By the time I moved to Vashon, I was burned out on AV. Going broke is no fun; the experience of dismantling your life and giving up the things you love is disheartening. However, there's a Yin for every Yang and the end of one cycle begins another, as we travel around the Karmic Circle of life.

The year I spent preparing for the return to America refilled my coffers and rekindled my spirits. I was a man on a mission again, hell-bent to make my fortune in the restaurant business.[5] Although I stashed a hefty sum, there wasn't enough capital for a new venture; so I went back to work as a photographer and independent AV consultant to generate the necessary funds.

My first job was for a former competitor, Rick Sorgel, a founding partner of Sorgel Lee Riordan Studios in Milwaukee [Wisconsin]. He hired me for a cross-country assignment shooting for Isuzu. I was given a Rodeo LS for the roughly 14,000-mile [~22,500 km] trip and liked the SUV so well that I bought it by trading Isuzu most of my shooting fee and drove it for 23 years.

[5] A popular aphorism has it that, "The make a small fortune in the restaurant business, start with a large one."

In Canada, I consulted with a prominent hotelier, Montréal's Price family, for a multi-image Visitors Center which they proposed building near their river-front Auberge St. Antoine, in Québec City.

That was followed by a two-year-long stint in Malaysia producing a show for that country's flagship carrier, Malaysia Airlines, in partnership with Thomas Leong in Kuala Lumpur and Doug Ethridge's Avcon studios, in Seattle.

While in Malaysia, I joined a group of colleagues on a month-long foray into Rajasthan, India.

Flush with funds, I bought a property at the Vashon ferry dock—the Costa del Sol Mexican cantina—and created Fork Inn the Road restaurant.

Although I manifested my restaurant dreams, so many mistakes were made that, three months after opening, I had to go back into the slide-show business to pay the restaurant's burgeoning bills.

My former AVC student, Filip Järnehag (lower left), hired me to co-produce shows for Wärtsillä [a Finnish manufacturer of gas turbine electric/heat co-generation plants] and the Swedish telecommunications giant, Ericsson.

Another former client, Max Bjurhem, contacted me to produce a show for Scania AB [one of Europe's largest manufacturers of heavy-duty vehicles].

To free myself from the shackles of my dying restaurant business, I sold my 80% share in to my partner, Hita von Mende; then, we split up.

I returned to Sweden and produced Max's anniversary show, working with Filip Järnehag. While in Sweden, I made a side trip to Poland, where I met my future wife, Anna Raus. I spent a winter in Poland, living with Anna in Poznan while she attended a business school.

Anna Raus in front of her school in the Old Town section of Poznan, Poland.

Back in Vashon, former colleague John Whitcomb [Pran AV, in Texas] got me involved in an enormous project building a Visitors Center for AT&T's HQ in New Jersey. I partnered with Watts-Silverstein and went to work with them, as an employee; ultimately, that was a mistake.

Sound recordist Libby Furnau holds route map for Swedish Match shoot.

Then, another former Client of-The Year, Allan Hilburg, brought me a $1.8-million production for Swedish Match that involved a global photo and video reportage mission. Watts-Silverstein was the producer of record for that job, too.

I quit Watts-Silverstein before the Swedish Match job was completed because, in my opinion, the client's interests were being abused to generate bonus bucks for Watts-Silverstein, who were trying to paint a rosy economic picture of their enterprise, which was being considered for purchase by an AV conglomerate in a deal that would net the owners a bigger bundle. It was a matter of principle and honor; for Hilburg, I fell on my sword. Then, in a twist of fate, I got hired by Lexivision, Swedish Match's promotion agency, to become a staff creative director. Anna and I returned to Sweden and set-up house in Stockholm. Getting there was half the fun: we got into a kerfuffle with US Immigration; the only solution was to get married.

Lexivision went bust a year later and cancelled my contract. Luckily, Max Bjurhem hired me to produce the Scania International Photo Library; it was a year and a half long, pan-European job across 22 countries resulting in >3,000 digital images. I became a Photoshop expert.

Anna and I got back to Vashon in time to ring in the New Century. I went back to work for Sound Images producing extravaganzas for Nike. We formed an informal working partnership and invested in the latest technological incarnation of the slide-show business: Watchout, a digital-presentation programming application, like PowerPoint on steroids.

Dave Frey and I committed heavily to Watchout and were among the first (and only) producers to use the program to create original content rather than screen videos.

The AV work I did there was the best I ever did; but Dave never entered any of it into competitions; he didn't believe in publicity; he thought it worked against him by alerting competitors to the existence of a lucrative AV customer.

Above, Sound Images studio in Portland.

Below, my Watchout studio on Vashon Island.

The profits generated by the Nike business paid for expansion of the Vashon studio. I kept investing in Watchout technology and came out a winner. There weren't many Watchout producers doing very large, multi-projector shows; so, by collaborating with Watchout's producer [Dataton AB, Sweden] I got a lion's share of that business, producing shows for Nintendo, IBM, JD Edwards, and Samsung, among others.

Anna left me in 2002. Free again, I explored the world and shot stock pictures in the Yucatan, Belize and Greece. I used those pictures to make new Watchout demo shows. One of those demos was used by NEC to show off a new line of digital-video projectors.

My work appealed to Quantum AV [Reno, Nevada] and they hired me to produce content for a chill lounge in the Peppermill Casino (above).

Simultaneously, the Texas Museum of History (left) hired me to convert a 1992 Watts-Silverstein slide show (Texas Forever!) into Watchout format; by then, it was impossible to make new slides or service the antiquated slide projectors.

Other clients included New York Life's annual meetings (three years in a row); continued work for Nike; and a major production for the Centers for Disease Control; that was by far the biggest show I ever worked on, involving 19 screens floating across a vast, 200-foot-wide [~61 meters] plenum above the CDC Museum in Atlanta [Georgia] (right).

Despite my commercial success, I was unhappy and didn't know why. I moved to Vancouver to get away from the ghosts in the Vashon studio. In my new surroundings, I spent a summer reading the Tao and came to realize I was working against myself, against my true nature; I was rowing my boat upstream, against the flow, instead of gently down the stream, going with it. As mentioned, The Law of Attraction holds that "like attracts like." That's another way of saying, you are what you think; that is, your manifestations result from your intentions (what you think about). I wished to be free, to do my own thing, and that's what I got—more wishing. Instead, I needed to stop living as I had been and start create a new reality and way of life for myself. It was as easy as "just doing it."

I created a new business identity—Douglas Mesney Art—and gave up commercial work except projects for Dave Frey [Sound Images] and Steve Oliker [Oligopoly], who hired me to do my thing instead of theirs. The money earned from shows produced for Nike, New York Life and the CDC funded my transition into fine-arts work.

The stock pictures taken on my trips abroad became the stuff of fine-arts photo-illustrations. Scenes from the Peppermill Casino's *Oceano* show were also repurposed as framed art. Those were presented to Vancouver galleries. All of them turned me down except for an upstart art emporium called Oh My Godard, featuring the work of Michael Godard. His style appealed to Vancouver's growing population of wealthy Yuppies and, as it turned out, so did mine.

Act Nonchalant, 2004

Although the phone rang less often, I still got audiovisual work—and needed it to pay the huge bills accrued making inventories of canvas and art-paper giclée prints; thousands were spent on Epson printers, ink, media and framing supplies.

New AV clients included the Seattle Art Museum for whom I produced an intra-museum digital signage system, and a prestigious show for the newly-build National Constitution Center, in Philadelphia. However, my AV days were numbered because I was becoming technologically obsolete. The obsolescence began when my third wife, Anna Raus, left me, hired three lawyers and took me to the cleaners. Paying her alimony robbed my R&D money for three years. Then, the costs for fine-arts printing and framing left zero money for upgrading my Watchout kit.

In 2007, I was faced with an existential choice when Steve Oliker told me that I would have to upgrade my Watchout system if I wanted to continue working with New York Life. I declined his offer after calculating that, factoring in the cost of new gear, I would lose money on his job. In doing so, I committed AV suicide. I wasn't worried because sales of my work at Oh My Godard were starting to take off. I was on my way to becoming a world-famous illustrator, or so I thought.

However, unbeknownst to me—and presumably Kelly Arnold and Page Tessuk, the gals running the Oh My Godard franchise—someone at Godard's Las Vegas headquarters embezzled the company's entire fortune and bankruptcy was being declared. In the weeks before that announcement, the company had put off paying Kelly and Page their share of the booty. In turn, my accounts receivable were piling up, to the tune of about $20,000. Nice guy that I am (read, sucker) I kept on giving them pictures to sell, installed an elaborate display of ultra-violet and backlit artworks, and made a video presentation that screened in the front windows, facing busy Granville Street.

I was in the gallery the afternoon that Kelly got the call from Vegas. She was told that the Sheriff was coming the next day to padlock the doors and we better get everything out of the place asap. Working well into the night, we managed to get all the artwork out of there, together with as many fixtures that could be stuffed into Kelly's condo, a block away. My studio was so crammed that it was impossible to do anything.

For me it was a binary existential choice: either quit or carry on. I chose the latter and with my dwindling funds loaned Kelly and Paige $8,000 to cover the initial rent for a new gallery, to be called Eye Candy Design Solutions.

I also designed a logo, seen at left, and produced several enormous, floor-to-ceiling canvases to boldly dominate the front windows, which faced Beaty Street, a major east-west thoroughfare with a lot of passing traffic but nowhere for anyone to park or even just pull over. Nor was there any foot traffic, save for deliveries.

Long story short: The new gallery failed in less than six months leaving me with a huge inventory of unsold work, a studio that was now a warehouse and a bank balance more than $30,000 lighter. As no other gallery in Vancouver was interested in my work (or anything digital), I decided to move my artwork and equipment to Vashon Island and re-purpose the operation into a printing service for other artists. "Limited Editions" were all the rage. Instead of selling one original at a high price, artists could have giclée prints made and sell multiple copies at more affordable prices. It all looked good on paper; so, I executed the plan and created a new business, Vashon Island Imaging.

My artwork and production equipment fit the Vashon house perfectly. The 400-square-foot [~37 m^2] studio facilitated production of huge giclée prints, while doubling as a gallery that stretched beyond, into the salon room.

It was while I was in the fine arts business that my Photoshop skills were honed to a fine point; speaking modestly, I became a master but never with a capital M because the way I did Photoshop was based on skills learned in Version 7 of that amazing software. As with audiovisual, I learned how to control many of the things that are now done automatically (algo rhythmically),

A notable example is the shadow detail in the panorama entitled Inuktuk Orators, seen below. Giclée prints show way more than can be reproduced in this book.

Of necessity, I had to learn giclée printing, inside out, mastering that, too. The key to success in any form of art reproduction is knowing the capabilities of the image medium; that is, how many colors it can produce. In that way, the Photoshop file can be tailored to that capability. For example, the images for this book are made in CMYK mode. Cyan, magenta, yellow and black are pigment color that mix to produce far fewer colors than an audiovisual screen, which mixes RGB colors: red, green and blue. It takes time to learn that what you see on the computer monitor is NOT what will print, and to make the necessary adjustments.

Mastering giclée printing allowed me to make virtual duplicates of other artists work. There was another guy on Vashon Island—Harvey Bergman—but the quality of my work far surpassed his. Plus, I offered a full service; including print coating, with varnish, lacquer or acrylics; as well as stretching. I never got into matting or framing for fear of pissing off Donna Baxter, who ran the local frame shop/gallery *Frame of Mind*, who sent me a steady stream of customers. Her recommendations gave me gravitas in the Vashon art community, wall space in most local galleries (including Seattle), and shows at several other venues. In short, it was hard to miss my work.

During the six years I was into the fine-arts trade (2004-2010), I made three major international trips, using those opportunity to create new collections of pictures.

In 2005, I journeyed to Africa; scaling Mount Kilimanjaro to celebrate my 60th birthday; spending a week on a Serengeti safari, and exploring Ethiopia.

In 2007, I spent 10 days cruising the Ionian Sea and exploring Greece with Captain John Connolly and later that year travelled to India, for a wedding, continuing on to Kashmir.

Those were the hay days of Watchout; it was before the big crash soon to come. There was a lot of money sloshing around; it was a pittance in comparison to the amounts being conjured today (the early 20s). But it was enough to keep the economy well juiced. Everyone was making money and a certain amount of that filtered down to the audiovisual end of the commercial spectrum.

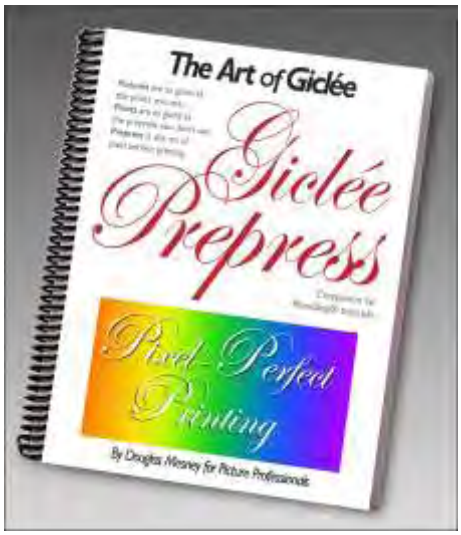
Ironically, Watchout shows grew in complexity with the passage of time, as slide shows had two decades earlier. More projectors and screens were added. But somehow, the money was always there—until it wasn't. And, dear reader, as a producer of stock images, the expenses of all my travels were a tax write off.

Left to right: Richard Legault, Doreen Jacklin (Ron's wife), Pamela and I, Alex Skibinski (Richard's partner).

2007 was a fateful year, and not just financially. On July 7th (07/07/07) I met a new gal in Vancouver and she became my partner, for life. Two years later, on 09/09/09, Pamela Swanson and I were married. The ceremony was on the beach at English Bay.

We gave up our individual apartments and moved in together at Lancaster Gate (above). Our suite was "compact", measuring 600 square feet [~55 M^2]. Eventually, that would prove too small; but for the time being I was spending more and more time on Vashon Island, especially when leaks demanded a new roof, and the new business demanded my presence on the island.

For the first year, Vashon Island Imaging was success, as measured by volume of sales. But it ran at a loss when the costs of moving and setting up are included in the calculation. Nonetheless, I reached a kind of stasis in my cash flow. Pam and I were in stasis, too. She would visit Vashon periodically while my visits to Vancouver were fewer and farther between. When we married, Pam came to live in Vashon as a requirement for obtaining a green card (permanent resident status). As time passed, it became obvious that Pam did not like living in the Vashon studio. However, a series of circumstances led to our abandonment of a green card and Pam's return to our Vancouver condo.



While that was playing out, the national economy sank deeper into recession; discretionary spending money was in short supply. Artists are the canary in the mine during times like that.

One by one, my customers either stopped making limited editions or set-up their own printing facilities. See that as a business opportunity—selling my printing expertise to those needing to learn it.

Thus, I wrote Giclee Prepress and invested heavily in the machines to print and bind it. It was a deluxe 274-page book that I sold for the cost of publication. Profits would come later, I assumed. However, the book was a total flop, for all sorts of reasons, all valid.

I hit a low but got a spark from a colleague, Pete Bjordahl, who suggested I make children's books. The spark ignited the concept of Baby Bird Art and Books, my next (and last) investment. The idea was simple: marry books and wall art to teach kids 3-6 how to read; in a series of twelve books that got increasingly more complex as the story evolved. However, book stores weren't interested in art, and art galleries weren't interested in book, Undaunted, I came up with a pyramid scheme for a home sales network using mothers to sell Baby Bird much as Tupperware was sold.

Reading Room

Interior Gallery

I was so deep in the weeds that I converted the shed in the yard into a Baby Bird showroom with a gallery and a reading room.

But the economy kept ratcheting down; people had less and less money. To counter, I sold the first copies at a loss. Even so, the price was too high. When, during the pre-Christmas Vashon Island Art Studio Tour, I sold just three books—one of which I knew was a sympathy sale—I knew my goose was cooked. After a final attempt to interest some investors, in Vancouver, I gave up the ghost.

Waking up New Year's Day, 2011, reality dawned on me: I was broke (again). It took some time for that to register. Once it did, I began the three-year process of dismantling my life on Vashon Island. That was a transformative change. As usually, I was selling at the bottom of the market—almost to the day. Using GAAP principals, I lost money. But any cash was welcome.

Having been through dissolutions twice before, I knew what I had to do. However, the magnitude was daunting; the sheer volume of stuff I had was even more than when I left New York City; just the stuff I had brought from Sweden filled a 40-foot container. Combined with everything from Hawaii and all the new stuff I had acquired during the two decades I lived on Vashon, there was enough stuff to fill *two* 40-foot sea cans. However, this time I would have no storage facilities (unavailable and/or too expensive in Vancouver) and my new "studio" space would be a small condo at Lancaster Gate.

In the end, it took me three years to get rid of everything that had to go and sell the house. During that time, Pam and I had acquired suite 908, adjacent to 906, where we lived. It was to be a rental unit, to supplement our income. We got the renter from hell and ended up losing money and having to go to court to have him evicted. After that, we were out of the rental business and decided to sell 906, with Pam moving into 908, a much sunnier suite.

Then, as the time to vacate Vashon approached, we bought suite 308 and Pam moved down there, leaving 908 available for me. However, the one-bedroom suite got filled to the brim and still there was not enough space. The overflow filled half of Pam's bedroom and studio. Worse, I couldn't do anything because there was no work space; it was a nightmarishly over-filled warehouse; I feared the floors might collapse.

But I am getting ahead of myself.

The realization that I was broke was not as sudden as might be implied; and there were caveats, the biggest being that I was experienced in going broke; I knew the process. I forget which pundit said it first; when asked how he went broke, he replied: "Slowly and then all of a sudden". There's another maxim I like, by Rick Rule: "Hope is not a strategy". And let's not forget the Boy Scout creed: "Be prepared". I was prepared and the realization that New Year's morning was that Plan B would begin that day.

Plan B entailed making the most of my Vashon property, to attract the highest possible selling price. Part of the plan had already been executed, when I renovated the unfinished original two-car-garage space, which had been serving as a warehouse and shop, with insulation and knotty-pine planking throughout, walls and ceilings. The space provided a staging area to assemble packed goods into shipment consignments.

The 560-foot [~158 meter] driveway—a perpetual problem due to erosion complicated by its steep grade—was resurfaced by Louis Rogenbuck.

At the request of the buyer, the thirteen terraces were regraded back into a hill.

To add more value, I terraced the front-field hillside into a multi-level, thirteen-hole miniature golf course—by hand with a mattock and shovel given to me by Tom Lorentzen, back in 1993. (I was never more fit than that summer.)

The number of stones I pulled out was astounding. Pam fashioned them into ornamental edging for the gardens, which she also expanded.

Then, with Pam's help, I excavated and installed 600-feet [122 meters] of gravel paths laid with circular red stepping stones that lead to all the key locations on the 3.5-acre [1.4 hectare] property. Bea Lorentzen hand-crafted three ornamental stepping stones—a dragonfly, bird, and butterfly—done with inlaid strips and chips of mirror and stained glass; those were installed around the pond.

Destined for Florida; I was lucky to find a company there in the business of selling used slide-show gear and supplies. John Emms got the purple Incredible flag, which once hung in front of our Belgian studio.

I reckoned the place would sell like a hotcake for $750,000. But after three real estate agents in 18 months, it finally sold to a Canadian lady from Toronto for a net of $490 K—which was, ironically, the price recommended by the first broker. People said I was lucky to get so much; it was the bottom of the market.

Despite losing money on the Vashon estate, I benefitted from the exchange rate to some extent and was moving into a lower-overhead operation with enough cushion to allow Pam and I to do a bit of travelling. That began with a scenic drive through the Western United States, visiting friends and relatives along the way. For Pam, it had the added pleasure of being a photo mission. [The world seen through her lens, is an optimistic place.]

First stop on our tour was an overnight with Anne Gordon. Then on to Vancouver, Washington, where we stayed with Pam's cousin, Derek Swanson and his wife Judy. While bivouacked at Derek & Judy's place, we did a walkabout in Portland, Oregon and had munch with Steve Ferris at Sound Images. Onwards to San Francisco with an overnight on Johnny Connolly's cabin cruiser in Sausalito; he passed away shortly after. In the city, we stayed in the heart of the Civic Center, booked without realization of what that part of San Francisco had degenerated into. "Civic Center" sounded good to me. Then, my plan was to continue to Los Angeles and visit my two sisters, Barbara and Kathy (now Patti). But they didn't want to see us. (!) So, we made a left and headed for Las Vegas; and there had a visit with my cousin, Paul Taylor, and discovered him in bad health and terrible shape. He died within a year from that.

Ironically, our next destination was crossing the desert through Death Valley—the lowest point in the United States—on our way to Sedona, Arizona (obscured by forest-fire smoke) and the north rim of the Grand Canyon. From there, next stop was Taos, New Mexico where we stayed a couple of days with Chris Korody and with a side trip to Santa Fe. Then, in Golden, Colorado, we stayed with Joey Porcelli and Randy Pharo, with a side excursion to downtown Denver. From there it was just four hours north by car to Elk Mountain, Wyoming, where we stayed with Susan and Arthur Havers at their newly acquired business – the historic Elk Mountain Hotel; a four-and-a-half-star boutique auberge. The drive home took us through Montana. I wanted to photograph Glacier National Park and (especially) Lake Louise; but the roads through the mountains had not been cleared of winter snow and remained closed. Instead, we headed for Osoyoos, BC, and stayed with Pam's good friend, Susan O'Connor.

Next was a trip to Sweden with two ambitions: Pam wanted to visit the town where the Swansons lived before emigrating to Canada; and I wanted to reconnect with my friends and colleagues. Thomas and Lena Lagerquist organized a reunion and put us up.

The guests included (clockwise from upper left): Christine Ströman (Bo was unable to attend, as below), Lars "Lasse" Hellquist, Kurt Hjelte (tipping his hat), Micke Wasdahl, Hilarie Cutler (Håkan wasn't there due to a brain hemorrhage that affected his vision), Thomas Lagerqvist (Lena was camera shy), Lotta Helte (Kurt's wife), Yours Truly and Pam, Filip Järnehag (behind the camera).

On the beach in Nha Trang, Vietnam (above) and at our favorite restaurant in Phnom Penh, Cambodia on our last night there.

As I still had a boat load of air-miles and they were about to expire, we headed to Southeast Asia and travelled through Vietnam and Cambodia.

Without doubt, Angkor Wat (below) was the highlight of the trip and a reminder that the only "permanent" art is carved in stone.

The last of my air miles were burned off on a week-long trip to New York City. We walked the entire southern half of Manhattan Island – during a January c-c-cold wave. Of course, visiting friends and colleagues was a priority; they included my mentor, Burt Holmes (who died within the year, of Parkinson's), Fred Cannizzaro (me cameraman, at Incredible), Peter Klebnikov (who in inherited my archive of car negatives), as well as my Canadian cousin, Betty Bonner and her daughter Tracy's family. Dinner at Gallaghers was a must, after seeing the Broadway show, *The Wiz.* Other highlights were at side trip to Douglaston and Flushing to see where I lived and visits to the Museum of Natural History; the planetarium; the Metropolitan Museum of Art and MOMA, the Museum of Modern Art.

Walking through Times Square, the photographer in Pam was irrepressible. She even got us in the heart of Revlon's *Love Is On* billboard, on 44th Street & Broadway, where taking a "selfie" is *de rigueur*. It took a few tries; but she got it!

2015 was a turning point socially as well. Dean Rossi and I reconnected. It had been eleven years since I was made redundant on Quantum Audiovisual's Peppermill Casino content-production projects. Dean's partner, Joe Ness, replaced me.

Left to right: Pam Swanson, Dean Rossi, Yours Truly and Dean's belle, Jennifer Miller, in a happy snap taken at Burning Man 2015.

They went on to do some spectacular things, which I came to realize when Dean treated me and Pam to a sushi feast at the new Peppermill Oceano Restaurant, where their super-high-definition, motion-still-life imagery ("stills" (fixed camera) shot with video), of every conceivable wonder of the world, covered the walls, on brilliant, high-intensity LED screens.

Back row, left to right: Dean Rossi & Jennifer Miller; Eric Andersen & Dustin Barbagelata; John Gunderson; Pamela Swanson & Douglas Mesney; Tim Ranalla & Lori Jensen; Jaymie Lowe; Jules Ackerson; Lucas Huff. Front row: Craig "Buddha" Law; Joel Ackerson; Jules Ackerson; Kate Cotter; Dave Madsen. (Dennis Alumbaugh was camera shy; Karen & Doug Kornbrust did not attend because of his health.) Mystery photographer.

Pam and I were in Reno for a reunion with Dean and a holiday at Burning Man with Dean and his cohort of two dozen friends, most of them musicians and performers. We were old enough to be their parents. They treated us with a degree of reverence that I found annoying. I wanted to be one of them, twenty years younger. But of course, that was impossible. Nonetheless we got along famously and were invited back the next year for an encore. On that trip, I was the camp chef.

Right: Dean Rossi's snap of Pam and I loading Dean's van at Costco, On our way to Burning Man 2016. Below, one of many drum sessions at our camp, organized by Dean.

In 2016, we returned to the Elk Mountain hotel and spent a week photographing the place for Arthur Havers and Susan Prescott, the proprietors. I made a brochure for them, using pictures from that four-day shoot. Then my life-long friend, Allan Seiden, visited with a girl friend in tow. They stayed over night on their way to Yellowstone National Park. [Spoiler alert: after struggling financially for the better part of a decade (when the Interstate highway bypassed the town of Elk Mountain, the hotel went off the beaten track), the Covid hoax nailed their coffin shut. Now they are moving back to Europe.]

Those years and the next few also saw Pam and I traveling to Vashon Island occasionally but regularly, organized around major holidays. Anne Gordon became a closer friend; we'd spend Thanksgiving with her, a couple of them at The Hardware Store, Vashon's most popular restaurant. On Fourth of July weekends, we and Anne were privileged to be among sixty or so friends of Mike and Catherine Urban (they handled my estate sale) invited to a lawn party on their Quartermaster Harbor spread.

When the travel was over, Pam and I discovered that we couldn't live together as things were. We both needed personal space. More precisely, she had to get away from me because I was falling into a deep depression and that was bringing her down. She told me that she was moving out and getting another apartment. Instead, I talked her neighbor into selling me suite 307, a corner unit next to Pam's 308. So, we sold 908 and I moved in to 307. It was a slightly bigger suite, so I was able to create a work space and a bedroom, where Pam and I slept (converting hers into a storage room for my artwork). It was nice being next to her instead of six floors above.

Despite the new digs, I was still mightily depressed. My original intentions had been to digitize my picture library—a project that would take years. But there no longer seemed any point to that; the Internet and iPhone destroyed the picture market.

I made a few stabs at the local ad and PR agencies, with an expensive, accordion-fold brochure, but got no responses; nada. I started sleeping a lot and was clearly going down hill when Pam suggested that I update my website and write a book about my adventures in the slide show business. The rest, as they say, is history. I set to work on this tomb in January, 2015 and have been working on it ever since.

Volume Two of An Incredible Epic was completed in December 2019. [Volume Three was posted in the spring of 2022.] The eight volumes went online on my 75th birthday (January 28, 2020) and single, black-and-white proof copies of each were printed (at The Print House, in Vancouver) and bound later that year. The proof copies were delivered from the bindery (Rasmussen Bindery, (in North Vancouver) a year ago, in November, 2020. Those proof copies revealed myriad problems of all sorts. After the holidays, I set about making the necessary corrections and decided to add more pictures. That work was interrupted for nearly five months, when I moved back to Vancouver from Sechelt, as you'll read about, below.

Sechelt turned out to be not quite the Camelot I longed for. That was mostly my fault, for choosing to live in a retirement community inhabited by geriatric bigots. Talk about ideologically-driven small-minded people; they all watch CNN and the CBC. Then, too—and more importantly—P am didn't take to the place and seldom visited. Without her, it was a lonely place.

Then I had a health thing. On New Year's Eve, 2020, Pam and I danced our asses off at The Lighthouse Pub, Sechelt's premier restaurant and lounge. The popular waterfront club is situated at the southern end of the Sechelt Inlet and is the "anchor" of a small cluster of offices for their marina, which included docking for several seaplanes (see picture top of page 1889). Our townhouse was a short, ten-minute walk away, through a nature preserve. I was a regular there nearly every weekend, when they had live bands and pulled enough tables away to make a dance floor. About once a month the featured act was *Disco Mamma*—Tammy and Walter Endert. She spun the digital "discs" and Walter did the rigging, sound reinforcement and lighting. Together, they managed to transform their corner of the Lighthouse into a Sechelt-sized version of New York's Studio 54; or so it seemed after a few beers. That was before Covid; the place was packed and everyone was having a blast. Well, I danced to hard too long. The next morning (Wednesday), I couldn't walk; my right knee was swollen and it was just too painful to move.

Suddenly, I needed a doctor; but I didn't have one in Sechelt; my family doctor (Michael Lee) was in Vancouver which, although only three hours away, was too far, in my condition. That day and the next was spent searching for a doctor, with zero results except an opportunity to call back Friday, at the Arbutus Medical Clinic, run by Dr. Ali Sarabi, who accepted me into his practice and gave me an appointment for the following Monday. Upon examination, he diagnosed me with "faux gout" – false gout, for which he prescribed a three-day course of Prednisone, a potent cortical steroid. [Gout is the accumulation of urea crystals in joints; usually, it's the big toe. Faux gout is calcium carbide crystals that grow in the knee.] Sure enough, by day two, my knee was good to go… but the lower half of that leg, below the knee, blew up like a balloon. Now, Dr. Sarabi referred me to Sechelt Hospital for an ultrasound examination.

Fortunately, Sechelt has a modern, well-equipped and well-staffed hospital. The hospital was having a slow day [in the midst of Covid]; I got serviced right away… and was sent to the emergency room! There, I learned that I had a "DVT"; that's a deep-vein thrombosis (blood clot). DVTs are taken seriously because they can kill you if a clot migrates to the lungs, heart or brain. I ended up in the ER the entire day during which I was injected with blood thinners and instructed how to shoot myself up with them. I forget the name of the stuff, but it cost $80.00 a day (!). When I left the hospital, around 7:00 pm [19:00], I treated myself to a feast at A&W; I didn't want to cook that night. Ha! Next morning, I was on the horn with my Vancouver hematologist, Jorge Denegri; he's the best doctor I've ever had.

To digress momentarily, about Dr. Denegri: As I related before, in this volume [Seven]: Jorge is a specialist. I was sent to him in 2008 after a series of GPs (general practitioners) were unable to determine why I was having UTI problems; those are unusual for (straight) men. His intensive analysis of my blood revealed a rare, hereditary leukemia called Marginal Splenic Cell Lymphoma. He told me then that the conventional treatment would be to cut out my spleen; but that I was more likely to be run over by a bus than to die of my (so far) s-l-o-w moving chronic illness. And, a decade later, my good health has proven him right.

When I called him, I explained what happened and that I could not afford an $80/day treatment. He prescribed an alternative blood thinner that cost "only" $4.00/day. That was a break.

But the biggest break was Pam's surprise visit. She dropped everything and arrived mid afternoon. I broke down in tears; we talked about it. The whole episode had shaken me. I concluded that isolation and immobility are not a good combination. Reinforcing that conclusion, a neighbor had told me about her being airlifted to Vancouver General Hospital after experiencing heart failure crossing the condo-complex lawn. I was not interested in following her, despite my love for flying in helicopters.

Thus, I decided to move back to Vancouver a year ago this November. Now, I am living in Lancaster Gate again—the building I left, to go to Sechelt, in 2019—in new digs, on the ninth floor (Pam lives on the third floor). How I scored this place is another story, as is the move itself, which involved disposing of all my photo and audio-visual gear, framed artwork, housewares and appliances, etcetera, in order to downsize from 1,450 square feet to just 600. [When I lived next to Pam, she let me use her bedroom for storage; but that would no longer be the case.]

In early December, I put out the word with my former friends and colleagues at Lancaster Gate, that I was looking for a place there. No units had been available for a couple of years. However, the head of the Lancaster Gate Tenants Committee, Doug McCorquodale, Told me that 903 was in probate; and the guy that lives in 803, Jerry Miller, happened to have met the sons of the deceased former owner, Dave Calvert, when they came to assess the situation; and he had their phone numbers. The younger of the two sons lives in Calgary, Alberta; I left a message and dialed the second number and was delighted to discover that the older brother, Ken Aldony, lived in Sechelt, of all places!

Ken and I met for coffee at the Trail Bay Mall, in Sechelt town. I explained my situation and interest in purchasing his father's former suite. Ken, who's in his mid forties, was wary, but agreed to let me see the place and make an offer.

The place was a disaster zone.
When the building manager, Paula Mija, let us in, we couldn't believe out eyes. The suite was totally full of tools and equipment; it had been gutted and partially restored, with great attention to architectural details. As Ken explained, his father, Dave Calvert, had been a master cabinet maker. Among his specialized tools was a table router with more than 300 different bits, used for ornamental woodworking. So, Dave was pimping out his apartment. In the kitchen, there were free-floating plate-glass shelves; they were 1-inch [2.5 cm] thick and sunk into the walls on two sides, for support. Beautiful, but totally useless for someone like me. My problem was that everything in the place was custom made but only half finished; there was no way to get parts at Home Depot, IKEA, or anywhere else. Oh, and he also did his own wiring and plumbing; and none of it was to Code. Thus, everything he did had to be demolished, the place gutted and totally rebuilt to its original specifications.

My other ~~problem~~ challenge was that 908 was in probate. In the best of times, there's no telling how long that will take the courts to process; and in the age of Covid, the processing of legal matters ground to a snail's pace. Ken's lawyer kept telling us it was imminent; "just a few more weeks," he said; but months dragged on. Finally, at the end of June, Ken and his brother received authority over Calvert's estate; they were then able to enter into a contract with Pam and I. Officiating the property transfer would take another two weeks; but Ken let our contractor, Florian Mija, to begin work on July 3rd.
In a three-week full-court press, Florian and his crew—Silvius, Bogdan and Marius—totally restored the suite, top to bottom, with all new fixtures and appliances.

Downsizing from 1,450 [~135 m^2] square feet to just 600 [~56 m^2] was painful. Every wall is lined with Metro (metal) shelving and every shelf is full; even in the bedroom (right).

The crew were under pressure to finish before the end of July because I had sold my Sechelt condo and had to be out by August 15th. As it happened, we were out of Ebbtide Place on July 28th, four months ago the very day I am writing these words.

The move-in was done in two stages. Florian finished the living room first; that provided enough space to store one third of the stuff coming from Sechelt. That move was made on July 21st and the rest of the stuff a week later. Pam and I did it all ourselves, with U-Haul trucks and assisted by a dynamic young man called Israel Slone. We had a 10-foot truck for the first haul and a 15-footer for the second; each was packed to the gills.

In fact, the 15-footer was overloaded by 6,000 pounds; the load bottomed out and the rear wheels scraped the fenders when the road was lumpy and on turns.

Israel Slone was a godsend. We met in January, 2020; that's when I started downsizing and purging stuff. Having learned about selling through eBay and Craig's List when the Vashon Estate was dismantled in 2012 and 2013, I decided to just give stuff away; had neither time nor temperament to waste.
Like most who come into my space for the first time, Israel was incredulous as to how much stuff I had. As I explained to him, *that* was my problem—half of it had to go. He had come in answer to an ad in the local paper, the Coast Reporter, for two video projectors and related video gear (splitters, adapters, cables, polarizers (for 3-D projection) etcetera). He was happy with the gear and while loading his car half jokingly said he'd take anything I didn't want. As it turned out, he meant it.

Israel Slone fell in love with my pictures; he inherited just about all of my remaining framed artworks.

Between January and June, Israel and his girl friend Dixie carted off nearly everything I no longer wanted. Among other treasures transferred to them were: the ice cream machine; a service-for-twelve, Swedish, stainless-steel flatware set; the Indian dinner-service set; the four JBL 4311 studio monitors together with amplifiers; all my garden pots, tools and supplies; three chests of drawers; and, best of all, my entire collection of framed artworks—including a dozen very large panoramas—save a few small ones I kept for myself.

Downsizing was much less traumatic than the Vashon episode, because so much had changed. As I was packing-up Sechelt, the Covid "plandemic "was unfolding. By February, I realized that life would be fundamentally different from then on (I have more to say about that, below); it was an existential awareness—the realization that I was never again going to give anymore big dinner parties; that I would never have enough land for a garden or enough wall space for my pictures; and that any thoughts of producing more artwork or the Baby Bird book series were exercises in futility. I was actually happy to see all the stuff go, knowing that it was going to a fine, upstanding and enterprising young couple. Dixie was an entrepreneur at heart who sold iconic fashions in her own boutique in Gibsons, the largest community on the Sunshine Coast, about 20 miles [30 kilometers] south of Sechelt. She was in the process of building a large, multi-purpose space to house her store as well as a yoga/dance studio.

The large artworks and sound system were destined for that space. And, Israel's abode now had wall-to-wall Mesney pictures, throughout.

The move was not without incident. While backing the 15-foot U-Haul truck into Ebbtide Place, I managed to wipe-out the front end of a neighbor's leased SUV. It was just a glancing blow, more of a scrape that tore off the front license plate. I reckoned the repairs would be an expensive repainting job. Ha!

Turns out that new cars have dozens of sensors buried in the front end, monitoring myriad car functions while sensing the environment and trajectory of the car; so, the entire front end had to be replaced. Yikes! Fortunately, I bought the extra insurance policy offered by U-Haul and they took care of everything.

By the end of August, 2021, I was re-settled at Lancaster Gate, ready to resume work on this book. However, I didn't begin work until late September. The summer weather was too good to miss and the BC government gave folks a holiday from the Covid restrictions (masking, social distancing, etc.). Plus, I needed a mental hiatus and some physical rest.

Before I shut down Sechelt, I had updated Volumes One through Four of An Incredible Epic; those third-edition volumes were uploaded to my website last June. Now, completing the updates to Volumes Five and Seven and printing the eight Third Edition volumes became paramount, before any more surprises impeded the completion of the memoir. Now (2022) I'm working on Volume Nine, which will be a supplementary picture book that includes many pictures and stories that didn't "fit" into the earlier editions; those were more oriented to the narrative. You could say that Volume Nine is the stuff that fell on the editing-room floor; that never made the final cut; but is nonetheless great stuff. We'll see how far I get.

The view from my balcony.

I'm glad to be back in the city (Vancouver). Sechelt was stifling; there was no stimulation. Life there was monochromatic; same 'ol same 'ol, day in day out, month in month out. Hell, the town center is seven blocks long from one end to the other. And, before Covid, there was only one dancing place, the Lighthouse Pub. Post Covid, there was no more dancing and the pool table is gone too. So, there was no reason to stay in Sechelt, especially without Pam. Having a life in the country requires an estate, like Vashon, where one can grow food and live in Nature. But, living in a country condo is nowheresville; all you get is isolation. That was OK for a while. In fact, Sechelt was a good place to hide from the ongoing tyrannical hysteria swirling around the hoax called Covid. The isolation provided incentives to work on this book.

Now, back in the city, there are so many options. The beach is just four blocks south (and it's a sandy one, compared to Sechelt's rocky, uninhabited coast). Stanley Park is six blocks west featuring Lost Lagoon and Beaver Lake set in an immense forest with myriad trails. North of us, Coal Harbour (think yachts) is a five-minute walk; and a ten-minute walk lands you in the center of the business & banking district. Best of all, the West End, where we live, is a tree-filled neighborhood with an infinite variety of architecture ranging from historic houses and apartments to modern high-rises designed by name architects. In short, there's always something new to discover. And, to get our 10,000 steps a day, Pam and I take a new walk nearly every day. By contrast, you can walk all around Sechelt in just 4,000 steps. Well, you get the idea; I don't miss the Sechelt gulag and am happy to be home again, close to Pam.

Of course, I'll miss the big, 30 X 15-foot [9.1 X 4.6 meter] patio I had in Sechelt. I grew a fabulous garden in 2020 with tomatoes, Japanese egg plants, climbing beans, two kinds of peppers and, of course, cannabis. I reckoned I'd be confronted by the Strata for growing weed; but nobody said a word. Though, the stuff was a bit embarrassing and had to be hidden as well as possible when my upstairs neighbors—Judy McDonald and Bruce Randall—were showing their house, for sale

Photos by Pamela Swanson.

And I'll sorely miss my barbeque; it's my number one preferred way to cook. However, the BBQ got me in Dutch with the new neighbors, who moved into Judy and Bruce's condo, above me. They didn't approve of the smoke, a certain amount of which was unavoidable given that I used newspaper, egg cartons and forest branches to ignite hardwood charcoal. Had I converted to using those "easy start" briquets and or propane—like everyone else at Ebbtide Place—that would have been OK. Instead, I gave the two outdoor grills to Israel and closed the book on that chapter.

Barbeques are banned at Lancaster Gate; but the 13 X 4-foot [4 X 1.2-meter], southeast facing balcony gets plenty of sun and proved large enough to grow a bumper crop of dynamite weed last summer.

2021 –Surprise! – Unlikely Reunion

Photo by Pamela Swanson

A highlight of 2021 was a surprise visit By Sandra Sande and her husband Julio Campos. I thought that would never happen. Sandra was angry with me for a very long time after our break-up in 1986 and divorce in 1992; I owed her money and still do. But you'd never know it; she was all smiles and so was he. They took Pam and I out for lunch at a very up-market restaurant; the bill came to several hundred dollars. That, and the success story of their company, led me to realize that they were (very) well off.

They had driven up from Santa Monica in a super-cool, Swedish-built camper, to stay with Sandra's mother, Herta, in Langley, BD; she was not doing well and was going to be getting the Covid jab. The camper was better equipped than my condo; they justified the cost by money saved on hotels. How the other half live, I thought to myself.

A week later, they came to visit me in Sechelt. I made my Mediterranean Pasta, a dish I learned from Frya Trost back in the late 60s. It's a pasta sauce made with fennel-spiced ground meat, diced tomatoes, peanuts and raisins; and one of Sandra's favorites. The first time she had it was aboard Filip Järnehag's sailboat when I made it for dinner during a weekend cruise through the Swedish archipelago, in 1985.

They stayed over night in their camper, down by the Lighthouse Pub marina. I didn't expect to see them until lunchtime; but they rang the doorbell at 8:00 am. They had been awakened at daybreak by a large search-and-rescue operation looking for a missing old man last seen rowing across Sechelt Inlet; and the early seaplane departures added to the audible commotion.

They brought some breakfast rolls and we had coffee together before they left, heading north to a place they own on tiny Hardy Island, just off the coast from Powell River, where they stayed until the end of October, producing a major corporate event from there, by phone and internet. (!)

2021 – Another Surprise – Not So Nice

In the Spring of 2021 came news that Pam's cousin, Bob Anderlini, had died in his sleep (lucky guy). She has a special affinity for the family, having lived with them and helping out with the farm, when she came to back to Vancouver after leaving Toronto, as a young woman just out of nursing school. I first met them when we were invited out to the farm; they wanted to meet the newest member of the family (me).

Lftt to right: Alexi (Boni's daughter), Boni, Frank (Boni's husband, Sue, Bob, David Swanson. Photo by Pamela Swanson.

Bob and his wife, Sue, ran a 28-acre dairy farm for many years. Although they tired of that, for tax reasons the property had to remain an operational farm. When I met them, they were raising about three dozen sheep and tending to a huge and exceptionally productive vegetable garden. Of note, they built their enormous A-frame cedar house, where they raised three kids—Justin and Tia by Sue and Boni from Bob's first marriage. Those kids are grown now; Boni and Frank have their own daughter, Alexi.

Clockwise, lower left: Frank, Boni, Sue, Alexi, Justin and David Swanson.

2021 – Resurrection of the Dove Show – Good as New (Almost)

Kudos to Steve Michelsen: He is bringing slides shows back to life.

I became aware of Steve as I began writing this book. He popped up on internet searches and at one point Noreen Camusa (former AVL staffer) mentioned him. Sure enough, he was posting old AVL manuals online. We made some early contact, but nothing serious.

As time passed, we kept in touch and I saw that Steve was earnestly trying to get an AVL system resurrected from the dead. He succeeded and now has a multi-image studio in the garage of his Delaware home; he pays for it working as a video geek on big productions for meetings and events.

Photo courtesy Steve Michelson.

Steve became a means to vicariously fulfill a dream that I had to abandon when life's circumstances betrayed me (or I betrayed myself – I haven't figured out which yet). In the dream, I built a multi-image museum. Oh, my plans were elaborate; the museum would feature demonstrations of every facet of slide-show production. There would be working models of the gear; e.g., Marron Carrell rostrum cameras, Agfa-Gevaert photostat cameras; and, of course, working projection systems playing vintage shows.

Whereas most of my surviving AVL gear lies somewhere in the depths of Vashon Island's original land fill and the projection gear in the hands of those high school students to whom it was donated (along with 90% of my AV and photo-studio gear), Richard Shipps [DDB Studios, Detroit] managed to keep all his. Richard was a fearsome competitor back in the day. He was AVL's fair-haired boy long before I was. David Fellowes and Richard Shipp's made AVL's reputation at the early stages of the multi-image business. Then I emerged (forced myself) on the scene along with Chris Korody [Image Steam, Los Angeles] and Duffie White [Photosynthesis, Denver]. AVL's founder and CEO/COO, Chuck Kappenman, played the four of us against each other.

Fellowes disappeared into other things, having married Martha Jovanovich, an heiress to the Harcourt Brace Jovanovich publishing fortune; but the rest of us carried on. AVL showered us with their prototype gear; we were the Alpha test sites and as such had marketable advantages over the competition. Fast forward two decades (I produced my last slide show at Sound Images for a Nike show in 2001; after that it was all digital) and now the antiquated world of slide shows seems quaint compared to what's possible today. But I digress.

Photo and carved-paper wreath courtesy of Richard.

I turned Steve on to Richard, and vice versa. Shipps was wanting to resurrect a multi-image rig himself. He had all the gear to do it squirreled away in approximately 800 square feet of storage space in three States (Michigan, Indiana, and Illinois). However, after the demise of multi-image in the 90s, he reinvented himself as a creator of "carved paper" artworks that now have an international reputation. Richard was unwilling to part with his past. I understood that, having been there. However, when he learned that I had shed myself of the past and felt good about it, perhaps that was liberating for him, as well. Perhaps my "throwing in the towel" made him look reality (and his wife, Pat Billings) in the face.

We'll never know and it doesn't matter. What matters is that Steve Michelsen inherited a huge chunk of Richard's gear and shows! This just happened (August, 2021), during a breather from the Covid madness. Now Steve is beginning to realize the depths of what he's inherited. All the slides need deep cleaning. [Even in sealed boxes, slide film outgasses oily vapors that fog glass slide mounts. So do cheap slide-viewing pages (they are even worse).] The gear needs cleaning and service also; rubber component s harden; analog electronics oxidize and fail. For my part, I've sent him all my last slide supplies (mounts, view sheets, AVL discs, etc.) as well as a ~2,000 slide collection of my best photos, in Wess mounts—stuff that he can use to make his own shows. He also has the original *Bumbles* and Dove shows (*You Can't Stop a Dove!*), which I had sent to Richard when Vashon went down, in 2014.

Steve's a clever guy. By analysing how other programmers worked (like myself and Shipps), how they accomplished their effects, he's been taking an advanced course about how to program.

To digress for a moment, about programming: The term "programming" is a misnomer—an inappropriate definition of one of the key aspects of multi-image production: "choreography" … another misnomer. Both terms are too constrictive, too limited. One thinks of a programmer as a button pusher; of programming as a mechanical function; and choreographers as dancer arrangers. But there was much more to slide show programming; so much more that Chris Korody believed it was the most important aspect of a show (of course, he was a programmer). At Image Stream, the show programmer had the final cut, the final say about how something would play, what it would look like.

Programmers were not created equal. Some (many?) were more "robotic" than creative; they took their cues from others, following instructions from the producer, creative director, editor, writer or all the above; they followed orders and were, indeed, button pushers. Generally, the bigger the production company, the greater the job specificity (requiring more people, each with a tinier task). However, at the other end of the spectrum were programmers who were also creative directors, editors, producers, etcetera. Especially in the beginning, multi-image shows were made by the kind of person referred to as a "one man band" … a "Jack of all trades". They were the creative programmers whose work was more like that of a chef du cuisine—a cook who can assemble a tasty meal out of (any) ingredients available. You know people like that; ones who can make dinner out of whatever is in the fridge. The decisions made by creative programmers influenced not only how one scene would transition into another; but what the scene would look like; how it played. For a simple example, given a graphic with over-projected glows and stars, how those elements interplayed; did they pulsate or flash? If so, at what rate?

Being able to reverse-engineer existing shows has no doubt been helpful for Steve. *You Can't Stop a Dove!* Is a perfect example. When he ran the show, things fell apart at the end during a continuous run of 122 slides at 9 slides per second. His Kodak E3 projectors couldn't keep up and the result looked choppy, with a lot of blackouts. Originally, the show was programmed on B2 projectors, which advanced slides in slightly less than one second. The E3s behaved more like the European S-AV projectors, which advanced slides in slightly more than one second. Removing 36 slides from that sequence solved the problem.

Steve sent this picture of the 18 slides he pulled from the original 51 used in this sequence of audio tape being stretched.

Steve solved the problem by removing one slide every second and reprogramming the sequence, which was itself quite a chore because he didn't have a copy of the original program. However, by playing the show tape cues into an AVL computer, he could capture and save them. The new version looks very much like the original. Fortunately, many of the animation steps were small enough that the pulled steps are hardly missed.

Left: A slide from the Dove show finale. Right: An original out-take image from my archive.

Another problem was that slide mounts were badly faded and the mounts fogged, as mentioned above. There's not much that can be done about the fading; but cleaning the slide mounts would clear the fog; so, he began cleaning them. That was taking too long (~3 hours per tray). Then he realized that he could simply remount the film chips in the glassless Wess Mounts that I sent him. Though time-saving, remounting is also a sizeable commitment of time. Following (overleaf) is Steve's clarification of his career path and his recollection of the Dove show restoration:

I didn't teach myself to program slides in my garage. I DID teach myself, though – after hours in the programming room at "The DuraSell Corp" in 1983! I freelanced as a slide programmer from '84 to '96. In '93, I picked up Powerpoint for the first time. In the late '90s, I programmed shows for Sony using their CRV laserdisc system – they created programming software to look and feel intentionally like AVL Procall, as they figured that most of the people that they used would come from multi-image. I did a few shows with Macs and Macromedia Director. After 2001 or so, it's been all Powerpoint, all the time. Bottom line, I have been doing the same job for 40 years! So, then I am not a "video geek". I have however worked alongside many video geeks, and know just enough to be dangerous.

Steve in the 1980s screening a show for Revlon at the Boca Raton Club, Florida.

Michelson in his Delaware studio, 2022. Both photos courtesy of Steve.

Regarding reprogramming the Dove show – I have to tell you just what I did (who else am I going to tell?): I figured… to slow the sequence down by about 1/3 to make it work with the E3s … 1/3 of the slides needed to come out. Each of the two sequences that needed "slowing down" consisted of:

- A few slides in some random trays
- Several sequences of nine slides (same trip through the nine projectors)
- A few more slides to end the sequence.

To evenly shorten the sequence: I pulled all the slides in the sequence out of the trays and put them into sleeves, leaving several open slots in each tray.

- I figured out what multiple of 9 slides would result in the sequence being shortened by 1/3.
- In the case of the longer ending sequence, as I recall it included 6 groups of 9 slides in total.
- I pulled out of the sleeves roughly every third slide, for a total of 18 slides, and set them aside. This would equate to two loops around the projectors.
- I moved all the slides in the trays after the sequence up by two slots.
- I replaced all the remaining slides into the trays.
- In the Procall, I pulled the cues that represented two loops of the nine projectors.
- I reprogrammed all the remaining cues so that there would be .15 seconds between slides, rather than .10.
- For good measure, each .15 seconds includes .05 where the incoming and outgoing slides are supered, so that there wouldn't be a "flicker" at each cut. Because video has a lower dynamic range than slides, the dark bits are darker; the dip in brightness during a cut is more visible on video than in person.

One thing that would speed things up for Steve is financial support with which he could hire assistants to clean stuff and rent a proper space for a studio; a storefront would be ideal; it could become a theater.

I recommended to Steve that he seek sponsors. The companies that created the equipment and supplies for multi-image productions back in the day and who are still in business today would be logical candidates. They include Kodak (don't forget Agfa and Fuji), Navitar, Dataton among others.

If I lived closer to Steve, I'd love to get involved. But here I am in western Canada with Steve on the east coast of America and a border closed to people who remain unvaccinated for Covid. I will likely never travel any distance ever again; I'm not vaccinated for Covid; me and my ilk are the latter-day Jews in a Neo-Nazi, communistic world being depopulated by criminal fascists and oligarchs.

Watch a video of the resurrected *You Can't Stop a Dove!* show on my website at: http://www.incredibleimages.com/index.html#DoveVideo

1977 **– *You Can't Stop a Dove* –** AVL Demo Show **–** Script **–** Plates N^{os} 1-3

AVL Rep.	Customer	Announcer
"I think you're going to like this show ... it's really Incredible ... and I know you're going to be thrilled with the new Dove. It answers just about everything you've been yelling at me about the last six months.	Yeah, I've heard a lot about some secret project. By the way, thanks for the instruction book.	
Let me just check the alignment here ... Okay ... that seems fine ...	It's some new chip, right? ... C77 or something like that ...	
Why don't you push the button?	Me? (chuckles) That's the kiss of death for your Dove show!	
No, no. go ahead, you can't stop a Dove show!	(chuckles)	(music up)
		Say hello to Dove! Dove, say hello to the audience!
		Dove's the latest member of our growing family of powerful and progressive products designed and produced especially for you ... to help you communicate better with others in our growing world of slides and multi-image shows that you're involved in, that we're involved in, and we think you'll agree, that the whole world will soon be involved in because, as we think you'll also agree, the world needs slides ... George Eastman discovered that years ago in 1923, which is why he discovered film: he knew that someday people would need things to put into their slide shows. Now, fortunately for us, and for George, his descendants kept the company out of the red and their scientists have now made it possible for shows like this in color ... which brings us to Dove.
		Dove's our latest and newest family member and our scientists developed Dove to add color to your life. And not only color ... but also zest, and spirit ... and most importantly, peace of mind. You see, Dove has positraction ...
	Positraction?	

Script as recorded.

AVL Rep.	Customer	Announcer
That's what I was telling you about ...		
Positrack means that Dove can remember what the cue and lamp status is supposed to be at that very instant. Basically, that means that your show can't go down. Basically, it also means that you just can't stop a Dove		
	Last year you sold me an Eagle. Now it's a Dove. This has got to stop.	
That's the point. You can't stop a Dove.		
	Do you gamble?	
Well ...		
	Watch this! (pulls RCA)	
... as I was saying, you can't stop a Dove. The Dove remembers everything. The cycle track feature remembers which slide is supposed to be there. Here: watch this ... see you can even pull out the power and Dove will pull the slide trays right back into total synch. when you plug it in.		
	(pulls AC)	
	Oh yeah ... watch this ... (slows tape)	
That's no problem for a Dove. Because positrack and cycletrack are keyed right into the digital cue information, so while the cue is happening it's also telling each projector where it is supposed to be and exactly what it is supposed to be doing.		
	Oh yeah ... watch this ... (stretches tape)	
No problem for a Dove. Even if you lose a hundred cues, Dove will bring you right back into synch.		
	On yeah ... watch this ... (turns Positrack off and on again)	
You can't stop a Dove! Even if you forget to turn Positrack on in the beginning of the show, it'll catch you up the minute you engage it.		
	Oh yeah ... watch this ... pulls AC, RCA, turns off switch, stops tape deck,	
(chuckles)		
		Positraction is the very latest in our electronic wizzardry that was designed into our Eagle computer system. Now you can take advantage of what has become the fastest electronic development in multi-image programming of all time. You can also be part of a growing and dynamic industry that will afford you opportunities never before obtainable ... opportunities that will prove as profitable to you as they will for your client, and as they will for us. Think of it! Now you can rest assured. You can sleep again.
		More than that: two Doves are better than one ... and three are better yet. What's more, there is virtually no limit to the myriad potentialities and possibilities. Especially since our new cyclotrack gives you that all-important feeling of confidence.
		Scientists have known for years that confidence means peace of mind, and that peace of mind lowers blood pressure, promotes longer life and effects sanity.
		At AVL we know that too. That's why we hope you'll join us in welcoming Dove to our growing family of pertinent, pointful progress for the good of you, your clients, and of men, women, and children everywhere.

AVL Rep.	Customer	Announcer
	starts deck, plugs in AC and RCA.	
	Oh yeah ... watch this ... stops deck, rips up tape	
Sir ...	(reaches for fire ax)	
Sir ... sir ...	(axes Dove)	
Oh my God ...		
	Guess what ... your Dove stopped	
Well, don't blame Dove.		

Crowd	
Voice #1	That guy's nuts'
Voice #2	I dove it! I dove it!

Script as recorded.

2022 Update

More than once, I've said: life turns on a dime. Well, a few short weeks after I wrote the Introduction you just read, life turned upside down. A population-control program has been initiated, globally, by a cabal of world leaders organized by the World Economic Forum [WEF] and the United Nations [UN]. Using Covid 19 as a cover, the eugenicists are inoculating the world population with poisons that will sterilize the young and weaken peoples' natural immunity to diseases and chronic illnesses (think, cancer) and thus encourage death before one's time.

The cabal (Davos man) also seeks a one-world government. To accomplish their agenda, the United States (and Canada) is being remade by a Marxist regime that is gaslighting the population, rewriting history, dividing the society, turning traditional values—even science—upside down, and wiping out anything entrepreneurial in favor of the mega-corporations. The rule of law is disintegrating; the Constitution and Bill of Rights are blatantly disregarded. Fascism is veering right, into a kind of Communism with American/Canadian characteristics.

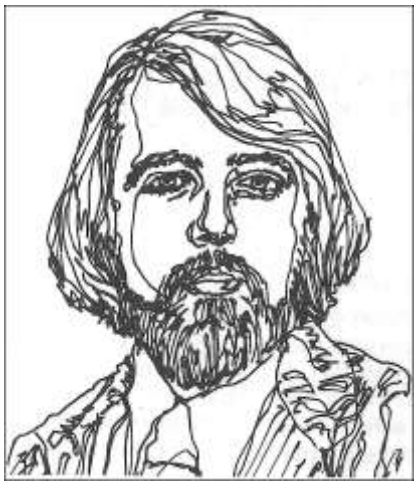
Thus far (November 2021) Pam and I have been able to avoid the poison "vaccines" that have been mandated be virtually every government around the world. Being un-vaccinated, we are segregated, discriminated against and generally hated by the vaccinated majority. We are the new lepers of society, the new *Jews*. Detention camps are being built, with double, razor-wire fences, guard towers, morgues and crematoriums.

For those reasons and because I am supposed to begin chemo therapy for my marginal splenic-cell leukemia, in the Spring, I can't say for sure that I will be alive a year from now. Of course, none of us can know that, really; the world could blow-up tomorrow. However, I know that my fuse is quite short now. [Update, April 2022: I had the first course of chemo (*Rituximab* and *Bendamustine*); I aged five years in a week and have cancelled the remaining five courses. Maybe the chemo can kill the cancer; but what will be left of me? I'd rather have fewer good years than a longer life, beat to shit.

Pat Billings gave me this neon sign for Christmas, in 1976.

I will continue to update *An Incredible Epic* as long as I can. Volume Nine was uploaded yesterday, June 15th. Today, the first edition of Volume Ten (this one) goes live.
Like Volume Nine, it is filled with many pictures, anecdotes and explanations for which there was no room for in the original eight volumes.

Preface



Volume Ten features the Masters-degree thesis of Ken Burke – *History of Multimedia – 1900-1972*. It traces in detail the history of multi-media and multi-image presentations from 1900 to 1972. Following that, are instruction manuals for a variety of multi-image machines built in the 1970s, particularly the projection-control equipment made by Audio Visual Laboratories (AVL).

As a former president of the Association for Multi-Image and head judge of their competitions for fifteen years, Ken Burke was a little giant whose major contributions spanned the golden age of multi-image – the late 1970s and 1980s.

1981 portrait of Ken Burke appearing in AMI's *Multi-Images* magazine.

I am honored to have received Ken's permission to publish his thesis. Credit goes to Richard Allison, who made me aware of Burke's work and who re-connected us. Richard discovered Ken while researching for his own planned book about the story of multi-image – a "Who's Who" based on interviews with many of the producers inducted into AMI's "Hall of Fame".

[I was one of the first three inductees, sharing honors with Richard Shipps, Chris Korody and Duffie White – all AVL team members. See next two pages for details. The photo of me in AVL's ad was taken in Stockholm, Sweden, by Juki Nakamura.]

I first emailed Ken in August (2022) seeking permission to reproduce "A History of Multi-Image, 1900-1972", as part of *An Incredible Epic*. He failed to respond. Hmm.

A month later, deciding to give it another chance, I resent my email; and, *voila!* The very next day Ken wrote back:

Great to hear from you; for whatever reason I didn't receive the previous email, glad I got this one. I've been in touch with Richard as you know, will continue to do so, and now I've been contacted by a guy at the U. of Iowa who's writing his dissertation on multi-image so I steered him to Richard as well, along with Marilyn Kulp. Yes, you have my full, unrestrained, no compensation to me permission to use any part of my M.A. thesis, although I would appreciate a citation for anything you use. Sincerely, the world will be a better place with the documentation you've provided about your illustrious career (no BS; your shows were always the best produced/programmed of any I saw over so many years). I thank you for doing it. Feel free to be in touch at anytime and please send back-up emails like this one if you ever do contact me and don't get a reply no later than the next day.

Ken

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August 18, 1995

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AMI PRODUCERS' HALL OF FAME

In 1985 the *AMI Producers' Hall of Fame* was formed. Its purpose is to recognize the significant contributions of an integral part of the Association's membership -- the multi-image producer. Individuals selected for membership in this elite group have inspired the industry, through their energy and excitement, to greater creative heights.

The charter members of the *AMI Producers' Hall of Fame* are: Douglas Mesney, P. McDuffy White, Christopher Korody and Richard Shipps. Members inducted from 1986 through 1996 are: Rusty Russell, David Fellows, Todd Gipstein, Charlie Watts, Bruce Silverstein, Donna Lawrence, Robert Rowan, Yukari Watanabe, Shigeru Kikuchi, Mark Hammer, Steve Hinchliffe, Minette Seigel, David Inocencio, Alan Murgatroyd, Seppo Palminen, Sirkka Peltoniemi, Peter Ryan, Ted Iserman, Kevin Oldcorn, Elaine Rogalski, Bruce Hornstein, Ollie Hallowell, Dixie Hornstein, Dave Leonard and Joel Gilmore.

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Duffie White,
Photosynthesis,
Dallas, Texas
"AVL Systems enable me to take graphic and photographic design into the "new dimensions" that put me in the forefront of my industry. Before AVL, producers were severely limited by unreliable equipment. We were still "inventing our medium" as we went along. I credit AVL with making multi-image a legitimate communications tool... and freeing me to concentrate on creativity!"

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Biography of Ken Burke

I want to start this add-on to my 1972 "A History of Multimedia" M.A. thesis by thanking Douglas Mesney for even considering me for inclusion in his massive, monumental *An Incredible Epic* project. For years I've considered Douglas as chief resident on the top of the mountain of multi-image creators, so to be a part of this grand project is a huge honor for which I'm humbly grateful. (Also, because I've written this addendum, I guess it's truly an autobiography, but I'll leave that honor to Mr. Mesney's masterwork, so "biography" it is for me.)

Born in Austin, TX (1947), raised in Galveston, TX, then back to Austin for college, I first stumbled into multi-image during my final undergraduate semester (1970) at the University of Texas when a friend told me about a new course in multimedia production over in the Radio-TV-Film Dept. (I was a Bachelor of Fine Arts Art Education major, focusing on painting and photography; I still have a lifetime credential to teach high school art in Texas, but, for many reasons, I doubt it will ever be put to use) taught by Dr. Richard Byrne, newly-relocated from the University of Wisconsin at Madison. Intrigued by what I heard, I made my first slide show as part of a final project for an education class I was in (using a soundtrack of Bob Dylan's "It's Alright, Ma (I'm Only Bleeding)" with numerous slides I'd accumulated over the years), then after graduation (when I was fortunate enough to have drawn a high enough number in the 1969 Draft Lottery to then avoid being sent to the Vietnam War; my deepest RIP condolences to all those who weren't so lucky), I got into UT's Master of Arts program in RTF (Radio Television & Film), took Dr. Byrne's class, found I had a knack for these image/audio combinations (also got marvelous training in photography from Russell Lee, one of the masters from the Depression-era Works Progress Administration), got curious what had led to this emerging art/business/communication form, found little about the history of the medium, so for my thesis I researched and wrote the pile of pages now included in this *Incredible Epic*. Through Byrne's connections with a former Wisconsin colleague, I ended up in New York City in fall 1972, working at Queens College of the City University of New York as an audio-visual administrator. During my time at UT and Queens I made a lot of multi-image shows of my own, from 2-projector single-screeners using a dissolve unit to a couple of 5-screeners, to a massive hour-and-a-half exploration of pop culture of the 1960s which incorporated 4 screens of slides, 16 mm film, video, and audiotape.

In January 1974, I returned to U.T. to seek a Ph.D., deciding that what I really wanted to do with my life was college teaching, but to get there I needed a dissertation topic, which finally fell into my lap after first studying aspects of literature, sociology, aesthetics, and communication theory because while I'd only made a couple of new 3-screen multi-imagers in those years, one of them was accepted in the new-formed Association for Multi-Image's management of the slide-show-showcase at the annual AECT (Association for Educational Communication and Technology) convention, held in Dallas in 1975, making it easy to attend.

There I met various people associated with AMI, became curious how one could transport principles of film criticism to this new, constantly-evolving audiovisual medium, decided to write a dissertation on the theory and practice of such an evaluation system (with a condensed version of the written project, plus information on refinement of my proposed evaluation instrument in a couple of academic journal articles also contained here if you ever need a non-medical sleep aid). [Dissertation follows this; see page 2699.]

As that dissertation was nearing completion in the spring of 1976, the next AECT/AMI showcase was in Anaheim where I presented a couple of shows as well as found my way to the AMI Board meeting. After Ph.D. graduation that May (I should also note a failed marriage 1971-'75; neither one of us at age 23 were ready for such a commitment, but you live and learn), I stumbled into an AV management job at the U.T. Graduate School of Business (applied for various teaching jobs, didn't score any), then an invitation to the next AMI Board Meeting (St. Louis) where I learned I was actually on the Board (I guess in those day it was appointment, rather than election) and met Bob Rowan who became editor of AMI's *Multi-Images* magazine to which I contributed a good bit over the years (we also sort of resembled each other, leading to many laughs).

As I got into spring 1977 I finally found an academic job at Southern Methodist University, in Dallas (teaching a wide variety of mass media courses, especially film history and theory) which continued on until end of spring semester 1984 (didn't get tenure; maddening at the time, ultimately proved to be one of the best things that ever happened to me), during which time AMI was growing, the "I" was shifted to "International, "with parallel organizations springing up in Canada, Australia, and—later—Europe, plus regional festivals starting all over in the U.S., but that was after AMI decided to break away from AECT (yet still continued the showcases in Miami, 1977; Kansas City, 1978; New Orleans, 1979; Denver, 1980) with our own showcase at a hotel at the Chicago O'Hare Airport in 1979 as verification to ourselves we could successfully run such an event. That led to our first competitive festival at Universal City (Hollywood), in 1979, after which we were off and running on an annual basis (Atlanta, 1980; Minneapolis, 1981; Philadelphia, 1982; Orlando, 1983; Dallas, 1984 and '85; Anaheim, 1986; Orlando, 1987; Phoenix, 1988; Dallas, 1989; Orlando, 1990; San Antonio, 1991; Anaheim, 1992; New Orleans, 1993; Anaheim, 1994; Dallas, 1995; Philadelphia, 1996).

Beginning in 1981, after I'd done initial refinements on my evaluation form through quantitative research methods, AMI appointed me Head Judge of those annual international festivals, began using the evaluation instrument discussed in that first academic article I mentioned above, then I did further refinements to it so the 1982 version explained in the second academic article became what we used from then on. But, I wouldn't have been doing all that AMI stuff (while actually getting elected to the Board where I kept serving until 1996, along with being president 1989-'90, 1994-'95; I also contributed a few chapters to the association's book *The Art of Multi-Image* [1978], then edited and contributed to another one for them, *Anthology of Multi-Image* [1980]) So, thanks to Bob Rowan [editor, Multi-Images magazine], I was put in contact with Panorama Productions in Santa Clara, CA (right by San Jose, in fact very close to the San Jose Airport as flights overhead constantly disrupted recording sessions with narrators), where they hired me as a producer.

[That was probably] based on their assumption that because I'd seen so many hundreds of multi-image shows, that I'd probably be able to bring that expertise into my work for them – proof once again you should never assume anything.

I was a functional producer, always brought my projects in on or under budget but didn't find much of a spark of inspiration except a few times (especially with our "Discover Panorama" show that won a top award in a San Jose competition); I was better with the continuance of my own multi-screen art shows which did quite well at a few regional festivals, even picked up a Bronze at AMI's big event (Nepotism? What's that?)

By June of 1987 we were all in agreement it was time for me to move on, which I wanted to do anyway to find some work closer to Berkeley because in February of that year I had met my now-32-years marriage partner, Nina Kindblad (we were both hunting for scalper tickets for the Paul Simon *Graceland* concert; got into the show; got into being with each other as well), once again stumbled onto an opportunity, this time at Mills College in Oakland, got hired for a tenure-track position in 1987, married Nina in 1990, get tenured in 1993, continued at Mills again with a wide swath of mass media-related courses which finally settled into me running a Film Studies minor as budget decisions cut away former departments I was in. A few months after I turned 65, I retired in 2013 as an Emeritus Professor of Film Studies, have continued to live with Nina (and an ongoing line of cats) in the San Francisco Bay Area since then, but sadly with decreasing connections to multi-image as Mills didn't have sufficient equipment for me to attempt to teach a course there (I did get a chance to do one for a couple of years back at SMU), plus AMI not only shut down but a lot of what had been stored at the Tampa, FL headquarters mysteriously disappeared (despite herculean efforts by Executive Director Marilyn Kulp to find out what happened to all that stuff), plus I have little storage space at my condo (don't care to rent more), so I discarded most everything connected to AMI except copies of a few of my publications (sadly had to watch piles of slides go into the trash).

The one other major event for me during AMI's final years was an invitation to join the judging team sponsored by the Spanish Audiovisual Association for evaluation of many of the massive media shows at the 1992 Seville World's Fair (which took me full circle to research I'd done on significant multi-image events at such fairs in Paris 1900, Brussels 1958, New York City 1964, Montreal 1967—along with what I'd seen for myself at the Fairs in San Antonio, TX 1968, Vancouver, BC 1986). What we were judging were the immense media installations at many of the national pavilions, an almost overwhelming task but one delightfully unique in my life). I'm still in touch (by Facebook mostly) with some of my fine old friends from those days, and attended a wonderful reunion in 2003 in Helsinki, Finland organized by the delightfully-crazy Seppo Palminen, but mostly for me AMI and multi-image are now just great memories, which is why it's so fantastic that Douglas Mesney has chosen to preserve so much of these invaluable activities in this fabulous series of books. Thanks again, Douglas, for allowing me to be a part of it all.

J. EDUCATIONAL TECHNOLOGY SYSTEMS, Vol. 6(1), 1977-78

A PRAGMATIC APPROACH TO CRITICISM OF MULTIMEDIA

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ABSTRACT

Because multimedia presentations are used to communicate diverse ideas, and because they employ various mixtures of media, they have resisted systematic criticism. A functional/experiential approach to analysis and judgment of these programs is recommended. Such a system would emphasize the structure and style of the presentation, its technical and aesthetic factors, its value to the audience, and the critic's personal reactions. This system is intended for "layman" critics and incorporates material from aesthetics, communication, instruction, and persuasion. After proper testing of this theoretical approach, a reliable evaluation instrument will be available for distribution.

Definitions of Multimedia

Multimedia programs—presentations using simultaneous combinations of audio tape, slides, and/or film, video, and overhead transparencies—have been in use for about twenty-five years [1]. Multimedia programs in multi-screen formats are now actively used in education, business, industry, government, the arts, religion, and entertainment. References to these programs abound in the periodical indices of instruction, popular literature, and aesthetics; however, there are other references to multimedia that do not address the multi-image programs described above.

Multimedia is also used as an adjective to describe any object or activity which combines different media or elements. In this form, multimedia is synonymous with mixed media and is a proper term

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doi: 10.2190/QPY7-XF5P-BV9K-0X74
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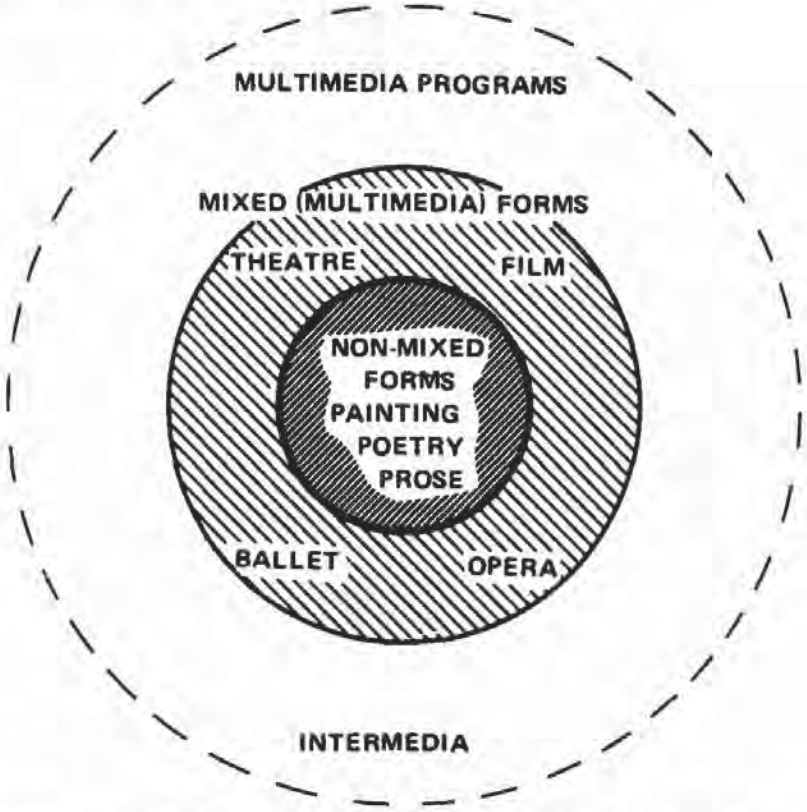

Figure 1. Non-mixed and mixed forms of communication (incomplete).

in both the arts and education. Klapper seems to have been the first to publish a definition of multimedia; he used the term to refer to several separate media used sequentially in one lecture or campaign [2]. Many current educational listings use this word as an adjective, referring either to lectures or to "multimedia kits" of records, pamphlets, filmstrips, and the like.

These concepts of multimedia are not incompatable if the semantics are kept clear. A distinction can be made between mixed activities and more direct forms of expression. In Figure 1, painting (pigment applied to a ground) is presented as a non-mixed form of communication. Other examples would be forms such as prose, poetry, and speech. Beyond the first level in the model, all other communication is some form of multimedia (mixed media). The first multimedia region is the loosely-bounded sphere of the traditional mixed forms, such as film, theatre, ballet, and opera, where conventions are generally accepted and recognized. In the outer realm of multimedia combinations are mixtures which are either less predictable or still undiscovered. Within this outer sphere are multimedia kits, slide/tape/film programs, and avante-garde Intermedia performances [3]. All of these combinations are

identifiable by their resemblance to past, similar works, but they have fewer acknowledged conventions regarding format, length, or structure.

While multimedia programs are currently used with any combination of media and choice of image areas, some changes are taking place. The Association for Multi-Image (AMI), formed in 1974, is establishing standards for certain types of multimedia programs. By AMI's definition, a multi-image program would consist of audio tape and three screens of slides or film. Other formats would also be encouraged, but the triptych standard would be required for festivals and traveling presentations. Such regularity in format would allow more widespread use and diffusion of multi-image programs. As this type of program gains more common acceptance, it will be even more vital for producers and users of multi-image to share knowledge and opinions.

This description of a system of criticism for multimedia presents a means of discourse among multi-image communicators. Just as multimedia formats are acquiring conventions and standards, so must there be standards for discussing such programs. In constructing this common system of analysis and judgment, it is proper to draw from existing schools of criticism and from existing knowledge about the uses of multi-image programs.

Communication and Criticism

Multimedia programs are used to serve a variety of communicative purposes. Unfortunately, this does not mean that there are methods of theory and criticism which underlie the production of such programs. Virtually none of the catalogued writings on these programs deal with a philosophical basis for this form of communication. Perrin offered the only theory of multiple imagery to date [4]. He said that simultaneous images on a large screen—or adjacent screens—create a pattern of information comparison and simultaneous visual montage; these visually-rich displays increase information density and facilitate certain types of learning. The types of learning most suited to multi-imagery are things such as comparisons, contrasts, details, interrelationships, and steps in a process. There have been no further elaborations on theories of multi-image communication, nor have there been any examinations of critical methods to be applied to multimedia programs.

One reason for the lack of critical statements may be the misconception of what constitutes a critical act. There are several types of "layman" critics, as opposed to scholarly or journalistic

critics, who make vital decisions regarding multimedia programs. These "layman" critics include teachers, art directors, agency executives, and clients from various civic and governmental groups. Normally, they would not see themselves as critics; nevertheless, the results of their judgmental comments are directly applicable to the immediate value of specific multimedia programs. Critical approval leads to good grades, agency approval, or approval of salary. Critical rejection leads to poor grades or revisions which cost the producer time, money, and prestige. Thus, the "layman" critic does not determine the historical worth of a message, as does a scholarly critic; however, he serves an important, pragmatic purpose in the process of creating and using multimedia programs.

Just as there are differences in purpose between scholarly and pragmatic critics, so are there differences in the circumstances in which they work. Scholarly critics may preview a work but usually they experience it along with an audience. After the experience, their analysis and judgment is recorded for examination by other critics and audiences. Except for student projects, most pragmatic criticism of multimedia programs occurs in a private session between producer and critic. After winning critical approval, the producer shows the program to the intended audience. Rarely would the pragmatic critic's remarks be written down or preserved.

Figure 2 shows more of the relationships between communication and criticism. The basic communication triangle of encoder, decoder, and reality is joined together by the signal and serves as the source of all language [5]. Each of these language components can be analyzed separately, in both quantitative and qualitative fashions. Quantitative criticism is concentrated on the concrete, measurable aspects of linguistic *structure*. Various social science analytic methods, such as structuralism and semiotics, are part of this linguistic, quantitative spectrum. While these discoveries have value concerning the underlying transformational nature of multimedia communication, the methodology is not suited to the needs of the pragmatic critic. Similarly, the *effects* of communication which are scientifically measured and evaluated are part of a lengthly quantitative discipline which is not relevant to the immediate needs of a pragmatic critic. Only in the messages and uses of communication are there areas related to spontaneous qualitative criticism. Even the media of communication and the types of messages are more of a theoretical than a practical concern; consequently, the only aspect of communication which lends itself to immediate, qualitative criticism is the *use* of messages. In other words, pragmatic criticism is directed at the uses or functions of communication.

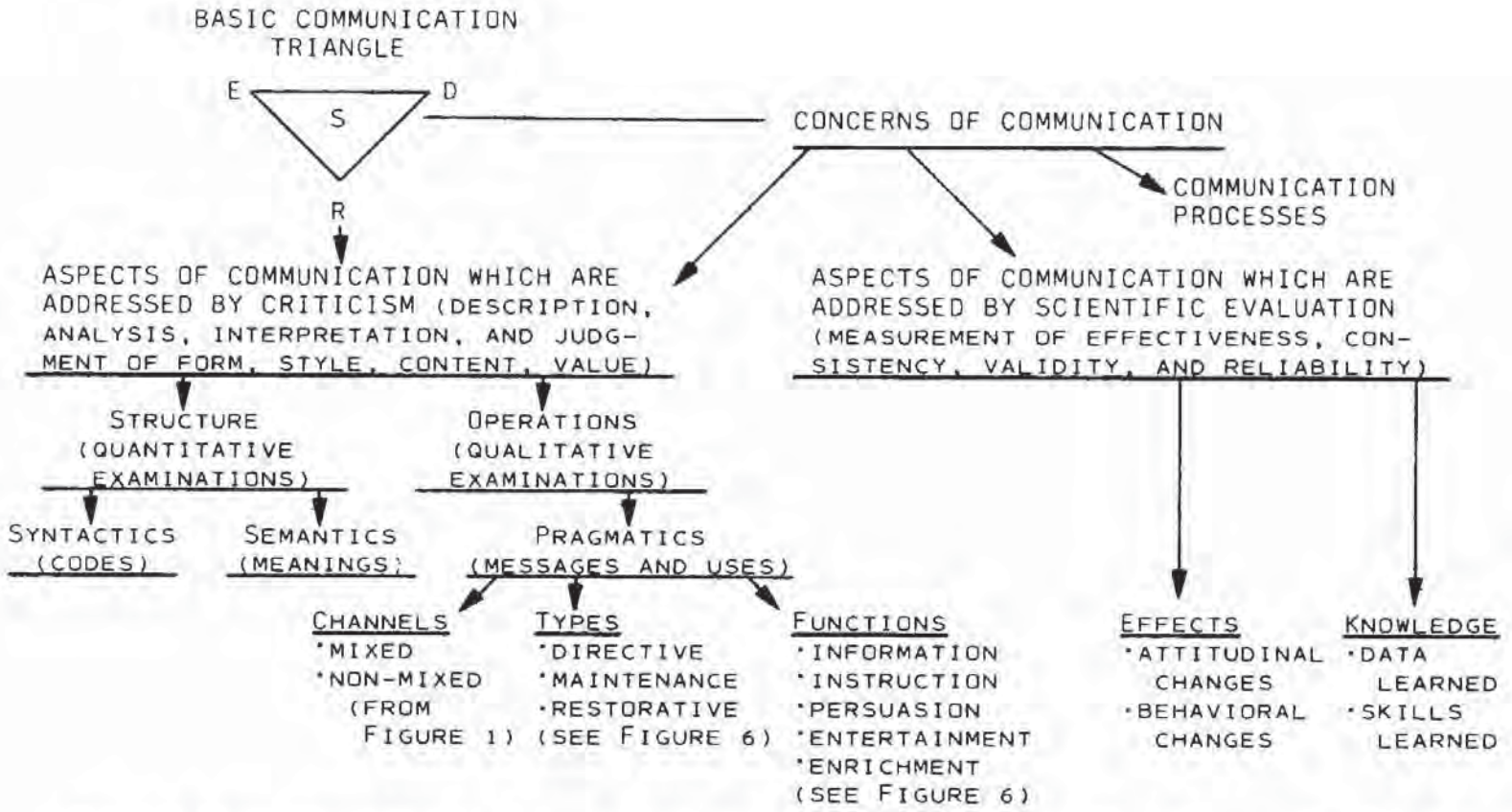

Figure 2. Some interrelationships between communication and criticism adapted from Kinneavy (1971, p. 25).

Scholarly criticism is also focused on this aspect of communication, but with a further emphasis on judgments of enduring social value. The scholarly critic determines the historical worth of a message. The scientific evaluator measures the effectiveness of a message. The pragmatic critic makes an immediate personal decision that affects the use of a message. Pragmatic critics are the necessary arbiters between producers and audiences. Through informed, responsible actions by such critics, audiences benefit by receiving programs that are understandable, attractive, useful, and highly enjoyable.

Functional/Experiential Criticism

While the various schools of scholarly and popular criticism all offer useful insights to the pragmatic critic, none of them are ideally suited to the full situation of the multimedia program [6]. The program itself should be examined, as in Objectivism; however, the functional purpose of the program and its potential effects on the audience should also be examined, as in Pragmatism. Relation of the program to nature or reality, as in Realism (Mimesis), might well be a content consideration. Further, the expressive personality of the producer and the individual perceptions of the critic should be taken into account. It is important to include the emotional response of the critic when constructing a system of criticism. Psychological, experiential reactions may encourage internal biases and misplaced emphases which would hinder the critic's attempt at objective, detailed analysis. A critic must re-examine his experiential reactions and possibly re-evaluate his judgments. He must try to balance his feelings against his observations. Often, these feelings serve as a filter through which observations are made. A critic must be aware of these responses, thereby keeping the filters as clear as possible. Taking all these considerations together, the critic should examine the:

1. style and structure of a program,
2. content of a program,
3. potential value of the program for a specific audience, and
4. his own experiential reactions to the program.

Of the various aesthetic approaches available to the pragmatic critic, only Berleant's "aesthetic field" approach encompasses all of the above considerations [7]. His phenomenological method focuses on the artist (producer), the aesthetic perceiver (critic or audience member), the work of art (multimedia program), and the performer

(in the case of multimedia programs, the critic experiencing the program). Like other modern aestheticians, Berleant stresses the active involvement of the critic/perceiver in the aesthetic situation. The critic and the rest of the audience are seen as vicarious performers who empathize with the work and mentally merge with it as it is presented. Further, Berleant requires both producer and perceiver to be active and receptive; he characterizes the experience in non-cognitive, qualitative terms: sensuous, immediate, unique, intrinsic, situational, integral, and intuitive [8].

Phenomenological aesthetics suggests that any type of communication is a dialogue in which the consciousness of the sender (and the reality he abstracts from) is joined to the consciousness of the receiver by means of the message. By using this approach a critic can study any message, including a multimedia program, in a way that unites the major qualitative critical concerns in a holistic manner. Thus, from the demands of pragmatic criticism and from the insights offered by phenomenology, we can suggest *function* and *experience* as the key areas of pragmatic criticism.

The functional/experiential method of multimedia criticism is ultimately based on phenomenology, the description of primary interactions. Sender, receiver, message, and environment are the components of the total situation of communication. Interfacing between all these components must be accounted for when a complex channel of communication such as the multimedia program is involved. Functional examinations lead to analyses of the sender's intentions, the structure of the message, and the potential effects on the audience. Experiential observations emphasize the reaction of the receiver and the influence of the environment. This environmental influence could refer to creative influences on the producer, presentational influences on the critic, or informational needs of the audience.

This entire situation of multimedia communication is diagrammed in Figure 3. Essentially, the producer must break through the presentation environment which protects the critic and the audience from involvement. Secure in the isolation of the classroom, theatre, or convention hall, the audience member must be attracted and stimulated by the multimedia program. Interest must be aroused and attention must be maintained for the channel to stay open between sender and receiver. External noise in the presentation environment or internal noise at the encoding or decoding states is a significant factor in the loss of attention. A producer considers these limitations and the influences he is subject to when designing the message; he also considers the inherent

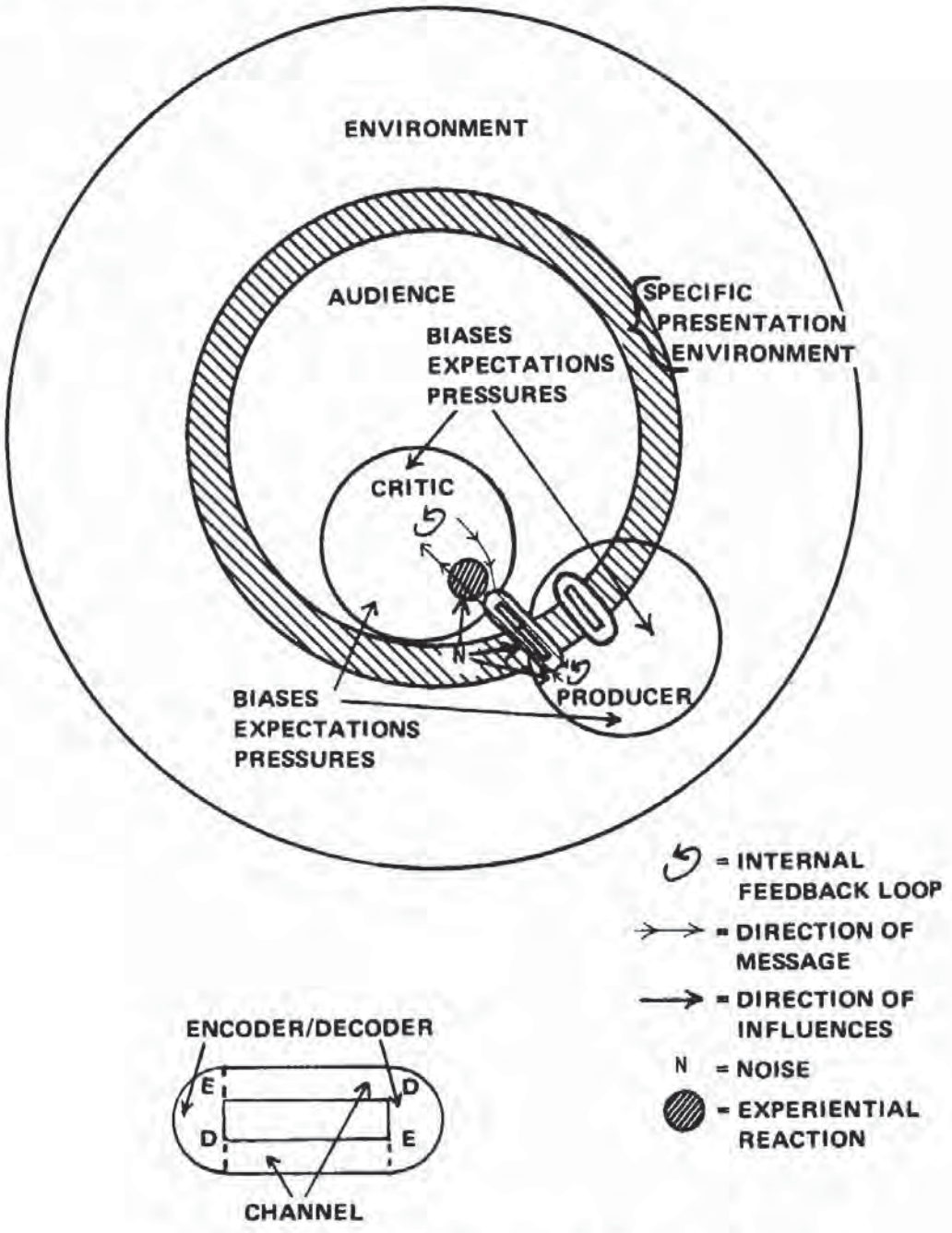

Figure 3. The process of multimedia communication.

limitations imposed by the program's function and content. From these internal ideas and modifications (feedback loops), both the producer's message and the critic's response are formulated. Once this process is understood by both producer and critic the critical emphasis on function and experience becomes more apparent.

Functions of Communication

If a functional approach is important to pragmatic criticism of multimedia programs, there must be some clarification of what functions communication serves. The basic assumption here is that these functions are somewhat discrete. While any specific message probably uses elements from two or more functions, there is normally only one primary function stressed. Thus, an informational program may use some persuasive techniques and some entertaining devices, yet remain essentially an informational experience.

In Figure 2 the functions of communication are designated as information, instruction, persuasion, entertainment, and enrichment. This designation is a compilation from several writers, especially Cavert (1974) and Schramm (1971). Figure 4 is a diagram of various ideas on communication concerning message types, functions,

TYPE	ACTIVITY STRESSED	FUNCTION	PURPOSE
DIRECTIVE[1]	awareness, attention, comprehension*	INFORMATION[2,5]	surveillance[3]
	acquisition and retention of data and skills*	INSTRUCTION[2,5]	cultural transmission[3]
	yielding, acceptance, committment*	PERSUASION[2]	correlation (politics,[3] economics[4])
MAINTENANCE[1]	stabilization, routine work and conversation*	ENTERTAINMENT[2,5]	diversion,[4,7] ritual[6]
RESTORATIVE[1]	rebellion, vicarious sensory stimulation, pleasure*		
	expression, rapture, meditation*	ENRICHMENT[5]	discovery[7]

[1]Wiebe (1971)
[2]Schramm (1971)
[3]Lasswell (1948)
[4]Wright (1959)
[5]Cavert (1974)
[6]Carpenter (1973)
[7]Kaplan (1966)
*synthesis of all above

Figure 4. Types of messages as related to functions of messages.

and purposes. The types of messages were proposed by Wiebe (1971), and the message functions are combined from Cavert and Schramm who originally presented only four functions each. Lasswell (1948) and Wright (1959) presented the first elaborations of the functions of communication, but their terminology was superseded by later writers. Thus, the terms they used for *functions* have been transferred to equivalent *purposes*, while the purposes of entertainment and enrichment are taken from Carpenter (1973) and Kaplan (1966). There is no assurance that these writers would agree to this organization, but it is logically based on their concepts.

One of the main characteristics that separates the various functions of communication is the applicability of quantitative measurement. For example, both instructional and persuasive messages can be measured for the attainment of specified goals by the receivers. These two functions, along with information, emphasize certain quantities in the message content. Information is different from instruction and persuasion in that informational learning is not designed to be measured against a precise state of knowledge and behavior. McGuire notes that instruction and persuasion have a further level of differentiation: instruction stresses attention and comprehension while persuasion stresses yielding [9]. As Schramm notes, entertainment has some similarities to the previously noted functions in having definite [10]:

1. structural qualities, in that all these messages require encoding, attention-gathering devices, decoding, and reduction of noise;
2. immediate effects, in that each of these messages is used for a specific purpose; and
3. long-term effects, in that each of these messages have results which can be measured in various ways.

The chief difference between these four functions is that information, instruction, and persuasion are consciously intended to teach their messages in some way, while entertainment is intended as a predictable diversion. Entertainment can be measured for its effects, such as in imitative behavior concerning violence and role modeling, but the message itself is not designed for quantitative recall.

Some might argue that entertainment is just as consciously designed for teaching social values as the other above functions are designed for teaching ideas and attitudes. Since entertainment is based in ritual stories and ceremonies there is a strong basis for this argument. However, the study of such social learning is more

of a psychological inquiry than a criticism of a message or an evaluation of effectiveness. Thus, we will still contend that entertainment is an emotional, affective function rather than a quantifiable, cognitive function. Enrichment is also an affective function, but it is even more elusive since its results are very subjective and virtually unmeasurable.

Enrichment encompasses subtle and diverse ideas which could be called spiritual, implying a general metaphysical feeling rather than a specific religious experience. In its fullest sense, enrichment includes aesthetic experience, artistic insight, intellectual discovery, meditative tranquility, religious ecstacy, romantic love, platonic love, sensuality, and passion. Following traditional distinctions, enrichment includes the discoveries associated with the fine arts; entertainment, on the other hand, takes in the ritualized, stimulation-centered activities of the popular arts. Some writers see these functions as being the same, with allowance for varying degrees of technical facility and manipulation of ambiguity. However, a closer examination, such as performed by Kaplan (1966), shows that enrichment emphasizes spontaneity, challenge, intensity, and similar types of involvement. Entertainment, though, operates on a more patterned level of personal and social reinforcement using stereotypes, familiarity, and sentiment.

An understanding of the differences between each of the five functions suggested here will aid the pragmatic critic in evaluating a multimedia program. Programs and messages serving each function will display certain structural and content characteristics that are necessary to that function. Critics must take each program in its functional framework when judging the successful attainment of the desired goal. Further, they must examine their own experiential reactions to the work in judging the successful attainment of the functional goal. If the critic is pleased by a program, he may see the pictorial composition as aesthetically pleasing, hear the soundtrack as captivating, perceive a clear function, and find value in the message. Likewise, an agitated critic may see technical decisions as flaws, may nitpick structural and aesthetic choices, and may search for counterarguments to the message. The critic must realize that his evaluation will necessarily be subjective, but if he clearly understands the individual functions of communication he can better attempt to judge the multimedia program as it will be seen by its intended audience.

Evaluation Instruments

One way to focus subjective, pragmatic criticism would be to construct a qualitative evaluation instrument, similar to instruments

of scientific measurement. However, the attempt to organize and clarify responses must not lead to scoring critical opinion as if it were empirical testing. Critical opinions cannot be scored for numerical validity in the manner of quantitative measurement. Numerical values can be assigned to responses, and response items can be validly related to each other. Nevertheless, any total score on a critical instrument would be relative only to the specific critic using the instrument. Personal opinions cannot be numerically equated to universal values; however, a qualitative critical instrument would be useful and proper in *organizing* and *representing* a critic's responses.

A qualitative critical instrument should guide the critic to all the relevant considerations about a multimedia program. Based on the functional and experiential concerns examined in this paper, relevant statements about multimedia programs would include:

1. what function a program serves,
2. what evidence justifies this choice of function,
3. how well a program serves this specific function,
4. what technical and stylistic standards a program achieves,
5. what emotional responses the critic has to the work, and
6. what the perceived value of the program is for the intended audience.

A useful qualitative evaluation instrument would require the critic to consider and/or respond to each of the above points. A five-page fully elaborated hypothetical instrument which addressed all of these considerations has been presented by this author [11]. Figure 5 is a shorter hypothetical questionnaire which is currently being tested for validity and reliability. A final, statistically-sound version of Figure 5 should be available by the end of this year for distribution to critics of multimedia programs.

A critic must fully understand the basis for such an instrument before using it; even informal testing with Figure 5 revealed concepts which should be clarified for the aspiring functional/experiential critic. Foremost among such considerations is the idea that both critic and producer have the goal of achieving a successful multimedia program. Thus, there should be a concentration on cooperation and explication of the program in question. The producer cooperates by specifying all of the presentational data before the preview showing of the program. Function, title, running time, number of image areas (screens or areas on a large screen), number of audio channels, number of slide and movie projectors used, number of dissolve units used, and type of automated

Date_____

Producer and Title of Program_____

Very early into the program what did the function seem to be: (circle)

INFORMATION INSTRUCTION PERSUASION ENTERTAINMENT ENRICHMENT

Was that impression confirmed at the end of the program: yes___ no___

If not, what did the function seem to be at the end of the program:

INFORMATION INSTRUCTION PERSUASION ENTERTAINMENT ENRICHMENT

Respond to the following statements by checking the appropriate blank:

Strongly Agree		Not Certain		Strongly Disagree	
←		↓		→	
___	___	___	___	___	The program's function was clear over 50% of the time.
___	___	___	___	___	The total experience of the program affirms the perceived function.
___	___	___	___	___	The program's structure enhances the function.
___	___	___	___	___	The program displays style and technique that enhances the function.
___	___	___	___	___	Technical quality of the visuals (exposure, focus) is excellent.
___	___	___	___	___	Technical quality of the audio (levels, distortion) is excellent.
___	___	___	___	___	The presentation environment (light level, visability, image size, audio volume) is excellent.
___	___	___	___	___	Aesthetic quality of the visuals (composition, clarity) is excellent.
___	___	___	___	___	Aesthetic quality of the audio (variety, editing) is excellent.
___	___	___	___	___	The program held my attention over 50% of the time.
___	___	___	___	___	The program aroused feelings in me that seem to support its primary function.
___	___	___	___	___	The program has high value for the (presumed) intended audience.

Comments (including suggestions for revision):

superior__ above average__ average__ below average__ inferior__

REVIEWER_____

Figure 5. Hypothetical multimedia evaluation form.

programmer used are among the items which the producer should specify to the critic. If the critic knows this information before viewing the program, he can be more aware of how a program's format enhances the total presentation.

It might seem self-defeating to let the producer bias the critic's perception of the program's function by specifying what it is supposed to be. However, the fact that the producer has a specific functional intention does not preclude the critic from perceiving an entirely different function from the actual message elements. It is more to the pragmatic critic's advantage to know what the producer's intentions are so that he can verify any dissonance he begins to feel. Further, a common basis of understanding before the presentation should facilitate discussion between producer and critic afterward. Some of the technological considerations and conventions would be assumed also, if the producer were adhering to a multi-image standard such as the AMI triptych mentioned at the beginning of this paper.

Evaluation Considerations

In constructing and using an instrument such as proposed in Figure 5 for evaluating multimedia programs there are a number of areas of critical concern. Among these are design, style, structure, technique, aesthetics, and environment.

The design of a multimedia program will often determine the clarity and effectiveness of the message. Number of image areas, arrangement of these areas, and arrangement of the audio speakers can often increase the total comprehension of a program. A multimedia program is not required to have just one, two, or three screens, nor is it required to have audio speakers placed near the screens. Some topics might lend themselves to cruciform or X-shaped formats; some content might be delivered best with quadraphonic audio signals filling the audience's entire environment. Similarly, image size can be a design consideration. Some ideas would be best clarified if one large screen area were used for topic statements and smaller image areas were used for supplementary information. Pacing and length must also be appropriate to the program. Pacing should be slow enough to allow comprehension yet fast enough to maintain attention. Length should not exceed the time necessary to present and explain the primary message.

Re-inforcement and juxtaposition of images and sounds can be used for such purposes as clarity and irony. Audio-visual redundancy is very effective for clarity, especially when related audio and visual cues are combined in the message [12]. In addition, message elements can be used metaphorically to add further levels of meaning to a presentation. Verbal descriptions of an industry accompanied by pictures of factories, workers, and products would

be an example of audio-visual redundancy using related cues. Verbal descriptions of the benefits of industrialization accompanied by pictures of smog-covered skyscrapers, traffic-jammed cars, and streets of concrete, metal and neon would be an example of multi-image juxtaposition used for an ironic effect. Simple audio-visual juxtaposition could result from a soundtrack describing the joys of a summer coastline while the accompanying images show people drenched with sweat. Any of these structural devices may be used to enhance a message, but in any program some devices will be more effective than others.

Technical and aesthetic considerations about a program are often the most troublesome concepts for a pragmatic critic. Those critics who are not producers themselves often do not feel competent to judge the production aspects of a program. An evaluation instrument can provide little help in gaining technical knowledge that a critic does not already possess. Reference to textbooks will help, but only practice as a producer or judge will sharpen a critic's eyes and ears. Until such skills have been perfected, though, perhaps the most helpful distinctions the critic can make are between aspects of technically *recording* the images and sounds and aesthetically *arranging* the images and sounds.

Thus, technical quality of the visual element includes sharp focus and proper lighting of the main pictorial subject. Technical quality of the audio element includes: recording and reproduction of the aural signal with consistent levels of volume; elimination of signal distortion; and elimination of background noises, unnecessary machine "clicks," and background "hiss." Aesthetic quality, or arrangement, of the visual element includes interesting compositions and proper placement of lines, shapes, and colors to lead the eye directly to the important subject matter. These design considerations are necessary for both individual images and the composite compositions of multiple images. Aesthetic arrangement of the soundtrack includes the choice of narration or singing voices, the use of variety, and the skillful editing of the components. Placement of one sound after another, transitions between sounds, and balance between background and foreground sounds are all aesthetic considerations about audio.

A problem in evaluation arises if the soundtrack is simply one pre-recorded commercial song, since the aesthetic quality cannot be related to the program producer. In such a case, the critic should minimize his comments on the aesthetics of the audio and concentrate instead on the technical quality of the transfer dubbing. A similar situation occurs when the visuals are copies of commercial

photographs or advertisements. Again, emphasis should be placed on the producer's technical skill in proper exposure and judicious cropping of the original.

Another concern is the environment of the presentation. The producer must provide:

1. proper sightlines to the screens,
2. images large enough to be seen by the most distant viewers,
3. a light level low enough for image clarity but possibly high enough for note taking, and
4. a soundtrack loud enough to be heard clearly but soft enough to avoid distortion.

Failure in any of these areas could result in external noise sufficient to block the transmission of the intended message. Often the private preview session with the critic will not be in the same location as the actual presentation. When this is the case, these environmental considerations cannot be evaluated adequately in the preview showing. Still, the producer must demonstrate an awareness of these presentational factors in the design of the program.

A final critical consideration relates to the basic nature of multimedia programs; these programs are composed of restructured time but they are presented in actual mechanical time. Slides freeze actions and environments, allowing space and time to be re-arranged at will, especially in multi-screen formats. Similarly, film is normally arranged in restructured time through editing; audio tape is also an edited, manipulated product. Yet, this reconstructed "unreal" multimedia world is presented in the real operational time of tape recorders and projectors. The critic should be aware of the inherent limitations of a medium where tape playback speeds, rotating slide trays, and advancing punch paper tape restrain even the most sophisticated automatic programmer. A virtually miraculous mechanical ballet occurs when presentational technology is respected and used within its natural limitations. Therefore, the critic should accept non-dissolving slide changes, machine noises, and slight projection distortion ("keystoning") as inherent in this mixed medium. These minor inconveniences are going to occur whenever multimedia programs are presented in spaces which were not designed for such technical complexity. Consequently, mechanical distractions should be noted only if they are significantly bothersome. A positive approach to these distractions would be to comment favorably if they are successfully exploited or overcome.

A long evaluation instrument, such as the five-page sample mentioned earlier, would be appropriate for a thorough examination

of the program's structure and accomplishments. This detailed form would be used in private sessions between the critic and the producer. Since a short form, such as Figure 5, can be completed in about five minutes, it would be ideal for rapidly-changing situations such as presentations of student projects or judging of entries in a multimedia festival. Thus, a short form would provide direction to a critic who must make immediate public decisions without prior consultation with the producer. It should be stressed again, though, that both of the hypothetical instruments presented by this author are not yet fully tested for validity and reliability. Promulgation of a final, tested short form will occur soon.

Interaction of Producer and Critic

Since the sender and the receiver in the communication situation of the multimedia program have a common goal of a successful presentation, it would be useful to detail this critical process. As we have stressed before, the producer should begin by stating his case as to intent and technological design. The critic should respond by accepting the producer's statement unless the program proves otherwise. Thus, the critic enters into the experience ready to isolate those program elements which underscore the program's success or failure.

Use of an evaluation instrument will help the critic organize his thoughts and responses. Areas such as design, structure, multi-image interactions, audio-visual interactions, and technical quality should be considered separately to see how each contributes to the total impact of the program. Also, the critic must examine his feelings toward the program. After ascertaining his mood, he then looks again at his evaluations of functional success. He should also determine several examples to justify his judgments. By explaining all this to the producer, he will establish a clear ground for dialogue about the program. Possibly, the producer and the critic will find that they have different assumptions about the needs of the intended audience. As these conceptions are clarified in discussion, there is even further justification for the final decision on the program's pragmatic value. A coherent profile of the audience will emerge in the producer/critic dialogue, and then examples can be applied from the program to show its relevance to the audience. Thus, a subjective process is given order and stability without being reduced to arbitrary numerical dimensions.

A multimedia program does not have to achieve a certain score to be considered excellent, nor does it have to be evaluated on all

the points discussed here. Properly used, the evaluation instrument will be a form of critical shorthand used to facilitate talk between producer and critic. After considering the program's elements separately, the critic may be able to see that slow pacing, for example, spoiled an otherwise captivating blend of narrator, colorful design, and clever script transitions. Similarly, a critic may realize that multi-image juxtaposition is helping to make a difficult point more interesting; if so, he can recommend more ironic commentary and less straight audio-visual re-inforcement.

The producer benefits from this method also, because he can discuss specific program elements in the context of the whole functional need of a particular audience. Consequently, he may be able to show that a critic's demand for more humor or shorter length are personal desires not appropriate for these particular viewers. If the audience is the general public, then the discussion can center on the program's adherence to the general functional principles discussed earlier. Neither party should feel a need to prove his argument as superior; rather, the end result should be a logical agreement on what function is proper for a particular audience and what program elements help achieve a clear functional message.

A Final Note

Multimedia programs are a contemporary phenomenon, using current technology in new combinations to reveal information and insights. Like any medium, these programs are subject to the needs of their producers and users. Future improvements in video production, transmission, and projection could affect the nature and use of what we now know as multimedia programs. Home projection of large multiple images might be possible from video disks, video cassettes, or cable transmission. These innovations would eliminate many of the current problems associated with distribution of multimedia programs. Equipment reliability might also be improved. If such changes occur, it would not mean that the multimedia program would be replaced by video. It would simply mean that contemporary technologies would again evolve, merge, and result in a new mixed medium. The new combination might be named multimedia or videography or some other descriptive title.

The important thing to remember is that multiple-image multiple-channel communication is popular and effective; surely, this form of message delivery will remain in future generations. No matter what technology is employed, there will always be a need

for eager, responsible pragmatic critics. These guardians will continue to protect audiences by demanding that multimedia programs be functional, well produced, and interesting.

REFERENCES

1. L. K. Burke, A History of Multimedia, M.A. thesis, University of Texas at Austin, ERIC no. ED 126 889, 1972.
2. J. T. Klapper, *The Effects of Mass Communication*, Free Press, New York, pp. 109-110, 1960.
3. G. Youngblood, *Expanded Cinema*, Dutton, New York, p. 346, 1970.
4. D. G. Perrin, A Theory of Multiple-Image Communication, *AV Communication Review, 17:*4, p. 369, 1969.
5. J. L. Kinneavy, *A Theory of Discourse*, Prentice-Hall, Englewood Cliffs, New Jersey, pp. 18-20, 1971.
6. *Critical Theory Since Plato*, H. Adams, (ed.), Harcourt Brace Jovanovich, New York, 1971.
7. A. Berleant, *The Aesthetic Field: A Phenomenology of Aesthetic Experience*, Thomas, Springfield, Illinois, 1970.
8. A. Berleant, *The Aesthetic Field: A Phenomenology of Aesthetic Experience*, Thomas, Springfield, Illinois, pp. 47-73, 1970.
9. W. J. McGuire, Persuasion, Resistance, and Attitude Change, *Handbook of Communication*, I. de Sola Pool, et al., (eds.), Rand McNally, p. 226, 1973.
10. *The Process and Effects of Mass Communication*, rev. ed., W. Schramm and D. F. Roberts, (eds.), University of Illinois Press, Chicago, pp. 47-48, 1971.
11. K. Burke, A Functional/Experiential Approach to Criticism of Multimedia Programs, ERIC no. ED 124 104, pp. 24-28, 1976.
12. H. J. Hsia, On Channel Effectiveness, *AV Communication Review, 16:*3, pp. 249-251, 1968 and W. Severin, The Effectiveness of Relevant Pictures in Multiple-Channel Communications, *AV Communication Review, 15:*4, pp. 397-400, 1967.

BIBLIOGRAPHY

Abrams, M. H., *The Mirror and the Lamp*, Oxford University Press, New York, 1953.

Berleant, A., *The Aesthetic Field: A Phenomenology of Aesthetic Experience*, Thomas, Springfield, Illinois, 1970.

Burke, L. K., A Functional/Experiential Approach to Criticism of Multimedia Programs, ERIC no. ED 124 104, 1976.

Burke, L. K., A History of Multimedia, M.A. thesis, University of Texas at Austin, ERIC no. ED 126 889, 1972.

Carpenter, R., Ritual, Aesthetics, and TV, *Mass Media and Mass Man*, 2nd ed., A. Casty, (ed.), Holt, Rinehart and Winston, New York, 1973.

Cavert, C. E., *An Approach to the Design of Mediated Instruction*, AECT, Washington, D.C., 1974.

Critical Theory Since Plato, H. Adams, (ed.), Harcourt Brace Jovanovich, New York, 1971.

Dickie, G., *Aesthetics, An Introduction*, Pegasus, New York, 1973.
Goldstein, E. B., The Perception of Multiple Images, *AV Communication Review, 23:*1, pp. 34-68, 1975.
Hsia, H. J., On Channel Effectiveness, *AV Communication Review, 16:*3, pp. 245-267, 1968.
Kaplan, A., The Aesthetics of the Popular Arts, *Journal of Aesthetics and Art Criticism, 24:*3, pp. 351-364, 1966.
Kinneavy, J. L., *A Theory of Discourse*, Prentice-Hall, Englewood Cliffs, New Jersey, 1971.
Klapper, J. T., *The Effects of Mass Communication*, Free Press, New York, 1960.
Lasswell, H. D., The Structure and Function of Communication in Society, *The Communication of Ideas*, Lyman Bryson, (ed.), Institute for Religious and Social Studies, New York, 1948.
McGuire, W. J., Persuasion, Resistance, and Attitude Change, *Handbook of Communication*, I. de Sola Pool, et al., (eds.), Rand McNally, Chicago, 1973.
Munro, T., Four Hundred Arts and Types of Art: A Classified List, *Journal of Aesthetics and Art Criticism, 16:*1, pp. 44-65, 1957.
Munro, T., *The Arts and Their Interrelationships*, Liberal Arts Press, New York, 1951.
Ortega y Gassett, J., *Phenomenology and Art*, P. W. Silver, (trans.), Norton, New York, 1975.
Perrin, D. G., A Theory of Multiple-Image Communication, *AV Communication Review, 17:*4, pp. 368-382, 1969.
The Process and Effects of Mass Communication, rev. ed., W. Schramm and D. F. Roberts, (eds.), University of Illinois Press, Chicago, 1971.
Scott, W. S., *Five Approaches of Literary Criticism*, Collier, New York, 1962.
Severin, W., The Effectiveness of Relevant Pictures in Multiple-Channel Communications, *AV Communication Review, 15:*4, pp. 386-401, 1967.
Shannon, C. E. and Weaver, W., *The Mathematical Theory of Communication*, University of Illinois Press, Urbana, 1949.
Tudor, A., *Theories of Film*, Viking Press, New York, 1973.
Wiebe, G. D., The Social Effects of Broadcasting, *Mass Culture Revisited*, B. Rosenberg and D. M. White, (eds.), Van Nostrand Rinehold, New York, 1971.
Wright, C. R., *Mass Communication, A Sociological Perspective*, Random House, New York, 1959.
Youngblood, G., *Expanded Cinema*, Dutton, New York, 1970.

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J. EDUCATIONAL TECHNOLOGY SYSTEMS, Vol. 12(3), 1983-84

EVALUATION AS KEY TO ANALYSIS OF MULTI-IMAGERY

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ABSTRACT

Although in use for a considerable time, the hybrid medium of multi-imagery has not been studied in a consistent way. Existing studies are limited in design and application, especially concerning the wide use of multi-image programs in commercial and corporate settings. One approach to understanding the most effective elements in multi-image design and practice might be through examining award-winning presentations, if the evaluation of these programs is consistent and thorough. An evaluation instrument designed to meet the standards of validity and reliability has been developed and field tested at international festivals; it has been shown to be consistently reliable and has been accepted throughout the industry. Studying the design factors of the winning programs, as indicated by the evaluation form, may prove to be a successful method of analyzing what previous research has failed to discover.

USE OF MULTI-IMAGE

The multi-image method of presentation has grown consistently in a number of fields over the past three decades [1-3]. Concurrent with this increase in the use of slide projector/audio tape/automated programmer statements has been a steady flow of research intended to analyze effective design and utilization of multi-imagery. Programmed systems installed by TeleMation Inc. were bringing

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doi: 10.2190/7G0M-3W2C-CWU9-39NA
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positive responses from users in government, industry and education as early as 1958; in that same year, the first known empirical study on multi-imagery was done in Europe, showing learning gain with the simultaneous-image method when used with young children [4]. From then until now, a number of studies have emerged on a regular basis comparing multiple imagery to single imagery or analyzing various aspects of multi-image perception or learner styles in relation to multi-imagery.

Enthusiastic proponents of this hybrid medium seem eager to prove its value for corporate, commercial and instructional purposes; however, the research has yet to prove conclusively the relative superiority of slide displays and audio over other methods of communication. Some specific applications of multi-imagery seem empirically justified, but strong qualifications are in order for these uses as well. If multi-image programs are as successful as their supporters claim, it would seem advantageous to be able to study more reliably the reasons for such success, even if new methodologies must be developed to properly analyze these programs.

RESEARCH ON MULTI-IMAGE

Reviews of existing research have shown that the successes attributed to multi-imagery are limited to particular uses and are questionable in their testing design [5-8]. Some consistent achievements occur in retention tests, but for immediate cognitive and affective results, multi-image effectiveness seems limited conclusively to children—seventh grade and below—and circumstantially to some underachievers, haptic learners, high verbal ability people and learners who are novices with mediated messages.

While this diverse group of multi-image users appear to benefit from whatever advantages the medium provides, they do not constitute firm populations who can be isolated for consistent multi-image applications and research replications. Low achievers, haptics and those with high verbal ability can rarely be singled out for special presentation environments in their "real world" circumstances, and media novices in this electronic society become increasingly hard to find. Only children remain as an identified and verified group of multi-image beneficiaries [9-11], but this news comes, ironically, at a time when funds for learning facilities and experiments are being reduced and abolished.

A final problem with these existing studies is that very few of them were able to penetrate the current primary areas of multi-image use: commercial and corporate training, motivation, public relations, fund-raising and sales. Activity in these fields has grown consistently and has been surveyed [12, 13], but the products have not been evaluated in any empirical fashion. One assumption seems to be that what grows must be effective, but this is no guarantee that multi-imagery is not riding a short-lived wave, as was the case with 3-D movies, programmed instruction and quadraphonic audio. Novelty and emotional stimulation still seem to be the key selling points of multi-image programs,

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despite frequent calls in the industry's publications and gatherings for an emphasis on content over technique.

Lacking truly substantiated conclusions, the marketing of multi-imagery has blossomed through showcase extravaganzas, hardware pyrotechnics and the steady dedication of those in the industry to enlarge their revenue base. Customer satisfaction seems to substantiate the various claims for the medium's strengths and potentials, yet there is an inherent problem as both producers and clients admit the logistical limitations of multi-image. Increasingly, projectors are stacked onto a single-image area suitable for transfer to film or videotape in order to increase the distribution and reach of the presentation. Computerized programmers are designed to accommodate the needs of dozens of projectors as slides race across the screen, overlapping, moving, glowing and twinkling. Some systems allow motion picture film to be synchronized with an audio tape soundtrack, while others allow a rapid succession of slides to be lip-synched to audio tape. Both of these methods, and others equivalent to them in levels of sophistication, are revolutionary advances in the design of multi-image hardware, but they seem suspiciously similar to a process that Al Jolson popularized in 1927.

Theoretical analyses of the value of multi-imagery stress its uniqueness, flexibility and perceptual engulfment [14-16]. If multi-image technology is to be used to preserve and enhance a form of communication which operates in mosaic (Cubistic) rather than linear (Renaissance) formats, research must help to define and enhance the types of content which are uniquely, positively related to multi-imagery. Many statements have been made to the effect that proper multi-image message design emphasizes comparisons, contrasts, interrelationships and other elements of thought which stress Gestalt rather than Skinnerian approaches [17]. However, little has been done to define what subject areas are best taught in a mosaic manner or what motivational strategies work best when amplified beyond the video screen. Massive amounts of research go into identifying audience characteristics and product appeal; similarly there is extensive research on the personal and social effects of media such as print and broadcasting. But virtually nothing worthwhile can be offered that helps in analyzing and understanding one of the major tools used in marketing and motivation: multi-image programs. However, there is one avenue of critical study that has not been explored in this matter, and it may yet yield some insights that will overcome the failings of the previous research. This new approach is through evaluation instruments used in multi-image competitions.

MULTI-IMAGE EVALUATION

It is a contention of the authors that multi-image evaluation should be consistent, well thought out and universally applicable, despite the enormous variety of screen configurations and content areas which must be faced in the field. Judging should be an aesthetic decision, even if there are monetary rewards

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attached to it; multi-image judging has long been in need of a proper aesthetic framework which will enhance the very practical situations in which it occurs. Public recognition of quality is the purpose of such events as the annual Association for Multi-Image (AMI) International Festival, but the on-going judging of multi-image programs happens much more frequently as a private interchange between producer and client. Critical acceptance of the product is necessary for it to be used in its intended classroom, sales seminar, convention keynote or other application. A systematic philosophy of multi-image evaluation would not only clarify communication between creator and judge, it would also give the industry a standard by which significant achievements could be consistently recognized.

Unlike most multi-image programs, such entertainment and artistic offerings as film, television programs, concerts, plays and the like stress only the visible stage of critical consideration. These works are produced for public consumption –succeeding or failing at the discretion of the audience–and evaluated for public discussion in critics' columns and at televised award ceremonies. Critical evaluations of multi-image programs take place at public festivals but also at daily decision-making conferences between producer and client, in the same manner that other commercial and corporate communications products such as ad campaigns, training films and newsletters are evaluated. Often, public awards are given in these areas as well, apparently based on standards which link private evaluation with public recognition. A client or account executive accepts or rejects a producer's work based on his/her subjective decision and delivers this ultimatum in the form of a personal dialogue; festival awards and industry recognition come in more organized circumstances where specific judging criteria are applied, but these still merely reflect the traditional wisdom of the practitioner.

The multi-image industry has developed in accordance with this type of internal/public judging, in that: 1) clients and supervisors provide on-going evaluations, speaking as self-appointed representatives of target audiences, and 2) public festivals are held in which the discipline recognizes its own achievements based on the acknowledged standards of the majority. As in other fields, the standards of achievement in multi-imagery have been quite subjective and personal, and the evaluative criteria have been different in varying times and places.

Over the past few years an effort has been underway to provide a unified means of evaluation for the multi-image industry. The theoretical foundations of this system stress the *function* of the program under consideration and the subjective *experience* of the critic when viewing the work. In this system, critics are recognized as being either festival judges or, more likely, pragmatic judges: decision-makers in production agencies, in-house media services, classrooms and other arenas where multi-image programs are used. The purpose of the evaluation system is to encourage the content diversity and technical flexibility in

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multi-imagery, yet provide a universal system for guiding the critic's responses and furthering constructive dialogue with the producer. A fuller elaboration of this system is available and would seem necessary for anyone who wishes to properly apply the intended principles [18-21].

However, our purpose here is to document the construction and use of an empirically reliable instrument which reflects the theory noted above. Such an instrument has been evolving since 1976 and is now being implemented as a means of evaluation criteria for multi-image festivals. The authors hope that knowledge of such an instrument will become available at the producer-client level as well, thus providing an industry-wide standard by which quality is examined in multi-image programs. Further, analysis of results from the 1981 and 1982 AMI International Festivals may be a first step toward the elusive goal of accurately studying effectiveness in multi-image design and application. These results will be discussed presently, but first some further explanation is necessary on the evolution of the instrument presented in Figure 1.

In the spring and fall of 1977, as a follow-up to the existing theoretical statements then published on evaluation of multi-image [22, 23], a 36-item instrument was administered to audiences at two national conventions: the AECT-AMI Multi-Image Festival in Miami and the Speech Communication Association in Washington, D.C. The AECT-AMI Festival constituted the multi-image industry's annual showcase at the time, drawing an audience of educators, instructional designers, corporate and commercial media specialists and students. The SCA convention annually draws a collection of educators and consultants in the areas of mass communication, speech and drama.

Over 300 subjects voluntarily used the trial instrument to evaluate a 20-minute, six projector multi-image program, "Deja Vishnu," created by this article's principal author; the content of the program was a metaphorical examination of the human condition, comparing Christian and Freudian approaches to the topic. Of the evaluative items available for consideration, ten factored out significantly, using the Varimax Rotated Factor Matrix after rotation with Kaiser Normalization and accepting only factors with Eigen values of over .97.[1] Also significant were statements with which the evaluator identified the primary communication function of the program and provided an overall rating of quality.

From this result an AMI Multi-Image Evaluation form was compiled, based on items 1-10 and 15 of Figure 1, plus a choice of the program's primary function—information, instruction, persuasion, entertainment or enrichment—as a mental guide to approaching the evaluative items. These choices of communication function and corresponding characteristics of each function are detailed in previously cited writings [24, 25]. The AMI Evaluation Form was published in

[1] Analysis at this stage was provided by Dr. Rob Balon of Balon and Associates, Austin, Texas.

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Rate the entry's achievements in the following structural areas:

Inferior *Superior*

1. How well does the program achieve its stated objectives?
   1 2 3 4 5 6 7 8 9 10
2. How clear is the producer's approach to the objectives?
   1 2 3 4 5 6 7 8 9 10
3. How well does the over-all design of the program enhance the objectives?
   1 2 3 4 5 6 7 8 9 10
4. How appropriate are the visuals to the content?
   1 2 3 4 5 6 7 8 9 10
5. How appropriate is the length to the content?
   1 2 3 4 5 6 7 8 9 10
6. How well does the multi-image format enhance the content?
   1 2 3 4 5 6 7 8 9 10
7. How is the over-all length and pacing?
   1 2 3 4 5 6 7 8 9 10
8. How is the aesthetic quality of the audio?
   1 2 3 4 5 6 7 8 9 10
9. How well does the program hold your attention?
   1 2 3 4 5 6 7 8 9 10
10. How worthwhile an experience is this program for you?
    1 2 3 4 5 6 7 8 9 10

Rate the entry's achievements in the following technical areas:

11. Visuals (Photography, Graphics)
    1 2 3 4 5 6 7 8 9 10
12. Script (Content, Sequence)
    1 2 3 4 5 6 7 8 9 10
13. Soundtrack (Fidelity, Balance)
    1 2 3 4 5 6 7 8 9 10
14. Programming (Timing, Flow)
    1 2 3 4 5 6 7 8 9 10
15. YOUR OVER-ALL EVALUATION OF THE ENTRY:
    1 2 3 4 5 6 7 8 9 10

Figure 1. 1981 AMI International Multi-Image Festival Judges' Evaluation Form

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the Summer 1978 issue of the AMI journal, *Multi-Images*, and was used informally to rate the 1978-80 AECT-AMI Festivals, with the results published in each year's summer issue of *Multi-Images*. In 1981 the instrument was adopted by the AMI International Festival Committee, with items 11-14 added at the committee's request to reflect previous evaluation forms used at AMI and Vail International Festivals in 1979 and 1980; the choice of communication function was dropped from the 1981 form because each producer provided the judges with a statement of the program's objectives.

The committee then trial-tested the instrument on a professionally produced multi-image program used as a meeting keynote in San Francisco and found it to be usable as long as proper explanation was made of the philosophy behind the instrument and the specific areas intended to be measured by each item. This orientation factor was built into the 1981 (and 1982) AMI Festival by providing each of the chosen judges with copies of some theoretical writings on the instrument [26] and conducting a briefing session for each group of judges before the screenings began.

FIELD TESTING OF THE INSTRUMENT

In September of 1981, forty-three judges looked at a total of 209 AMI International Multi-Image Festival entries, with each judge recording scores on the instrument presented in Figure 1. Their rankings, based on the total score from four judges on each entry, resulted in the various Festival award winners. In addition, the score sheets provided a total of 834 ballots which could be examined for validity and reliability. There were also ballots taken from a popular audience vote category in which 181 viewers each ranked three programs. An orientation session was provided to the audience as well, but it did not allow for the close question-answer period and background readings that characterized the judges' orientation. Table 1 summarizes the results of the data analysis for both judges and audience responses. Several interesting outcomes were observed.

The reliability figure for use of the evaluation instrument by the audience group was .83, yet the instrument was found to be even more reliable in the hands of trained judges (.97). As indicated by both the item mean (6.499) and the scale mean (97.4916), the judges scored presentations in a more critical

Table 1. Statistical Data Comparing Judges' and Audience's Response Scores

	Number of Cases	*Item Mean*	*Scale Mean*	*Scale Standard Deviation*	*Mean Intercorrelational Value*	*Mean R-Square Value*	*Reliability*
Judges	834	6.499	97.4916	26.6562	.7218	.5210	.9748
Audience	545	8.531	127.9596	17.0607	.3644	.1328	.8334

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manner than the audience group, as evidenced by a higher item mean (8.531) and a subsequently higher scale mean (126.957). The larger standard deviation of the judges, 26.6562, versus a standard deviation of 17.0607 for the audience group indicates greater variability and thus a broader opinion base on the part of the judges. This diversity is clearly desirable in that it represents a less homogeneous and thus a more critical approach to multi-image evaluation.

Of great interest to the authors were the differences in mean item intercorrelation values and mean *R*-Square values between the two groups using the instrument (*R*-Square values indicate the percent of variance accounted for and thus the power which a given item has in predicting the overall evaluation score). The mean item *r* value for the audience (.3644) suggests that they had difficulty in relating the contribution of certain program elements to the overall evaluation. Specifically, items 2, 3 and 7 (from Figure 1) had low *r* values. These items required the evaluators to assess the clarity of the producer's approach to the objectives of the program, the relationship of the program design to the fulfillment of the stated objectives and the appropriateness of the overall length and pacing of the program. The low mean *R*-Square value for the audience group indicates that any given item accounts for relatively little of the total variance of the scores. In other words, for the audience individual items contribute little toward predicting the overall evaluation of multi-image programs.

On the other hand, the analysis of the judges' scores revealed a mean intercorrelation value of .7218 and a mean *R*-Square value of .5210. Thus, the judges appear to have viewed the evaluation process in a more holistic manner. No corrected item total correlation fell below .7783. The mean *R*-Square value suggests that individual items serve as reasonably good predictors of other item scores. Although the judges had a greater variance of scores, their use of the instrument seems to be more uniform and devoid of a systematic lack of understanding of the suppositions underlying any of the items.

Table 2 presents the item correlations for judges' scores. The three highest correlations are listed for each of the fifteen items. Based on a careful examination of the relationships suggested by these figures, the 15-item evaluation form was condensed into a 10-item form for the 1982 AMI Festival. The dominance of item 15 from Figure 1—the overall evaluation—led to the decision to eliminate certain redundant items for the current judging form. Items 3, 9, 10, 12 and 14 were dropped as being unnecessary. Items 1 and 2 (along with 15) subsume item 3; items 9 and 10 reinforce each other and seem to duplicate the response to item 15; 12 and 14 also overlap the responses to 3, 9 and 10, as well as being absorbed by the responses to 15. From this it would seem that item 15 nearly eliminates the need to specify emotional responses as well as qualitative rankings of the script and programming. Further, the general structural considerations of length, pacing and appropriateness of multi-image format seem to override some of the more specific technical areas.

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Table 2. Correlation for Judges' Scores

Item	*Correlation*	*r*
The following items were intended to measure *concept:*		
1. Achievement of objectives	2. Clarity of objectives	.8775
	15. Over-all evaluation	.8077
	3. Design enhances objectives	.7918
2. Clarity of objectives	15. Over-all evaluation	.7891
	3. Design enhances objectives	.7621
	10. Worthwhile experience	.7572
3. Design enhances objectives	15. Over-all Evaluation	.8435
	10. Worthwhile Experience	.8036
	4. Appropriate visuals	.7802
The following items were intended to measure *structure:*		
4. Appropriate visuals	15. Over-all evaluation	.7841
	10. Worthwhile experience	.7503
	11. Visual quality	.7361
5. Appropriate length	7. Length and pacing	.8443
	9. Holds attention	.7429
	15. Over-all evaluation	.7396
6. Format enhances content	15. Over-all evaluation	.7824
	14. Programming quality	.7724
	9. Holds attention	.7380
7. Length and pacing	9. Holds attention	.8129
	15. Over-all evaluation	.8041
	10. Worthwhile experience	.7880
8. Aesthetics of audio	13. Soundtrack quality	.8415
	15. Over-all evaluation	.7839
	9. Holds attention	.7598
The following items were intended to measure *emotional response:*		
9. Holds attention	10. Worthwhile experience	.9126
	15. Over-all evaluation	.8763
	7. Length and pacing	.8129
10. Worthwhile experience	9. Holds attention	.9126
	15. Over-all evaluation	.9050
	7. Length and pacing	.7880
The following items were intended to measure *technical quality:*		
11. Visual quality	15. Over-all evaluation	.7889
	10. Worthwhile experience	.7505
	9. Holds attention	.7199

Table 2. (Cont'd)

Item	*Correlation*	*r*
12. Script quality	15. Over-all evaluation	.8234
	10. Worthwhile experience	.7931
	9. Holds attention	.7876
13. Soundtrack quality	8. Aesthetics of audio	.8415
	15. Over-all evaluation	.7730
	3. Design enhances objectives	.6704
14. Programming quality	15. Over-all evaluation	.8232
	7. Length and pacing	.7747
	10. Worthwhile experience	.7737
The following item was intended to measure *total response:*		
15. Over-all evaluation	10. Worthwhile experience	.9050
	9. Holds attention	.8763
	3. Design enhances objectives	.8435

Note: Correlations are rank-ordered
All *r*'s listed are significant, $p < .001$

In 1982, the 10-item form (Figure 2) was used by fifty judges to rate 226 entries in the AMI International Festival, giving a total of 885 cases to compare to the 1981 use of the 15-item instrument. Although the inter-item correlation values and mean *R*-Square values were slightly lower in 1982, the reliability figures are nearly identical (.97 and .96 for 1981 and 1982 respectively, as noted in Table 3), which is highly commendable given that the number of items on the instrument was reduced. Further, the degree of agreement between 1981 and 1982 inter-item correlations for judges' scores was extremely high. Eight of the ten items (nos. 1, 2, 3, 4, 5, 7, 8 and 9 from Figure 2) were identically related as shown in Figure 4. This clearly indicates the strength of specific relationships for these items and the consistency of evaluative criteria employed by the judges. Given the positive findings of the last two years' use of the Burke AMI Evaluation Form (Figure 2), it is being retained as the standard judging sheet for AMI's International Festivals and its use is being promoted for regional and local multi-image competitions as well.

It would appear that a standard approach to evaluation of multi-imagery has now been established, so that any future analysis of honored presentations would indicate a consistency of approach toward excellence in this medium. What might be found in analyzing these award-winners could likely tell much about what succeeds in this field, which could further reveal consistent design factors that lead to proper application of multi-imagery to a variety of business and educational purposes.

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Rate the entry's achievements in the following structural areas:

Inferior *Superior*

1. How well does the program achieve its stated objectives?

1 2 3 4 5 6 7 8 9 10

2. How clear is the producer's approach to the objectives?

1 2 3 4 5 6 7 8 9 10

3. How appropriate are the visuals to the content?

1 2 3 4 5 6 7 8 9 10

4. How appropriate is the length to the content?

1 2 3 4 5 6 7 8 9 10

5. How well does the multi-image format enhance the content?

1 2 3 4 5 6 7 8 9 10

6. How is the over-all length and pacing? (Programming: Timing, Flow)

1 2 3 4 5 6 7 8 9 10

7. How is the aesthetic quality of the audio? (Components, Editing)

1 2 3 4 5 6 7 8 9 10

Rate the entry's achievements in the following technical areas:

8. Visuals (Photography, Graphics)

1 2 3 4 5 6 7 8 9 10

9. Soundtrack (Fidelity, Balance)

1 2 3 4 5 6 7 8 9 10

10. YOUR OVER-ALL EVALUATION OF THE ENTRY:

1 2 3 4 5 6 7 8 9 10

Figure 2. 1982 AMI International Multi-Image Festival Judges' Evaluation Form

Table 3. Statistical Data Comparing 1981 and 1982 Judges' Scores

	Number of Cases	*Item Mean*	*Mean Item Intercorrelational Value*	*Mean R-Square Value*	*Reliability*
1981	834	6.499	.7218	.5210	.97
1982	885	6.730	.6959	.4843	.96

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Table 4. Inter-Item Correlations Comparing 1981 to 1982

Item	*1981 Correlation*	*r*	*1982 Correlation*	*r*
1. Achievement of objectives	2. Clarity of objectives	.8775	2. Clarity of objectives	.8503
	15. Over-all evaluation	.8077	10. Over-all evaluation	.7613
	3. Design enhances objectives[a]	.7918	3. Appropriate visuals	.6964
2. Clarity of objectives	15. Over-all evaluation	.7891	10. Over-all evaluation	.7663
	3. Design enhances objectives[a]	.7621	3. Appropriate visuals	.7325
	10. Worthwhile experience[a]	.7572	4. Appropriate length	.6900
(1981 no. 3, Design enhances objectives, eliminated in 1982)				
3. Appropriate visuals	15. Over-all evaluation	.7841	10. Over-all evaluation	.7904
	10. Worthwhile experience[a]	.7503	8. Aesthetics of audio	.7084
	11. Visuals quality	.7361	4. Appropriate length	.6946
4. Appropriate length	7. Length and pacing	.8443	6. Length and pcing	.8195
	9. Holds attention[a]	.7429	10. Over-all evaluation	.7755
	15. Over-all evaluation	.7396	5. Format enhances content	.6770
5. Format enhances content	15. Over-all evaluation	.7824	10. Over-all evaluation	.7883
	14. Programming quality[a]	.7724	6. Length and pacing	.7637
	9. Holds attention[a]	.7380	9. Soundtrack	.6870

6. Length and pacing	9. Holds attention[a]	.8129	4. Appropriate length	.8195
	15. Over-all evaluation	.8041	10. Over-all evaluation	.8186
	10. Worthwhile experience[a]	.7880	5. Format enhances content	.7637
7. Aesthetics of audio	13. Soundtrack quality	.8415	9. Soundtrack quality	.8781
	15. Over-all evaluation	.7839	10. Over-all evaluation	.7576
	9. Holds attention[a]	.7598	6. Length and pacing	.7168
(1981 no. 9, Holds attention, eliminated in 1982)				
(1981 no. 10, Worthwhile experience, eliminated in 1982)				
8. Visual quality	15. Over-all evaluation	.7889	10. Over-all evaluation	.7650
	10. Worthwhile experience[a]	.7505	3. Appropriate visuals	.7084
	9. Holds attention[a]	.7199	6. Length and pacing	.6883
(1981 no. 12, Script quality, eliminated in 1982)				
9. Soundtrack quality	8. Aesthetics of audio	.8415	7. Aesthetics of audio	.8782
	15. Over-all evaluation	.7730	10. Over-all evaluation	.7632
	3. Design enhances objectives[a]	.6704	6. Length and pacing	.7085
(1981 no. 14, Programming quality, eliminated in 1982)				
15. Over-all evaluation	10. Worthwhile experience[a]	.9050	6. Length and pacing	.8186
	9. Holds attention[a]	.8763	3. Appropriate visuals	.7904
	3. Design enhances objectives[a]	.8435	5. Format enhances content	.7883

[a] Item eliminated in 1982 evaluation form

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CONCLUSIONS

The overall message that the scores of the 1981 and 1982 AMI Festivals indicate is that how a program is conceived carries more weight with professionally-trained judges than how that program is executed. Of course the programs under consideration here usually demonstrated a commendable level of expertise, but this only seemed to streamline the judges' interest in *what* and *how* more so than *how well*. What seems to stand out is clarity of purpose and appropriateness of structure, with the technical factors merely supporting success in these areas.

Given that these judges represented a wide spectrum of professional multi-image producers and users, their responses would seem to represent one of the most valid examinations to date of the effectiveness of multi-image programs. Concept seems predominant over technical virtuosity and the overall subjective response is linked very clearly to how well the program meets its intended function.

Designers of multi-image programs can take heart that the recent emphasis on message over medium by various spokespeople of the industry is more than idle rhetoric. At least as far as the 1981 and 1982 AMI Festival judges are concerned, such pronouncements against flashy technique for its own sake are firmly supported. The next step in understanding the intricacies of successful mosaic design fused with appropriate content would be to examine the actual award-winning shows that were the result of this instrument's application. These programs (listed in the Fall 1981 and 1982 issues of *Multi-Images*) should provide a good basis for examining what blends well in multi-image content and presentation style. Such an extensive project is beyond the scope of this article, but it could provide a plausible agenda for those who wish to preserve and enhance the unique medium of multi-imagery. Continued testing of the evaluation form is also a necessity to check reliability from year to year and discern noteworthy trends.

What is known about multi-imagery at this point is still limited and fragmentary. Finally, though, a methodology for studying the field has been implemented that should prove useful in future research and analysis. In the process, a standard of evaluation is being refined and promulgated which will give the industry a consistent tool for self-examination and increased dialogue.

REFERENCES

1. K. Burke, A History of Multimedia, M.A. thesis, University of Texas at Austin, ERIC no. ED 126 889, 1972.
2. R. Gordon, (ed.), *The Art of Multi-Image*, Association for Multi-Image, Abington, PA, 1977.
3. *Anthology of Multi-Image*, K. Burke, (ed.), Association for Multi-Image, Abington, PA, 1980.

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4. A. V. Roshka, Conditions Facilitating Abstraction and Generalization, *Voprosy Psikhologii*, *4*:6, pp. 89-96, 1958 (reported by I. D. London, *Psychological Abstracts*, *34*, p. 85, 1960).
5. B. Fradkin, (ed.), A Review of Multiple Image Presentation Research, ERIC no. ED 130 680, 1976.
6. K. Burke, *AMI Research Bibliography*, Association for Multi-Image Clearinghouse no. CAbl, 1979.
7. K. Burke, A Review of Research on Multi-Image, in *Anthology of Multi Image*, K. Burke, (ed.), Association for Multi-Image, Abington, PA, pp. 173-201, 1980.
8. R. Ziegler, Relationships Among Visual and Holistic Cognitive Style Dimensions and the Multi-Image Medium: An Exploratory Study, Ed.D. dissertation, University of Iowa, 1981.
9. W. H. Allen and S. M. Cooney, Non-Linearity in Filmic Presentation, *AV Communication Review*, *12*:2, pp. 164-176, 1964.
10. S. M. Cooney and W. H. Allen, Non-Linearity in Filmic Presentation: Part II, Discussion, *AV Communication Review*, *12*:3, pp. 302-325, 1964.
11. D. Jonassen, Implications of Multi-Image for Concept Acquisition, *Educational Communication and Technology Journal*, *27*:4, pp. 291-302, 1979.
12. C. Harkins, The Multi-Image User: A Diffusion of Innovation Investigation into the Adoption and Use of Multi-Image Communication Techniques, Ph.D. dissertation, Renssalear Polytechnic Institute, 1978.
13. R. Pandolfi, An Analysis and Synthesis of the Utilization and Effectiveness of Multi-Image Production as Reported by Multi-Image Commercial and Non-Commercial Producers and Users, Ph.D. dissertation, Temple University, 1980.
14. R. Siegler, Masquage: An Extrapolation of Einsenstein's Theory of Montage-as-Conflict to the Multi-Image Film, *Film Quarterly*, *21*:2, pp. 15-21, 1968.
15. D. Perrin, A Theory of Multiple-Image Communication, *AV Communication Review*, *17*:4, pp. 368-382, 1969.
16. K. Burke, Theory and Evaluation of Multi-Image, in *Anthology of Multi-Image*, K. Burke, (ed.), Association for Multi-Image, Abington, PA, pp. 157-169, 1980.
17. J. Meyrowitz, Conceptual Relationships in Multiple-Image Instruction, ERIC no. ED 126 851, 1976.
18. K. Burke, A Functional/Experiential Approach to Criticism of Multimedia Programs, Ph.D. dissertation, University of Texas at Austin, 1976.
19. K. Burke, A Pragmatic Approach to Criticism of Multimedia, *Journal of Educational Technology Systems*, *6*:1, pp. 57-76, 1977.
20. _____, Theory and Evaluation of Multi-Image, in *Anthology of Multi-Image*, K. Burke, (ed.), Association for Multi-Image, Abington, PA, pp. 157-169, 1980.
21. _____, Evaluating Multi-Image, *Multi-Images*, *8*:1, pp. 19-21, 1982.
22. _____, A Functional/Experiential Approach to Criticism of Multimedia Programs, Ph.D. dissertation, University of Texas at Austin, 1976.

15 of 16 p.m.

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23. K. Burke, A Pragmatic Approach to Criticism of Multimedia, *Journal of Educational Technology Systems*, 6:1, pp. 57-76, 1977.
24. ____ __, A Functional/Experiential Approach to Criticism of Multimedia Programs, ERIC no. ED 124 104, 1976.
25. _____ __, A Pragmatic Approach to Criticism of Multimedia, *Journal of Educational Technology Systems*, 6:1, pp. 57-76, 1977.

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Comment regarding the judgement of multi-image shows:

On at least one occasion, I served as a judge for an AMI Festival competition. It was an educational experience; I learned that judgements are only as good as the judges. (Duh.)

AMI competition entries were judged by committees. I don't recall precisely how many were on a given committee, but I want to say maybe ten people. They came from all the disciplines of multi-image: writers, photographers, programmers, producers... clients, too.

Ken Burke, as head judge, presided over the committee and we used ballots that he created. Those rating sheets were quite good, requiring judges to rank productions based on ten criteria, both objective (technical aspects) and subjective (emotional). [See: *Evaluation as Key to Analysis of Multi-Imagery* by Ken Burke in Volume Eleven.] The following were ranked 1-10 with one being Inferior and ten meaning Superior:

1.) How well does the show achieve its stated objectives? (More on that, later.)
2.) How clear is the producer's approach to those objectives?
3.) How appropriate are the visuals to the content?
4.) How appropriate is the length to the content?
5.) How well does the multi-image format enhance the subject?
6.) How is the overall pacing? (Programming, Timing, Flow)
7.) How is the aesthetic quality of the audio? (Components, Editing)
8.) Rate the entry's achievements in each of the following areas:
Visuals (Photography, Graphics)
9.) Soundtrack (Fidelity, Balance)
10.) Your overall evaluation of the entry.

While the ballot was brilliant, implementation was difficult. People had difficulty assessing anything outside of their own disciplines; that is, a writer knew nothing about audio production or programming; nor did technicians know anything about writing. And what about concepting (core creative); who was qualified to be the judge of that; who could say what was the "right kind" of show?

The committee format provided some relief from those deficiencies by facilitating discussion among the judges, refereed by Burke. Thus, I was given the opportunity to explain to my cohorts why the programming of a given entry was exceptional or not, from a technical standpoint. Those explanations frequently fell on deaf ears. Most votes were cast on a more basic evaluation: like or dislike. For example, some thought my shows were "flash and trash," as Sherri White characterized them, while others thought my techniques were awesome. Plus, there were aspects of the competition akin to a popularity contest.

One of the biggest obstacles to "fairness" was inherent to the multi-image technique: how do you compare a two-projector show with one employing thirty-projectors? Or a single screen production with a multi-screen extravaganza. Or an educational show with a mindblower? Again, while Ken's ballots provided a way to rate these kinds of criteria, in many cases (most?) the judges were incapable of doing so. Thus, in my opinion, many deserving shows were deprived of honor while others were over-rated.

But maybe I am being too, what… particular? Probably. In the end, such things boil down to popularity contests. People either like it or not. Hollywood knows that best; box office receipts are the ultimate adjudicators; for TV it is the Neilsen (viewership) ratings; and, these days, downloads. Maybe all our work as judges could have been replaced with an applause meter?

One advantage to having served as a judge was learning what really mattered; that is, how to win a competition. It is revealing to note the order of Ken's ten criteria. Technical aspects are the last on the list. The very first one is about how well a show met its *stated objectives*; that was Ken's primary attribute when evaluating multi-image shows. Thus, the key to winning Ken's heart—and remember, he was the referee—was writing objectives that justified one's show; it was akin to writing the closing arguments for the jury in a trial. I spent considerable time finessing those statements of objectives on the entry forms that accompanied our videotaped show entries.

Dell Brown photo.

But what do they say, "You can't win them all"?

Although every show I ever entered won some kind of award, there was one show in particular—the 80-projector *Saab 9000 CD Launch Show,* shown above—that I felt was unfairly judged at the AMI festival, where it garnered silver instead of gold or the vaunted "Crystal AMI" award. I chalk it up to "Mesney fatigue," a form of professional envy. The success of my self-promotion program backfired; I was over-exposed in the trade press; I had won "too many" awards already. And my audacity—spending more than $20,000 to bring the Image Wall screen and the crew to assemble it from Europe, to stage the show at the festival—was under appreciated. If I remember correctly (probably not) I lost to a three-projector show. Ha!

A History of Multi-Image | 1900-1972

By Ken Burke, PhD

Restoration by Richard Allison

* * *

The Story of AMI | Association for Multi-Image

By Carl Beckman, AMI Founder

* * *

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Note from Ken Burke

I have looked through [the pdf of the manuscript] to verify that it is all there, even the funkiness of some unneeded blank pages or a couple of additions (I guess) put in after the Tampa office [of the Association for Multi-Image] sent the “finished" product to me (almost all of it was retyped from originals I sent there so I didn't have a lot of control over how it looked; I was just thankful it existed at all).

The opening text (p. 244) of the Don Pasquella "Designing Multi-Image Presentations" (title on p. 243) is blank in my print copy so I don't know what happened there, but you can generally make sense of what he probably said based on the rest of the article.

Now that I skim through this, I remember that when I went to Boston in 1973 to meet with Gerd Stern in person, he told me he had a book contract to publish something about multimedia so he wanted me to work with him on that.

The plan was to use my history material, the study of the psychology of perception as related to multi-image by Bruce Goldstein (I've completely forgotten how he came into this, maybe Gerd knew him), the educational stuff about multimedia use at the U. of Wisconsin by Gerry McVey (I brought him into it), and then whatever Gerd wanted to contribute.

Well, the other 3 of us got our stuff together, but years passed by with nothing from Gerd so Bruce finally submitted his material to an academic journal, and I talked the AMI Board into letting me put an anthology together based on those 3 inclusions plus other stuff I'd accumulated over time along with a couple of new things I wrote for the book.

The final result is a funky publication as the "binding" is actually 3 long metal screws (hence the 3 holes on the left side of any page if they should show up) and no one thought to put page numbers on the Table of Contents so I just recently wrote those in.

A HISTORY OF MULTIMEDIA

by

Larry Kenneth Burke, B. F. A.

THESIS

Presented to the Faculty of the Graduate School of

The University of Texas at Austin in Partial

Fulfillment of the Requirements for the Degree

of

MASTER OF ARTS

THE UNIVERSITY OF TEXAS AT AUSTIN

May 1972

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Preface

This study was written in the belief that it is the first attempt to write a comprehensive history of the phenomenon known as multimedia. Other writings have served as invaluable aids in this task; the most helpful were Gene Youngblood's Expanded Cinema, Jeffery Embler's dissertation of the uses of film in dramatic theatre, and Donald Perrin's dissertation on multiscreen history and multiscreen in education (all cited in the bibliography). As exhaustive as these works are, they cover only specific topics in the total field of electronic mixed media and, as such, fall to be com— prehensive general histories. No one consulted in the course of compiling this survey felt the need for the arbitrary definitions imposed by the author; however, he chose to use them in an attempt to clarify some of the confusion encountered when gathering the diverse research material,

Sincere thanks are due to the author's wife and to his supervisory committee, all of whom offered much in the way of sources and editing, Equal thanks is extended to Gerd Stem of USCO and Intermedia Systems Corporation for his unrestrained aid in supplying a wealth of data on his organizations. Thanks also go to all others who were so considerate in replying to letters of inquiry,

This thesis was submitted to the author's supervisory committee for approval on April 20, 1972.

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Introduction

I. Definitions

> mixed media. 1: a work of art executed in more than one medium; also: a commercial production (as a motion picture) containing disparate techniques or art forms, 2: a presentation (as in a theatre) in which several media are employed simultaneously.[1]

For purposes of clarity, the term electronic mixed media will be used in this paper to describe any presentation that blends any electronic medium with any other medium. Thus, a lecture that combines a speaker and one screen of slides is mixed media, just as a painting that combines chalk and paint is mixed media. Certain types of electronic mixed media will be defined as multimedia for the purposes of this study. Specifically, multimedia refers to the juxtaposition of two or more communications media-at least two of which must be electronically powered -- to produce a total work which is different from the sum of its parts. The individual elements may or may not be complete statements in themselves, but taken together they form an entity. Hereafter in the text, the non—quoted word multimedia always indicates the term just defined. The quoted term "multimedia" will be used only when referring to works which have been called "multimedia" in print, but do not fit this author's definition of the term. Further discussion of these terms contained in Appendix I. Examples of multimedia are: (1) many works of the New Theatre,[2] (2) productions of "legitimate" theatre, ballet and opera which use electronic

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[1] Webster's Seventh New Collegiate Dictionary, (1969). P. 543

[2] New Theatre is used in this paper as the term described in Michael Kirby, The Art of Time (New York: E.P. Dutton and Co., 1969) pp. 75-98 and pp. 117-130

media as unique, integral elements, (3) media Environments, most of which employ no performers, and (4) multiscreen presentations that use separate (not redundant) forms of communication. Exclusions include such things as contained media (television, sound films), multiple screen works that equate to single—screen films, illustrated lectures and demonstrations, computer films, holographs, and multi—monitor television sculptures. Other words that need clarification are Environmental Theatre and Environment. Environmental Theatre is used as the term was defined by Michael Kirby:

> Environmental theatre, on the other hand, can be viewed as a way in which the spatial characteristics of the stage itself as it is related to the spectator may become a specific aesthetic element of a particular presentation. Environmental Theatre, in this sense, makes use of an expressive dimension that is not exploited by traditional performance arrangements.[3]

The category of Environments is defined by Allan Kaprow t s use of the word:

"An environment is literally a surrounding to be entered into."[4] Viewers in an Environment may be requested to perform some action, but no actors or performers as such are used.

11. General History

Multimedia is a phenomenon of the 1960 's, although its original events date back to 1952 and its precursors began in 1900. The term multi—media came into use in 1961, but the first multimedia event recognized by most authors is the untitled presentation given by John Cage at Black

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3 Ibid., P, 134.

4 Allan Kaprow (Pasadena: Pasadena Art Museum, 1967), p11

Mountain College, North Carolina, in the summer of 1952.[5] Trying to clarify whether some events of the 1950's can be called multimedia since they occurred before the word originated is as confusing as trying to determine if Hieronymous Bosch can be called a Surrealist. The option taken here is to disregard the nine—year time lag between Cage's work and the present generic name for his contribution. Allan Kaprow ʳ s term Happening first appeared in its present usage in 1959, and Cage's 1952 event was then claimed by many writers as the first example of Happenings or Theatre Pieces or whatever term they cared to use. Similarly, it seems certain that the field of multimedia also began with Cage, so his 1952 work is used as the first example of what will include some Happenings, Theatre Pieces, etc. In addition, this study will encompass many multiscreen and environmental presentations that have nothing to do with the performances of the New Theatre. Ranking in importance with the 1952 Cage piece is the "sample Lesson" of Charles Eames, George Nelson and Alexander Girard in early 1953 at The University of Georgia. This one—hour lecture (the same format as Cage's presentation) included films, multiple screens of slides, audio

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5 Richard Kostelantz, The Theatre of Mixed Means (New York: The Dial Press, Inc., 1968), pp. 30-31.

6 Allan Kaprow, p. 21, The word was used in Kaprow's article "The Demiurge" for the Vol. 30 (No. 4, 1959) issue of the Rutgers Anthologist, in which Kaprow gave the script for what would be his first public Happening, "18 Happenings in Six Parts. " Kaprow had previously used the term "happenings" in a different context in his article "The Legacy of Jackson Pollock" written in late 1956 and published in the October 1958 issue of Art News.

tapes and controlled incense odors.**7.** Cage's event was the germinal one using performers with electronic multimedia; Eames' and Nelson ᵛ s lecture was a presentation in which the media performed all the roles. Still, the 1953 lecture will be elaborated on more for its influence than for its distinction as multimedia. It was mainly a string of separate films and slide shows which added up to one central message. Even so, all present multiscreen and multimedia presentations in education owe a significant debt of origination to Eames and Nelson.

Since the body of this report is devoted to describing events from 1900 through early 1972, it is necessary at this point to give only the briefest outline of major multimedia developments. The Brussels World's Fair of 1958 gave the world its first major exposure to the talents of Josef Svoboda. This Czechoslovakian sceneographer used the Fair to introduce two of his most fertile ideas: (1) Polyekran -- the multi—screen slide and film show which served as a further development of the Eames—Nelson breakthrough and (2) Laterna Magika -- the wedding of performers to multiple screens of slides and film. Also introduced to the world audience of the Brussles Fair was the multiscreen, multisound total environment of the Vortex concert, begun in 1957 by Henry Jacobs and Jordan Belson in a San Francisco planetarium.

The next major development was the opening in January 1961 of the Multimedia Instructional Laboratory at The University of Wisconsin. This

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7 George Nelson, ' 'Art X: The Georgia Experiment, Industrial Design, October 1954, p. 45.

facility served to reintroduce multimedia into the educational realm this time on a permanent basis and paved the way for rapid expansion of multimedia usage in the education field. "Multimedia" as a word appears to have originated at this Wisconsin laboratory.

On the West Coast in the early 1960's there was a different type of development occuring; Vortex—like light shows (with projections of moving liquids, lights and slides) were being united with electronically amplified rock music. These early psychedelic environments seem to have originated in the California communities of North Beach and West Venice,[8] but they did not expand in scope and impact until about 1965. By this time such groups as the Beatles, the Beach Boys and the Rolling Stones had firmly established the primacy of large—audience interaction with the loud rock music of drums and electric guitars. Though none of the above groups were associated with light shows, they did clear the way for psychedelic groups such as Jefferson Airplane and the Grateful Dead. The rock music—light shows that developed on both coasts introduced American youth to tribal, ritualistic environmental experiences that came to a full flowering in 1967. One group who carried the light show to the level of a true, total electronic media environment was USCO (the "US Company"), Beginning in 1963 this team of artists and technicians produced a magnificent series of shows and displays utilizing many channels of sound, lights, strobes and projections. Several of their presentations were shown across the country between 1963 and 1966.

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[8]Sheldon Renan, An 'Introduction to the American Underground Film (New York: E. P. Dutton and Co., Inc., 1967), p. 251

Multimedia grew rapidly in the mid—1960's. The biggest blast of this new concept to hit the New York area came in November 1965 with the New Cinema Festival I held at the Film Makers Cinematheque. This series of performances contained many works of lasting impression, particularly the use of multiple projections by USCO and Stan VanDerBeek and the combination of film with performers in Ed Emschwiller's Body Works and Roberts Blossom's FiImstage. In December 1966, New York City was also the site for the site for the Nine Evenings of Theatre and Engineering" by the newly—formed organization, Experiments in Art and Technology (E. A. T.) Critical reaction was mixed concerning the "Nine Evenings, while more enthusiasm had greeted the New Cinema showings. Nevertheless, by the end of 1966, electronic mixed media in its many forms had established a beachhead for permanent inclusion in contemporary American consciousness. The apogee of multiscreen usage (which was generally mistaken for multimedia) came in the magnificent spectacles of Expo 67.

Curiously enough, since 1967 the general idea of multimedia has permeated American culture but with few significant innovations in the field. Enormous scale seems to have been the only area for new accomplishments in the last four years, with John Cage's mammoth HPSCHD (1969) at The University of Illinois and the 1970 Venezuelan extravaganza "Imagen de Caracas" being the winners in this category. It would appear that misuse of the idea of "multimedia" and a general creative slump are responsible for the present state of the art,

Massive proliferation based on the attitude that any combination of slides and

sound is "multimedia" has brought this new form of communication

to the same level as most commercial television. To an audience uneducated in true multimedia, almost, any display of visuals and sounds is considered "worthwhile" and "impressive. Continued acceptance of mediocrity (especially continued financial acceptance) is hardly incentive for further aesthetic development. Where the more accomplished practitioners of multimedia are concerned, the novelty of the new form and their discoveries seems to have faded when faced with further evolution. Even as early as 1964, Charles Eames! contribution to the New York World's Fair (a 16—screen presentation for IBM) was blasted by Jonas Mekas, the underground film critic, as being "unfunctional" and "silly."[9] Ray Eames, wife and working colleague of Charles, retorted by calling the Expo 67 exhibits "rather frivolous"[10]

This section closes with multimedia in a state of doldrums, not decline. If anything, the recent years appear to be a time of evaluation of what has passed so recently and rapidly. Multimedia is now in abundance, but few of the current commercial products show progress from older discoveries. Numerous students of electronic media have suggested more substantial uses of multimedia. Gerd Stern (of US CO) has long been aware of the religious nature of electronic media as mind extenders and replacements for drugs in our society.[11] Charles Steinberg, in his study of mass communications, urged the use of electronic media by theologians and scientists to "find a

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9 Jonas Mekas, reprint of Village Voice reviews, Film Culture, Winter 1966, p. 11.

10 Paul Schrader, "The Films of Charles Eames, Film Ouarterly, Spring 1970, p. 7.

11 Jonas Mekas, "USCO," Film Culture, Winter 1966, p. 3

basis on which to reconcile man's conquest of the finite with his aspirations toward the infinite. 8112 Stan VanDerBeek has been proposing "Movie Dromes" since at least early 1966 as world—wide centers for multi—image information exchange.**13** As yet the only one in operation is at VanDerBeek's home in Stony Point, New York. This theatre would seem to answer the call of Robert E. L. Masters and Jean Houston for "intense sensory experiences (that) open the gates to the repressed and the forgotten, evoke a symbolic and mythic consciousness, and finally achieve levels that in psychedelic experience are ones of profound spiritual awareness." **14**

III. Other Forms of Electronic Mixed Media

The previous section noted that, despite few significant advances in the field since 1967, "multimedia" has become a widespread, enthusiastically accepted part of American culture. Disregarding obvious misuses of the term, what actually constitutes the bulk of "multimedia" in present culture? For the most part, "multimedia" consists of a presentation mixing one to three screens of slides (occasionally Super 8 or 16trrn film is used also) with audio tape of music or a narrative about some agency, program or idea.

The slide and music shows are most frequently found in private homes as amateur ventures, in churches as ministers strive for modernization, and in college classroom projects particularly in communication and

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12 Charles S. Steinberg, Mass—Media and Communication (New York: Has tings House, 1966), p, xi.

13 Stan VanDerBeek, " 'Culture Intercom* and Expanded Cinema," Film Culture, Spring, 1966, pp. 41—47

14 Robert E. L. Masters and Jean Houston, Psychedelic Art (New York: Grove Press, Inc, 1968), p. 12

education courses, usually these shows attempt to illustrate the lyrics of the music or achieve a pictorial mood similar to the musical mood. This form of communication has the normal potential for a range in quality; however, it seems obvious to this author that most of these slide-tape presentations should be called slide—shows rather than multimedia. Slide— show is a purely neutral term used to describe, not to degrade. These mixed media shows are most likely derived from the Eames—Nelson sample lesson" of 1953 and from the military and college multiscreen presentation halls of the early 1960s.

Regarding educators use electronic mixed media, suffice it to say that the majority are presenting elaborately illustrated lectures that seldom involve juxtaposition of separate elements to form a whole. Still, extensive research does exist on proper use of multichannel presentations in education; consult especially the articles in the bibliography by Stuart Cooney (1964), Alvin Roberts (1964), Daniel Smith (1967), Jerome Conway (1967), Werner Severin (1967), James Anderson (1968) (1969) and Donald Perrin (1969. Probably the most comprehensive study of educational multi— media was done by Donald G. Perrin (unpublished dissertation, University of Southern California, 1969). From the standpoint of classroom use of electronic media—mix, this study of Perrin's serves as a basic sourcebook of presentation methods, a concise handbook of technical information, and a relatively complete compilation of educational use and research in multimedia. Perrin's work also contains accounts of most major articles on educational multimedia found in the bibliography of this paper, Perhaps the best way to conclude these remarks on education and multimedia would be to pass on

to educators the advice that electronic media should be used as an extension of the personality of each lecturer. In other words, "media should make you larger.” **15**

The use of multiple images with taped or live narration was developed by the

U.S. military in facilities designed for this purpose by the Tele— PrompTer Corporation in the late 1950’s. While this is claimed as "multi— media" only by some military public relations men, similar presentations in the business world are often considered "multimedia" (see Sales Management September 21, 1962 for a sample). Generally these shows for businessmen consist of slides and/or film plus a taped lecture on the merits of some product or aspect of a company e These shows may be presented to executive boards, sales meetings and large conventions. Most often shows for businesses and industries are prepared under contract with a private “multi—media company.” Another market for the 150—0dd "multimedia companies" is the growing list of government agencies and civic associations who need shows about their organizations for fund—raising or volunteer—raising activities. Depending on availability of projection and audio equipment, a slide show is often more financially feasible for these organizations than producing a sound film.

IVO Description of the Study

This report is an attempt to describe and evaluate the historical evolution of multimedia (as defined in Section I of this Introduction). The

[15] Richard B. Byrne, personal conversation, September 1971.

main body of the report is: devoted to descriptions as detailed as possible of not only those events categorized as multimedia but also many other events of a similar nature. These other mixed media events usually had relevant association with or influence on the actual multi— media presentations, Chapter One contains developments "before the fact" as it were: developments that took place in the years 1900—1951, before Cage's 1952 "lecture."

All events are placed in one of two general categories, Performance Environments or Display Environments. The distinguishing feature of the two general headings concerns the use or lack of live per— formers. Obviously, Performance Environments use performers while Display Environments use no true performers, although the latter often employ audiences, participants or lecturers to complete the event. Performance pieces are further subdivided as either Electronic Media and Performers or as Environmental Theatre. As is the case with all terms used in this study a category name has been chosen because of the emphasis indicated by its titles. Thus, Electronic Media and Performers indicates a theatre work in which the concentration is on the stage presentation, while Environmental Theatre events are those that emphasize the total environment rather than just the stage action.

Similarly, the Display Environments are broken down into Multiscreen Presentations and Environments, with the events classified by their most distinctive element. A work can easily be a multiscreen environment, but these are usually grouped simply with the Multiscreen Presentations since these environmental — projection pieces depend on the images, not the

environment for their effects. Environments, as a subcategory, are those display works which need no entertainment from actors or images to account for their existence. Not every event to be discussed fits neatly within a category. Some had to be shoved into a section for lack of better placement. Appendix V contains charts of categorized events to be described in chronological order.

Each chapter will be divided into the four sections described above: (I) Multiscreen Presentations (2) Electronic Media and Performers (3) Environmental Theatre (4) Environments. The arrangements of these sections within a chapter are dependent on the importance of the events contained in each section. Chapter One begins with Multiscreen Presentations in order to bring Cineorama to its place of distinction, and Chapter Two starts with Environmental Theatre to pay tribute to John Cage.

Chapter Two deals with the early multimedia events in the period 1952—1960. Chapter Three deals with the rapid, far—ranging developments of 1961-1966. This period begins in January 1961 with The University of Wisconsin Multimedia Instructional Laboratory, and continues through the New York multiscreen displays of 1965. Two major events that occurred in New York during this period of expansion and discovery are treated in separate sections on the New Cinema Festival I and the "Nine Evenings of Theatre and Engineering.” Chapters Four and Five, respectively, deal with the 1967— 1972 period and concluding observations on the subject

The first appendix is a discussion of terms and definitions. Appendix II is a chronological chart (as complete as could be compiled) of Significant multimedia events and other events which have some bearing on

the subject. All entries in the main body of the text are contained in this list, plus many others which are described only in Appendix 11. If this appendix should appear to be thorough the reader should be reminded that no attempt has been made to catalog all events accepted by this author or any other writer as true multimedia. Such a cataloging would be a hope— less, thankless and useless task akin to listing all television programs ever broadcast. The events which are included would seem to be the most important ones in the evolution of this communication form.

Appendix III is more for reference than for direct relationship to the study. It is a chronological list of the more important technological advances in photography, motion pictures, projection devices, phonographs, color organs, audio recorders, radio, television and electronic music devices. This chart contains information of interest to a student of electronic media, if for no other reason than to show how sophisticated a range of devices was available to the forerunners of multimedia in 1900. The fourth appendix contains letters received by this author

in his research on the subject. Their value lies in their indication of the degrees of cooperation a- re— searcher in a contemporary subject must face. Appendix V is an informal index.

Possibly all receivers of the mass media are victims of a bias in books, magazines and newspapers toward New York City events; someone once said that you could gather 200 people with red flags upon a sidewalk in New York and next week’s news magazines would report it as a major Happening. If this is the case, illuminating correspondence from other parts of the country and other nations would be highly beneficial to all concerned G

Every reference of significance to the subject found by this author has

been included in the bibliography; still, almost all of the events are retold from mass media accounts. Other discoveries that have occurred elsewhere remain the private knowledge of the creators and the participants. Hopefully, local studies of multimedia will soon be written, compiled and somehow distributed to present and future students of the subject.

V. The Passage from Intro to Body

Many excellent descriptions of the foundations of what now constitutes multimedia, Happenings, New Theatre, etc., have previously been written. A particularly good account of the progress from Cubism, Futurism, Dada, Surrealism and Bauhaus to Abstract Expressionism, Assemblage, Environments and Happenings is contained in Michael Kirby's Happenings (1965) from page 22 through page 46. Rather than replay the information here, a decision was made to offer a series of quotes from participants in these movements. Their words should indicate the unity of development described by Kirby and other writers,

> The only possible solution of the universal problem: the sovereignty of art and of revolutionary artists.[16]
>
> Tomasso Marinetti, describing his play Le Roi Bombance

> To complete oneself, to perfect oneself in one's little— ness, to fill the vessel with one t s individuality, to have the courage to fight for and against thought, the mystery of bread, the sudden burst of an infernal propeller into economic lilies [17]
>
> Tristan Tzara, Dada Manifesto of 1918

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16 Rosa Clough, Futurism: The Story of a Modern Art Movement (New York: Philosophical Library, 1961), P, 29.

17 Robert Motherwell, The Dada Painters and Poets (New York: Whittenborn, Schultz, Inc 1951), p. 7

> Surrealism is based on the belief in the superior reality of certain forms of association heretofore neglected, in the omnipotence of the dream, and in the disinterested play of thought. It leads to the permanent destruction of all other psychic mechanisms and to its substitution for them in the solution of the principal problems of life. [18]
>
> Andre Breton, first Surrealist Manifesto, 1924

> We want to create a clear, organic architecture, whose inner logic will be radiant and naked, unencumbered by lying facades and trickeries; we want an architecture adapted to our world of machines, radios, and fast motor cars, an architecture whose function is clearly recognizable in the relation of its form. 19
>
> Walter Cropius, concerning the intent of the Bauhaus, c. 1925

> There is no such thing as empty space and empty time
>
> There is always something to see, something to hear,20
>
> John Cage, Silence (1961)

> Not satisfied with the suggestion through paint of our other senses, we shall utilize the specific substance of sight, sound, movement, people, odors, touch. Objects of every sort are materials for the new art: paint, chairs, food, electric and neon lights, smoke, water, old socks, a dog, movies, a thousand other things which will be dis covered by the present generation of artists. Not only will these bold creators show us, as if for the first time, the world we have always had about us but ignored, but they will disclose entirely unheard-of happenings
>
> Allan Kaprow, "The Legacy of Jackson Pollack," (1956)

---

18 Patrick Waldberg, Surrealism (New York: McGraw—Hill Co., 1965), p, 72.

19 H. H. Arnason, History of Modern Art (New York: Harry N. Abrams, Inc. 1968), p. 251.

20 John Cage, Silence (Cambridge, Mass.: The M.I.T. Press, 1961), p. 8.

21 Kostelantz, Theatre of Mixed Means, p. viii.

> Cubism, by seizing on instant total awareness, suddenly announced ghat the medium is the message. Is it not evident

that the moment that sequence yields to the simultaneous, one is in the world of structure and of configuration? Is that not what has happened in physics as in painting, poetry and in communication? Specialized segments of attention have shifted to total field, and we can now say 'The medium is the message' quite naturally. [22]

Marshall McLuhan, Understanding Media (1964)

The artist must make use of the force of art, with its influence on human psychology, to communicate and to announce. He must find ways to come out of his isolation from his community. He must find ways to unite technology and the human condition. He must find ways to investigate, to document, to criticize, to love. . . and so add meaning to the life we are all sharing.[23]

Stan VanDerBeek, 1966.

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[22] Marsha11 McLuhan, Understanding Media: The Extensions of Man (New York: McGraw—Hill, 1964), p. 13.

[23] Stan VanDerBeek, "Re: Vision, " American Scholar, Spring 1966, p. 339.

Chapter One

The Pre—History: 1900—1951

I. Multiscreen Presentations

The ancestry of multimedia could certainly be extended into a long history of simultaneity in the arts. However, the first example of an event actually utilizing an electronic communication medium in a form that now expresses itself as multimedia was the Cineorama display of the 1900 Paris Exposition. Some authors give the date of the Exposition as 1896, but the late film historian, Kenneth Macgowan, rather authoritatively described the event as taking place in 1900. Cineorama was a total 360^0 environment of ten screens; its creator was Raoul Grimoin—Samson, whose patent for the process was granted by the French government in 1897. Previously a patent had been given in England on October 6, 1894 to Joseph Train for a similar process. However, Train's "invention" remains an unreported mystery, and first—public—display honors for environmental cinema go to Grimoin—Samson.[24]

Unfortunately, film histories usually pass by this grand event.

This 10-screen exhibition was huge in scale a ratio of eleven to one in screen size with the "screen" being 30 feet high and 333 feet around in a circular building. Spectators (200 at a time) stood in the basket of a huge gas balloon with the mock—up balloon spreading high above

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[24] Donald G. Perrin, "A History and Analysis of Simultaneous Projected Images in Educational Communication, unpublished Ph. D. dissertation, University of Southern California, 1969, p. 34

them. Below the basket was the enclosed projection booth containing ten projectors. The images projected had been filmed from a balloon containing ten 70mm cameras set around the circle of the balloon basket. Thus the wrap—around film the spectators saw was the grot-md as their balloon "Ascended," "traveled," and "descended." Since the film was in color (Hand—painted), the audience was given the effect of a real balloon ride as they stood in the exhibition balloon basket. This grand event was short—lived; the police closed the exhibition after three days due to fire hazard caused by the extreme heat in the projection booth. 25 After 1900, Grimoin—Samson went on to other interests and total—environment projection did not return until 1955.

Multiple—screen cinema was long and slow in developing. Only three other examples of this film form will be discussed in this section. One possible explanation for the lack of interest in multiple screens in early theatres is the fact that first—generation filmmakers still had some choice in frame size and could make their own wide frames for multiple images (in use since E. S. Porter's 1903 film AMERICAN FIREMAN 26) Nevertheless, 35mm became the standard frame size long before the next display of multi—screen, so the absence of multiple screens from 1900 to 1927 still remains unexplained. In 1927, multiscreen returned in the form of a magnificent 3—screen film, NAPOLEON, by Abel Gance.

---

25 Kenneth Macgowan, '*The Wide Screen of Yesterday and Tomorrow," Quarterly of Film, Radio and Television, Spring 1957, pp. 217-218

26 Ibid., p. 222.

NAPOLEON was made in 1926 and sh0&vm in Paris in 1927. The three screens put together formed a viewing area of 50—by—12 1/2 feet on which three equally—sized 35mm images from three projectors were shown.[27] NAPOLEON is accepted as the first and possibly the only example of Gance's multiscreen method known as Polyvision. There is one rather confused reference to a previous multiple screen Gance film, LA ROU (1923),[28] but no mention is made elsewhere of this film. The triptych effects of NAPO— LEON were used in three basic ways: (1) to present a continuous panorama, (2) to flank a dominant center image with related side images (such as Napoleon’s face in the center and marching armies on the sides), and (3) to mirror the central image with the side screens. Gance also used the triple camera developed by Andre Debrie [29] for dramatic cinema effects-such things as the landscape viewed from a runaway horse and a snowball hitting the lens.

Polyvision did have its problems. The cost of production and difficulty of showing NAPOLEON made the film a financial failure.[30] Complete synchronization of the three projectors was not possible at that time,[31]

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[27] Ibid., p. 223, and Sheldon Renan, An Introduction to the American Underground Film (New York: E. P. Dutton and Co., Inc.,1967), p.62.

[28] David Curtis, Experimental Cinema (New York: Universe Books, 1971), p. 14.

[29] Macgowan, "Wide Screen," p, 223.

[30] Parker Tyler, Classics of the Foreign Film (New York: The Citadel Press, 1962), p. 27.

[31] Arthur Knight, The Liveliest Art (New York: New American Library, 1947), p.305.

so, the film used the center screen more than the triptych form. Gance was not even able to attract followers to his multiscreen process; his only disciple was Claude Autant-Lara.

Some confusion seems to exist regarding Autant—Lara. One account credits him with developing a 3—screen process (one large center panel, two small flanking sides like a classic triptych), in 1927, known as Hyper— gonar.[32] Another account[33] mentions only his use of triple images on one wide frame of film – CONSTRUIRE UN FEU (1924-29). [34]

The next verifiable use of multiscreen cinema came in 1937 in the U. S. A. Fred Waller reached back to 1900 and partially reintroduced the environment concept of Cineorarna. Waller's Vitarama used eleven screens of 16mm film in a semicircular format, but would have needed only five for a 35mm format. The project was originally intended for the oil industries display at the 1939 New York World's Fair. Waller's interests in the effects of peripheral vision led to his involvement with the hemispherical theatre; unfortunately for Waller, the oil men were not pleased with the concept, so Vitarama was not included in the Fair.[35] Some writers say that Eastman Kodak took up support for the project, but the Official Guide-Book makes no mention of Vitarama in any form at the 1939 extravaganza.

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[32] Perrin, "Projected Images in Education," p. 18.

[33] Macgowan, 1 'Wide Screen," p. 224.

[34] Sources give varying dates. The confusion derives from the film having been begun in 1924 and not finished until 1929.

[35] Kenneth Macgowan, "The Screen's 'New Look' Wider and Deeper," Quarterly of Film, Radio and Television, Winter 1956, p, 127

Vitarama was not dead yet, though. The architect of the project, Ralph Walker, joined with Waller to form the Vitarama Corporation which built seventy—six 5—screen panorama gunnery training devices for the military during World War 11. These 180 0 devices enabled a gunner to train his reactions so that he responded to several stimuli from different angles of his field of vision. Many men were better prepared against "blind" attacks due to the Waller device: the Us S. Government estimated that 350, 000 casualties were prevented because of the effectiveness of the Vitarama training.36 Vitarama was to return as Cinerama in the early 1950 v s, but that is a story for another chapter.

The only other significant use of multiple screens before 1952 was the traveling sales meeting developed by the Seagram Distillers Corporation in 1948. Inspired by a nationwide traveling display of Life magazine photographs in 1947, Seagram Distillers put together a show using five screens and live "drama. Accounts indicate that the actors were more like announcers, and the entire pitch was intended to present advertising concepts to salesmen.37 For these reasons, this event has been classified as multi— screen rather than a true combination of film and live actors. The importance of this event lies only in its introduction of multiscreen presentations to the business world.

11. Electronic Media and Performers

Current New Theatre performances have benefited greatly from the

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36 Perrin, "Projected Images in Education, pp. 21—22.

37 Stuart M. Cooney and William H. Allen, "Nonlinearity in Filmic Pre—sentation: Part Il, Discussion, " Audio Visual Communication Review, XII, (Fall 1964), p.305.

sophisticated use of projections used in conjunction with live actors. The earliest use of live and filmed drama seems to have been in Japan in 1904.

Film was introduced into Japan in December 1896, and its popularity was high by the turn of the century. In an attempt to spark better com— petition with the new entertainment, producers of the older Shimpa plays began showing film clips of plays at the cinema theatres. These cinematic ads soon found their way into the actual Shimpa plays. Mostly they were used as transitions between scenes; the screen was down for scene changes and another scene which had been filmed outdoors was then projected on the "curtain" screen, occasionally actors stood behind the screen and spoke dialogue in a form of crude "lip—sync". Little more is known of this dramatic form except that it lasted a very short time. Film seems to have triumphed in the end, because indoor scenes were filmed, then joined with the outdoor shots and released as full—length features.[38] Film and actors first came to the United States in the burlesque theatre, not on the "legitimate" stage. In 1909 Windsor McCay (creator of Felix the Cat) designed a stage act for himself and an animated partner named "Gertie the Dinosaur."[39] "Gertie" a huge brontosaurus-reacted to McCay's comments, followed some commands, and apparently "caught" pumpkins thrown to her by McCay

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[38] Jeffery B. Embler, "A Historical Study of the Use of Film to Provide Additional Content to Theatrical Productions on the Legitimate Stage," un— published Pho D. dissertation, University of Pittsburg, 1971, pp. 52—53.

[39] Bob Thomas, The Art of Animation (New York: Colden Press, Inc., 1958), p. 8

In Europe film entered stage drama to enhance live actors, The play Eine Million by Berr and Guillemand was presented during December 1911 in the State

Theatre (Staattheater) in Posen, Germany. As in Japan, film was used as a transition between acts; one scene ended as the actor climbed out a window, then the projector started and the filmed actor continued on beyond the window. Also in Germany in 1911, at the Hamburg Operettentheatre's opening of the Rund um die Alster review, the principal actors were shown on film running through the streets of the city. The filmed introduction climaxed as the actors ran into the theatre entrance, then the curtain rose and the same actors that had been in the film leaped from the orchestra pit onto the stage.[40]

After a twelve—year interval, film returned to the European stage in the form of projected titles in Vsevelod Meyerho1d's 1923 production of The Earth in Turmoil (see page 33). Meyerhold used filmed titles and commentaries again in 1924, as did Erwin Piscator, but it was finally Piscator who elevated the use of stage film to the status of a genuine dramatic element.

Piscator was the real pioneer of Epic Theatre, which he developed in various theatres in Germany in the 1920 He founded the Proletarian Theatre in Berlin in 1920, worked in the Central Theatre 1923—1924, and then directed in the Volksbuhne from 1924—1927. While working at the Volksbuhne, he aroused heated controversy since his strong Socialist leanings were expressed in the propaganda pieces he aimed at his German proletariat

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[40] Embler, "Film on Legitimate Stage," p.54

Audience.[41] In order to maintain artistic integrity, he opened the Piscator Theatre (Piscator—Buhne) on the Nollendorfplatz, Berlin, in the fall of 1927. This rented theatre was used since his Total Theatre, a radical design for the placement of

projections and actors planned by Walter Gropius, was never built due to government interference and lack of money. At the Piscator Theatre he staged several productions that made excellent use of actors and projected images. However, Piscator% use of film as a unique element in a play dates back to 1925.

As noted above, Piscator and Meyerhold had used filmed titles and commentaries in 1923 and 1924. Sergei Eisenstein used a short comic film as a separate element in a play he directed in 1923.[42] (see Appendix 11); however, Eisenstein's film was viewed as the sole action while the rest of the play ceased. Piscator found ways to incorporate the film into the play as the players continued the action. In the 1925 production of Felix Gasbarra's Trotz Alledem (In Spite of Everything) at Grosses Schauspielhaus in Berlin, Piscator used newsreel films of war and its results. Commenting on this film Piscator said:

> These takes showed with brutality the horror of war: Attacks by flame throwers, piles of slashed bodies, cities on fire. The "mode" of war films had not yet become established and these photos served to shake and waken the proletarian masses, more than would have been achieved by hundreds of statements. [43]

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41 Maria Ley—Piscator, The Piscator Experiment: The Political Theatre (New York: James H. Heineman, Inc., 1967), pp. 69-77.

42 Embler, "Film on Legitimate Stage," p. 58.

43 Ibid., pp. 40—415

There Is also an unclarified statement by Piscator that he occasionally used slides in place of the newsreel. No matter what the nature of the projected images in this play, they were used throughout the performance, not at just one point.

Edward Kook's study, Images in Light for the Living Theatre (1963), includes a letter from Piscator in which the latter claims that his first use of film in theatre was on February 20, 1926, in Alfons Paquet's Sturmflut (Stormtide). This production, done at the Berlin Volksbuhne, may have held some personal significance for Piscator. Otherwise, there is no explanation for his neglect of his previous uses of film in the theatre.

Only rear projection was used in the 1926 play; this allowed the actors to play anywhere around the film without disrupting the image. One scene included film of a warship firing on a port. To enhance the feeling of depth, cutouts of the port's buildings were placed around and in front of the screen while actors were in front of the "port" and the screen background. Another example of film and actors uniting to increase depth was a scene of a crowd on film directly behind a crowd on the stage.[44] Thus, film was used to increase the cast as well as extend the environment. The 28—foot wide film Images came from a projector 45 feet behind the screen. Four slide projectors were positioned 38 feet behind the screen, but nothing more is reported of their use.[45]

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44 Ibid., p. 55.

45 Ibid., pp. 147-148.

Piscator's use of film and slides together is one subject his biographers fail to elaborate. Possibly the slides were used only for projection of background scenery or titles, as was the custom in this branch of German theatre. Another possibility would have been the use of the projections as counterpoints to the message of the narrative. No accounts indicate that Piscator used his projections as communicative elements separate from the narrative. He even admitted that one of his chief reasons for using film was to enhance "the reality of people's environments)"[46] Further research may prove Piscator to have been even more progressive. For now, however, he will continue to be regarded as a precursor rather than the father of multimedia.

After 1927, Piscator had his own theatre and nothing seemed out of place on his stage. His first production in the Piscator Theatre, Ernst Toller's Hoppla Wir Leben (Hoppla, We Live) opened on September 3, 1927.[47] A newsreel compiled by Victor Blum and others-was shown to the protagonist (Thomas) to inform him of the world events of 1917—1927 that had occurred while he was confined to an insane asylum. Unlike the film in Sturmflut, the newsreel of Hoppla was treated as actual film viewed by the actor; it included genuine footage of such events as the beginning of the Russian Revolution (March 8, 1917), Mussolini's march on Rome (October 7,1922), the Scopes Trial (July 20—21, 1925) and Trotsky's expulsion from the

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46 Erwin Piscator, Political Theatre 1920—1966 (Arts Council of Great Britain, 1971), P. 52.

47 Ley—Piscator, Political Theatre, p. 294.

Communist Party (November 1927). The newsreel ran seven minutes and concen— trated on violence and political upheaval because “Piscator felt ‘It’ was necessary to grasp the monstrosity of each epoch.”

Scaffolding had to be constructed for the six screen areas of the backdrop. One film projector and seven slide projectors were set up for front projection and another film projector was located 45 feet behind the 36—foot wide, 26—foot high screen area. A large scrim screen was placed in front of the actors so that it could be occasionally lit with images which would seem to envelop the actors. One such use of the scrim was to give the effect of Thomas in prison. A filmed sentry marched above him while the warden strolled about on another screen, this produced a three-dimensional effect around the live actor and carried out Piscator's policy of film to enhance environment.**49**

Piscator’s zaniest and most commercially successful work in his Theatre was Jaroslav Hasek’s the Adventures of the Good Soldier Schweyk. This satire concerned a lovable, loyal, stupid soldier who remained faithful to the army even in the most absurd situations. Among the films used in this play were the first animated cartoons used on a legitimate stage, these caricatures of military officers, clergy and doctors were done by the famed antiwar Expressionist, George Grosz.**50** In addition to film, such items as

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48 Emb1er, "Film on Legitimate Stage, pp. 43—44,

49 Ibid., p. 148 and Erwin Piscator, p, 56.

50 Emb1er, Ibid., p. 73 and Ley—Piscator, Political Theatre, pp. 88 and p.294.

conveyor belts, cantilevered bridges, moving scenery, searchlights beamed on the audience, sound effects and motorcycles on stage were used, to the delight of the audience.[51]

There were a few competitors for Piscator's prominence in Europe before everything was halted by the tragedy of World War 11. On June 30, 1930, at the State Opera House (Staatsoper Unter der Linden) in Berlin, Franz Ludwig Hoerth staged Paul Claudel's Christophe Columb, with music by Darius Milhaud. The play concerned ritual (New World discovered by the Old Religion) and simultaneity (two characters of Christophe Columb-one sails to the New World, the other is an old man looking back on his youth).Film was often used in this play to show the psychological workings of the minds of the characters. Such a sophisticated use of film had not been incorporated into the theatre previously.[52]

In Czechoslovakia, the talented director Emil Burian was working on the concept of total integration and orchestration of all theatrical elements. Unlike Piscator's grand effects, Burian's film and slides were thrown onto scrims and screens in front of and behind the performers to give a total union of film and actors. His stage was small (20 feet wide, 15 feet deep) so the 6—meter by 4—meter front scrim completely cut off the actors from the audience. Frank Wedekind's Fruhlings Erwachen (Spring's Awakening) presented in 1936 in the Prague Theatre was a typical Burian production.

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51 Janes Roose—Evens, Experimental Theatre (New York: Universe Books, 1970, p. 50.

52 Embler, "Film on Legitimate Stage, pp. 98—103.

Color slides were shown on the front scrim and on the screen upstage left from the actors, while black and white 16mm film also flooded the scrim. Descriptions

of Burian's productions are insufficiently detailed to properly judge the context and effect of the film/ slide/ actor mix. Jarka Burian (no relation to Emil) says there was no true interaction between the projections and performers In the Prague theatre form, sometimes known as Theatregraph.

Projections were used as supplements to the actors to create Burian's stage environment.[53] Thus the works of this great director have been presently classified as pre—multimedia; for him, the play was the thing, not the con—tributing elements.

In the U. S. A. Epic Theatre found popular appeal in the form of "Living Newspaper" plays produced by the Federal Theatre Project, headed by Hallie Flanagan Davis. These plays borrowed stage mechanics and style from Epic Theatre, then added dialogue taken straight from the mass news media. Between 1935 and 1939 over one thousand productions were staged in 40 states, but the strong political tone of the plays alienated Congress, who cut off funds in 1939.[54] A typical production was One Third of a Nation which opened on January 17, 1938, in New York's Adelphi Theatre. This play by Arthur Arent used loudspeakers and a filmed tour of New York City, with emphasis on the slums.[55] "Living Newspaper" films tended to be newsreels.

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53 Ibid., pp. 106—112, 171, and Jarka Burian, The Sceneography of Josef Svoboda (Middletown, Conn.: Wesleyan University Press, 1971), p. 79.

54 Oscar G. Blockett, History of the Theatre (Bos ton: Allyn and Bacon, Inc., 1968), pp. 635-636.

55 Embler, "Film on Legitimate Stage," p. 133—135.

rather than dramatic elements to counterpoint the actors.

The only other significant use of film and actors before 1952 came in Czechoslovakia. Following the trails blazed by Burian, the talented director—designer team of Alfred Radok and Josef Svoboda worked with the combination of filmed and live drama. In 1951 they staged Samberk's comedy, The Eleventh Commandment at the Czechoslovakian Film Theatre in Prague. This production included a scene where a detective faced the audience, looked into a mirror so he could see a robber on film about to "shoot" him, then "fired toward the screen and 'killed' the robber".**56** Such slick effects would re—emerge in 1958 as the famous Laterna Magika Show,

111. Environmental Theatre

This section is concerned with the development of total environment situations that involved dramatic performances of some type, all but one of the examples cited took place in theatres and only two made any use of projected film. The concept developed was one of audience involvement in the performance. This does not necessarily mean audience participation, but it does mean that the performance a stage in more recent times, this concept of events occurring in different parts of the environment would manifest itself first in Cage's 1952 "lecture" and then in the long series of Happenings initiated by Allan Kaprow.

The first noted example of the play coming out to the audience (discounting dubious parallels with pre—Elizabethan innyard plays) occurred

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56 Ibid., pp,120-121

in Moscow in 1910 when Vsevelod Meyerhold presented Moliere's Don Juan in the Alexandrinsky Theatre. Meyerhold continued his noble efforts in revolutionizing early 20th century theatre with this performance of Don Juan His production had the following unusual elements: (1) no front curtain or footlights, (2) the forestage was extended into the audience, (3) the houselights were kept on during the performance, (4) costumed stage hands changed the props in full view of the audience and (5) the actors dance movements were set to the music of Jean—Baptist Lully (the founder of French Opera, c. 1660—1670)**57**

True Environmental Theatre seems to have begun in London on December 23, 1911 with the opening of Max Reinhardt's The Miracle. His production was adapted from the wordless play by Karl Vollmoeller with a score by Englebert Humperdink. This play concerned the legend of Sister Beatrice, whose place in the convent was filled by the Virgin Mary while Beatrice was lured away by the pleasures of the world, Reinhardt, with the aid of Herman Dernberg, Rudolph Mrorsky and Ernst Stern, transformed London's Olympia Exhibition Hall into a Gothic cathedral. Real stained-glass windows, wooden doors and stone columns added to the semblance of reality. In addition, a cast of 1000, a chorus of 500 and a 200-piece orchestra made the production the most spectacular ever produced by Reinhardt Costs for an 8—week run was about L4000 but the enthusiastic crowds made the expense worthwhile After a smashing success in London, Reinhardt toured Germany with his

57 Blockett, History of Theatre, p.581

extravaganza from 1912 through 1914.[58]

Environmental performances must have seemed naturally suited to the spirit of the Dadaists, for they were quick to make use of unusual, scattered events at their public soirees. These wild collections of poetry readings and other gestures began in Zurich during July 1916 and soon spread to the metropolitan areas of France and Germany until Dada's decline in 1921. Two such soirees were called Le celebre illusioniste and Noir Cacadou,[59] they presumably occurred in 1916 or shortly thereafter. In the former, Philippe Soupault released balloons of different colors, each of which carried the name of a famous man, and Walter Serner placed a floral bouquet at the feet of a dressmaker's dummy. The latter performance featured Richard Huelsenbeck and Tristan Tzara jumping around in a sack with their heads in a pipe, Jean Arp reading his poems from inside a large hat, George Ribemont—Dessaigner dancing in a large funnel, and later, Huelsenbeck screaming his poems while Tzara beat time on a packing case. Other events were often accompanied by such "instruments" as rattles, keys and tin cans.[60]

Following the examples of Reinhardt and the Dadaists, the Russian directors Meyerhold and Eisenstein continued Environmental Theatre in the early 1920's. In February 1923, Meyerhold staged the play Zembya Dybom adapted by Sergei Tretyskov from Marcel Martinet's The Night. The play title has been variously translated as The Earth Rises, Earth on its Hind

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58 Oliver Me Sayler, Max Reinhardt and His Theatre (New York: Brentano Publishers, 1926), p.357 and Huntley Carter, The Theatre of Max Reinhardt (New York: Benjamin Blom, Inc.,1914), pp. 224-440.

59 Michael Kirby j "The New Theatre," Tulane Drama Review, Winter 19659 p.42

60 Roose—Evens, Experimental Theatre, p. 54.

Legs, The Restive Earth, and The Earth in Turmoil. Before the performance the audience participated in organized marching; then, during the play (about the Russian Civil War), soldiers used actual weapons including small cannons presumably with blanks. Vehicles such as trucks, motorcycles 9 and bicycles drove through the auditorium onto the stage for further realistic effects. At the finale the army arrived, took command of the auditorium, and everyone rose to sing the Internationale. [61] This play was also the first recorded instance of Meyerhold's use of theatrical film; he projected filmed titles above the stage.[62]

Eisenstein went a step further than Meyerhold by presenting Gas Works in the actual Moscow Gas Works in 1924. For this truly Environmental play, actors performed on the existing catwalks of the gas company. By 1925 Eisenstein had left the theatre for the cinema, employing the same principles of simultaneity in the film that he had developed on the stage. Eisenstein's second film, THE BATTLESHIP POTEYRIN (1925), is now a classic because of its montage of simultaneous events and viewpoints.[63]

Environmental Theatre in this country began on January 15, 1924, with the opening of Reinhardt's The Miracle in New York City's Century Theatre. As in London, the theatre interior was transformed into the illusion of a Gothic cathedral, this time by Norman Bel Geddes.[64] Again as in London, the successful run was hailed by enthusiastic crowds.

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[61] Michael Kirby, The Art of Time (New York: E.F. Dutton and Co., Inc. 1969), p. 143

[62] Embler, "Film on Legitimate Stage," p.88

[63] Ibid., p. 21-22

[64] Kirby, Art of Time, p. 139, and Sayler, Max Reinhardt, p.vii

The next major example of Environmental Theatre in New York began on September 22, 1938, when the Olsen and Johnson review Hellzapoppin opened. Michael Kirby's description of this event, contained in his excellent chapter on "Environmental Theatre" in The Art of Time (1969) notes that the prologue of the review contained film of famous figures praising the show in dubbed voices Hitler with a Jewish accent, Mussolini in Negro dialect. Thereafter much of the action occurred in the audience. Gags included barkers who sold concessions, souvenirs, and theatre tickets; a semi—nude man who watched from the upper balcony while sitting on a horse; and an orangutan who watched from one box while a man in a gorilla suit abducted a girl from another box. At one point, the house lights were doused and puffed rice was poured over the audience. Such antics surely were inspired by the absurd public exhibitions of the Dadaists. Later these concepts would find their way, in more refined form, to the various stages of the New Theatre.

IV. Environments

Environments have drawn inspiration from decorated interiors and exteriors throughout the entire history of the plastic arts. Contemporary Environments also include, as a basic idea, the notion of environmental alteration, None of the Environments discussed in this report were intended as permanent embellishments of existing spaces. Rather, these Environments were formed by adding different elements in original ways to transform – and occasionally obliterate the existing physical environment. This area of the multimedia study commands a rather minor space until the USCO presentations of the mid-1960’s; nevertheless, these examples of environmental

alteration have had great influence on contemporary ideas about multimedia. Generally, multiscreen environments, such as Cineorama, are treated in the multiscreen sections since these displays depend on the projections for the dominant effect.

Environments developed from collage and reached full scale in Kurt schwitters' 1924 Merzbau in Hanover, Germany. Merz was the word chosen by Schwitters to describe the collage nature of all his work, so Merzbau was a Merv housec He filled his home with lights, constructions, objects, sliding panels, and other paraphernalia Unfortunately this Merzbau was destroyed by Nazi bombing in 1943, and his second one in Lysaker, Norway, burned in 1951. The only remaining example of true Merzbau Environment is the partially completed on in Amberside, England, begun in 1945,**65**

Habitation Environments came to the U. S, A. in 1930 when Clarence Schmidt began transforming his Woodstock, New York home. While Schwitters seemed confined to the interiors of existing houses, Schmidt dug out the hillside and added rooms as an earthworm adds segments. The Woodstock Environment has achieved a state of biomorphic growth and use of natural materials that both praises and spoofs Frank Lloyd Wright's principles of organic architectures Rooms were added onto rooms ad infinitum and each room is heaped with forty years' accumulation of objects, photos, Christmas lights, stuffed creatures, toys and anything else feasible. Outside, Schmidt made a huge grotto of trees, rocks, machines, tires, rowboats,

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65 Wi11iam so Rubin, Dada, Surrealism and Their Heritage (New York: Museum of Modern Art, 1968), pp. 56—58 and p e 191.

mirrors and plastic statues. Such a place sounds like a sourcebook for Rauschenberg's combines of the late 1950's, but Schmidt was practically unknown by the art world until recent times 0 At last report he was still adding on to his creation.**66** Information on other American home—Environments can be found in the Blasdel article in the bibliography,

In Europe, the only other significant event in environmental alteration (excepting the two World Wars) occurred in Paris in 1938. During January and February of that year, the major show Exposition Internationale du Surrealisme was held in the Galerie Beaux—Arts. Andre Breton and Paul Eluard organized this monumental display of Surrealist art, and Marcel Duchamp designed the setting of the exhibition space. Leaves and moss covered the floor while 1200 sacks of coal hung from the ceiling. A pond and a bed were among the objects installed amidst the flora. During the opening festivities, the air was heavy with the smell of roasting coffee and the crowd noise was drowned out by German marching songs blasted over the public address system, Helen Vinel, a dancer, added to the occasion by performing a solo improvisation, “The Unconsummated Act,” around the pond and bed.**67**

This chapter has shown how such ideas as multiscreen projection, film used in theatre productions, theatrical environments, and display Environments were all known and developed before 1952. All the items previously discussed (in addition to others contained in Appendix II) helped to further the different performance and presentation arts into distinct,

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66 Allan Kaprow, Assemblage, Environment and Happenings (New York: Harry N. Abrams, 1965, p. 170—171.

67 Rubin, Dada, Surrealism, pp, 152—153.

contemporary modes of expression. In 1952, John Cage combined his knowledge of the preceding events with his ideas on chance and Zen philosophy to produce the first true example of the mixed media form known as multimedia.

Chapter II

The Formative Years 1952-1960

1. Environmental Theatre

It seems impossible to over—emphasize the importance of John Cage to multimedia. Even if he had not originated this new art/ communication form, surely one of his students would have. Cage stands as a major figure in the present development of all 20th century art forms, either as a creator or as a strong influence. As is usually the case in history, Cage was the necessary "right man in the right place at the right time”. By the middle of the present century, the performing arts had caught up with the visual arts in moving completely away from the illusionism of the narrative form. This does not mean that narrative works disappeared; it simply means that some branch of each performing art evolved a totally abstract form of expression which coexisted with the older narrative forms, Cage influenced music and dance directly (the effects on dance came through Cage’s close friend, Merce Cunningham, theatre indirectly (Allan Kaprow was Cage’s student when the former developed Happenings), and even the visual arts indirectly (Rauschenberg was a Cage student at the time of the 1952 "lecture”, VanDerBeek was residing at Black Mountain College at the same time, and Gerd Stern met Cage at Black Mountain also).

So much has been written by and about Cage that there seems no reason to further expound upon the man here. One particularly good source of

insight into Cage is his interview with Richard Kostelantz, printed in "The Theatre of Mixed Means (1968). As usual, Cage speaks best of himself:

> I found through Oriental philosophy, my work with Suzuki, that what we are doing is living, and that we are not moving toward a goal, but are, so to speak, at the goal constantly and changing with it 9 and that art, if it is going to do anything useful, should open our eyes to this fact.

Cage's much—referred—to presentation took place in the summer of 1952 at Black Mountain College, North Carolina, in the form of a 45-minute lecture. The combination of elements used in the lecture were carefully considered and orchestrated by Cage, but the point of entry of each element was determined by chance.[69] Cage's definitions of music and theatre are very broad (music consists of sound and silence, theatre consists of something to be seen and heard); therefore, the 1952 lecture is considered by Cage to be both music and theatre, since these terms have little, if any difference in Cage's philosophy, Other authors claim this celebrated event as the first Happening, Theatre Piece, Theatre of Mixed Means production, etc. To these is added the claim that it was the first true multimedia presentation.

Unlike the spectacles of Epic Theatre, where film and other projections were used to extend and enhance the basic theatre drama, Cage's lecture juxtaposed totally separate elements for a work that exists only in totality. Individually, the parts do not explain each other, yet taken together they form an entity, Consider the situation. All the viewers sat in chairs arranged in four large triangles facing the center of the lecture room as Cage began his talk on Meigror Eckhnrt„ Then other events

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[68] Michael Kirby and Richard Schechner," An interview with John Cage," Tulane Drama Review, Winter 1965, pp.59-60

[69] Kirby, Art of Time, p.86.

occurred as Cage continued to talk. M. C. Richards recited from a ladder, Charles Olsen and other "planted" performers in the audience stood and recited, David Tudor played the piano, Robert Rauschenberg played old records on a hand—cranked Victrola, and Merce Cunningham (accompanied by an unscheduled dog) danced around the audience There was even a film - of the school cook and a sunset - which was projected first on the ceiling, then on the wall,[70] Cage says there were also radios and slides used in the performance,[71] but no description of their use has been given. Above all this activity hung Rauschenberg's White Paintings Seven Panels (1951) about which Cage has remarked, "The white paintings were airports for the lights, shadows and particles."[72] Concerning the entire 1952 event, Cage explained, "It was the making of theatre to bring all these things together that people could see and hear.[73] This monumental moment in the history of simultaneity in the performing arts ended with the words:" A piece of string, a sunset, each acts."[74]

Further theatre by Cage was usually in the form that critics classed as music, so theatrical extensions of the 1952 event had to wait for the development of Happenings. Kaprow's first public Happening was not until 1959, but a group of Japanese completely isolated from knowledge of Cage did Happening—like performances as early as 1955. The Gutai Group,

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[70] Michael Kirby, Happenings (New York: E. Pe Dutcon and- Co., Inc., 1965) pp.31-32 g

[71] Cage, Silence, p. x.

[72] Alan R. Solomon, Robert Rauschenberg (New York: E.P. Dutton and co.,1965), pp. 31-32

[73] Koste1antz, Theatre of Mixed Means, p. 56,

[74] Cage, Silence. p.x.

as they were called, was organized in Osaka in 1952 by Jiro Yoshihara.[75] Other members of the group were Akira Kanayarna, Sadamasa Montonaga, Shuzo Mukai, Saburo Murakami, Kazuo Shi raga, Atsuko Tanaka, and Tsuruko Yamasaki.[76] This group appear to have originated the strange, non-matrixed type of theatre presentations now known as events. One of their first public showings occurred in October 1955 at the Ohara Hall, Tokyo; at this performance Saburo Murakami broke through a series of paper screens with his hands and Kazuo Shi raga rolled in the mud. More elaborate showings included First Gutai Theatre at Asaki Hall, Tokyo, and Kankei Hall, Osaka, in May 1957, and Second Gutai Theatre Art at Sankei Hall, Osaka, in April, 1958. Examples of the Events from the first show were Murakami breaking a large paper screen with his hands and a club (similar to his 1955 work) and Akira Kanayama inflating a giant balloon which changed colors until he cut it in two.[77] Odd as these Events might seem, they certainly were not scoffed at by the American avant—garde, For some idea of the scope of theatre Events in the U.S. see the Winter 1966 issue of Film Culture for a long listing of Events and Event creators Japanese, American and European.

On Sunday, December 8, 1957, the activities of the Gutai Croup made the front page of the art section of The New York Times.[78] Some have speculated that this publicity had some direct influence on the origins of

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[75] Martin Cohen, "Japan's Gutai Group Art in America, November-December 1968, p. 880

[76] Kaprow, Assemblage, p. 210,

[77] Ibid., p.212-216

[78] Kirby Happenings, p. 29.

American Happenings, but the first Happener, Allan Kaprow, did not know of the Japanese group until 1960.[79] Kaprow's only Oriental influence appears to have been the interest John Cage held in Zen philosophy and the I'Ching. While studying with Cage at New York's New School for Social Research from 1957 to 1959, Kaprow developed both of his major creations: (1) the gallery Environment in 1957 (a public version of Merzbau) and (2) the Happening in (first done at Douglas College, Rutgers University, New Brunswick, on 80 April 15, 1958).

Kaprow's first public Happening was presented at 8:30 pm, October 4,1959, at the Rueben Gallery, New York City, this was the work called 18 Happenings in Six Parts, the script for which had been published earlier the same year in the Rutgers Anthologists. Three "rooms" were created in the gallery by means of plywood frames covered with translucent plastic sheets; lighting was provided by clusters of 25—watt bulbs, and some action painting—collage (reminiscent of Kaprow's paintings) was included on the walls of room I. Spectators - all of whom came by invitation -sat in folding metal chairs arranged in the three rooms and changed positions as indicated by the instruction sheets handed them upon entering. The action took place in six units with three Happenings occurring in each unit, Since the Happenings occurred simultaneously in different rooms, the spectators had to compare observations to find out what had gone on in all parts of the setting.

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[79] Kaprows Assemblage, p, 224.

[80] A11an Kaprow, pp.21 and 42

Kirby 's Happenings (1965) contains a complete script and an eyewitness account of the event, so it would be redundant to repeat it here. For this study, it is enough to know that four tape decks with separate sound tracks, a phonograph and projected slides of nudes, Kaprow's paintings, children's art, collages and other paintings were all used during the performance, separately and simultaneously. Unlike the semi—spontaneity of current Happenings, this primary work was rehearsed for two weeks prior to the opening. It was also presented six times (October 4th and 6th—10th) instead of the present practice of one—shot presentations.[81] (a practice now advocated by Kaprow).

Many early Happenings made some use of electronic media, although it was often in the form of taped background sounds. One performance that made especially good use of film was Robert Whitman's The American Moon presented in November 1960 at the Rueben Gallery.[82] For this Happening the spectators entered the gallery through a plastic—covered tunnel, then sat in one of six smaller tunnels, also covered with sheets of black plastic. Once the viewers were seated in their tunnels, they found themselves facing a central performing space. At various times during the piece, screens of clear plastic and typing paper were lowered to cut off the tunnels from the central space, An 8mm projector in each tunnel showed a film on the makeshift screen; when the lights in the center area were turned

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[81] Kirby, Happenings, 68—75.

[82] Ibid, p. 139.

off, the viewers in each tunnel could see the film on the screen of the tunnel directly across the central performing area.[83]

Whitman and Other Happeners continued to use electronic media in their works well into the 1960's. Still, Happenings and multimedia seem to have gone their separate ways since Kaprow's 1959 work. Most of the significant uses of electronic media in Happenings has been concerned with the New Theatre form of film and actors in juxtaposition. These other Happenings are discussed in either Chapter III or Appendix II.

11. Multiscreen Presentations

1952 was not only the year of the Cage lecture; it also marked the return of multiscreen films. After the wartime success of Vitarama, Fred Waller redeveloped his product for theatrical purposes in 1949. Hollywood producers were not interested, so the Vitarama Corporation's assets changed hands to become Cinerama Incorporated. Mike Todd and Lowell Thomas took the financial step that other producers had avoided, and the first Cinerama film, THIS IS CINERAMA, opened in New York on September 30, 1952.[84] The 3—screen format of Cinerama was similar to Gance's Polyvision with two major exceptions: (1) in Cinerama the film was shot on one complex camera with three interlocked lenses and shown with three interlocked projectors, Gance did not have the necessary equipment in order to possibly

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[83] Gene Youngblood, Expanded Cinema (New York: E. P. Dutton and Co.,Inc. 1970), p.381.

[84] Perrin, "Projected Images in Education," p.23

achieve such technical perfection; (2) Cinerama was commercially profitable for a long enough period of time to encourage construction of theatres equipped to handle the presentation, Polyvision was a financial disaster from the start.[85]

Economic competition from regular cinema theatres (which would not bear the expense of reconversion for the new process) eventually drove Cinerama practically out of business. Cinemascope began in 1953, and the scale of the wide Cinerama's thunder. Another weakness of Cinerama was its lack of development as a valid cinematic form. Unlike Gance, who combined separate scenes on his three screens, the directors of Cinerama used only the wide panorama effect, The novelty of this limited mode soon wore off for the mass audience and Cinerama faded as progressive cinema. Nevertheless, the thousands of people who saw Cinerama in the 1950's and 1960's were much better prepared to accept the multiscreen works of today's Expanded Cinema.

A more significant use of multiple screens was the "sample Lesson" designed by Charles Eames and George Nelson. Nelson explained that in 1952 Lamar Dodd, Chairman of the Fine Arts Department of The University of Georgia, asked Nelson's help in structuring a more effective educational policy. Nelson brought Eames into the project in the fall of 1952, and they recommended a radical program for efficiency in teaching a Rather than

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85 Knight, Liveliest Art, p.290.

let students spend weeks on a project just to rediscover art principles, Eames and Nelson suggested the use of electronic media in large lecture situations. The faculty were not enthusiastic, so Eames, Nelson and Alexander Girard agreed to produce a lecture (on ”Communications")for the hypothetical course – “Art X”.[86]

The final production was named “A Rough Sketch for a Sample Lesson for a Hypothetical Course”,[87] and included films by Eames, slides by Nelson and a traveling display by Gerard. Equipment used was one 16mm projector, three slide projectors, three screens, several tape decks and canned odors of incense. No exact date of the first showing is given; January 1953 seems to be the date Nelson indicated in his article on the event. As to whether this lecture should be classified as mixed media or multimedia is open to question until more specifics are known about the nature of the soundtrack e Nelson's description is the most complete published, and he gave the impression that the lecture was a series of separate films and slide shows. At any rate, this presentation carried as much significance for the education world as Cage’s 1952 lecture carried for the art world. After this "Georgia Experiment" (which was also presented at U.C.L.A.in 1953),[88] educators gradually began to realize the possibilities of electronic media as more than supporting players in a lecture.

By 1961, The University of Wisconsin installed a facility that

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[86] Ne1son, "Art x,' I pp. 44—45.

[87] Schrader, “Films of Eames,” p.3.

[88] Renan, American Underground Film, p. 229.

answered Nelson's dream of packaged lectures of sound and visuals. Nelson had hoped that such lectures could be centrally produced and then delivered to many schools. This hope is now also realized to some extent. However, most educational "multimedia lectures" are still local, impermanent, and varying in quality. One further note should be recalled concerning the “sample lesson” of 1953. Nelson admits that three screens of slides were used because a single wide—screen film would have been too costly to produce.[89] This economically realistic attitude reveals the underlying weakness that still plagues educational multimedia when compared to theatrical multimedia. Educators have long known that audio—visual aids are invaluable in the classroom if for nothing else but their attention value. It follows that the more attractive the various media presentations are, the better will be the attention paid by the students. Even though learning may be no more effective with electronic media, studies have shown that students generally prefer media—augmented lectures to traditional lectures. When faced with the problem of tight school budgets, educators soon saw that multiple—screen slide shows would be a natural companion for rented films as cheap, easy and attractive presentations. Only recent research and serious study of multi—media have begun to elevate its use in education to the aesthetic level of many theatrical experiments in multichannel communication.

In 1955 multiscreen finally came full cycle back to the 360 environment of Cineorama. The modern revival, called Circarama, was a joint

[89] Nelson, “Art X,” p. 46

project of Walt Disney and American Motors. Basically, it was an 11—screen travelogue in a circular building. A crowd of about 350 looked above their heads at a screen 8 feet high and 130 feet around, broken by strips into eleven screens. One 16mm projector behind each strip threw an image onto the screen directly opposite.[90] The show presented always used all eleven screens for a complete panoramic view of the American countryside. As indicated, the content of Circarama made no advances over the basic concept invented in 1900.

One of the two most progressive uses of multiscreen in the 1952—1960 period was the series of Vortex concerts conducted by Henry Jacobs and Jordan Belson at Morrison Planetarium in San Francisco's Golden Gate Park. Few of the current light shows could possibly be as spectacular as these Vortex works. Belson installed interference—pattern projectors, strobes and kaleidoscope projectors for increased visual imagery in addition to the star machines, color controls and other existing planetarium devices. All of these were used in conjunction with abstract film images made by Belson and James Whitney. Jacobs had control of the sound, which came from almost fifty speakers in the 60-foot dome. Originally there were thirty—six loud speakers clustered in groups of three around the surface of the dome; in addition, there were two bass speakers on each side of the dome, plus one at the top Jacobs installed a few more speakers plus a master control board that allowed him total direction of the sound. Any single speaker or cluster could be the sole sound source at any time, so

[90] Macgowan, “Wide screen,” pp.219-220

a very sophisticated interplay occurred between Jacobs' sound and Belson's images. Jacobs could also rotate the sound quickly around the room 9 hence the name Vortex for the concerts, Audio tracks included electronic music by Jacobs, Stockhausen, Berio and Ussachevsky and poly rhythms of the Balinese and Afro—Cuban cultures.[91]

The enthusiasm of both men was unbounded concerning their creation. Belson was quite excited about the use of images with no frame lines. These projections seemed to float in space while the color of the environment went from cold black to the warmest saturated hues. Belson remarked:

> Vortex is a natural tie—in with intellectual, aesthetic, and philosophical developments of our time, which calls for a new awareness by the artist and esthetician of what is happening in the world of science, where the scientist is unveiling visual imagery so provocative in itself —— apart from its immediate scientific merits-that a new philosophy is developing [92]

Jacobs was no less restrained in his comments: “It was such an absurdly perfect situation that we just stopped altogether after we left the planetarium; when you begin with the ultimate, there;s nowhere else to go.”[93]

This first spectacle in the short history of multimedia began in May 1957 and continued until 1960. After a hundred magnificent concerts (including two weeks at the 1958 Brussels World's Fair), Morrison Planetarium withdrew support and Vortex suffered an untimely death. In the early 1960's, light

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[91] Youngblood, Expanded Cinema, pp. 388—3916

[92] Robert Pike, A Critical Study of the West Coast Film Movement (Los Angeles: University of California at Los Angeles, 1965), p. 161,

[93] Youngb1ood, Expanded Cinema, p, 388.

shows returned this time with rock bands — but few of the new environments could equal the quality of Vortex.

Unknown to the general public in the late 1950's, multiscreen also came into use by the U. S. military on a permanent basis. TelePrompTer Corporation designed a military briefing room consisting of a 5—screen rear projection system and audio tape to facilitate information transmission; this configuration of one large center screen with two small stacked screens on each side was known as Telemation. Briefings could be completely automated, with film and slides coming up at appropriate points during the taped lecture. Manual control was also possible, so an officer could punch up his own visuals as he talked. In either case the rear projection system allowed the room lights to remain on for note taking. There is no indication that these briefings were anything but illustrated lectures; however, the success of Telemation in these installations led to similar facilities which greatly enhanced college teaching in the early 1960’s.

Multiscreen usage in the period discussed in this chapter achieved its greatest recognition at the Brussels World's Fair of 1958, Of the events described so far, three were in operation at the Fair: (1) Vortex concerts (2) Cinerama in the Attractions Pavilion and a Russian Pavilion version known as Panorama (3) Circarama in the American Pavilion, with an 18—minute film on American culture. The Brussels Universal and International Exposition, which ran from April 17 co October 19 on a 500—acre park in

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94 Perrin, "Projected Images in Education, p c 84,

Brussels, attracted some 41 million visitors[95] who saw eight separate multi—screen displays. In addition to the shows previously mentioned, there were Aviorama, Congorama, Kenneth Anger's INAUGURATION OF THE PLEASURE DOME, Laterna Magika and Polyekran.

Aviorama was designed by the Milan engineer Luige Maretti. It utilized three screens--one in a normal position, one tilted down above the first, and one tilting up below the middle screen. The audience sat on three sides of the pit around the lower screen; projectors were located in the back of the hall, in the pit and in the ceiling. Little more is written about the content of the presentation. Presumably some combination of images besides a vertical panorama was used. Albert Ducrocq's Congorama also seems to have been an exercise in design rather than a serious attempt at content cinema. This display had side wing screens, lighting effects, sound effects and sliding walls all controlled by an "electronic 96 brain" — presumably a computer.[96] Kenneth Anger's film INAUGURATION OF THE PLEASURE DOME, was shown at the Brussels Experimental Film Festival as a 3-screen presentation; this was not done again in later years, possibly because the three projectors were in proper synchronization only once in all rehearsals and showings of the film.[97]

The other truly progressive multiscreen work mentioned earlier as a companion to the Vortex concerts was the Polyekran display designed by

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[95] Gerson H. Lush, "Brussels International Exposition," Britannica Book of the Year 1959 (Chicago, 1959), pp. 123—125.

[96] Perrin, "Projected Images in Education," pp. 37—38.

[97] Stan Brakhage," A Moving Picture Giving and Taking Book," Film Culture, Summer 1966, po 49.

Josef Svoboda. Seven film projectors and eight slide projectors synchronized to audio tape presented a 10—minute, 8—screen show concerning the Prague Spring Music Festival.[98] Rather than a multiscreen equivalent of a multi-image film, Polyekran incorporated direct interplay between the natures of still and moving images. One scene from this show featured a filmed dancing ballerina jumping from screen to screen; then she was suddenly “frozen" as a still slide on one of the screens while other action continued on other screens Such a use of projections and sound to present a narrative with no help from live actors was a fine refinement of the Eames—Nelson presentation five years earlier. The physical arrangement for Polyekran was a small stage lined with black velvet. Two of the trapezoidal screens hung tilted from the ceiling, two were tilted up from the floor, and the others were arranged at eye—level Spectators watched Polyekran from low stools. Svoboda intended his show to be a collage of separate images rather than a simple multi—image narrative;[99] such an intent is what distinguishes a multimedia work like Polyekran from a simple mixed media piece like Congorama.

In 1959 Charles Eames re—emerged with another multiscreen presentation, this one a real spectacular. For an American exhibition in Moscow, Eames (aided by John Whitney) put together a 7 —screen slide show with each

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[98] Jarka Burian, "Josef Svoboda: Theatre Artist in an Age of Science, Educational Theatre Journal, XXII, May 1970, p e 133.

[99] Perrin, "Projected Images in Education, pp. 38—39 and Burian, Sceneography of Svoboda, p. 81.

of the seven as large as a drive—in theatre screen.[100] The display was a result of an exchange of national exhibitions by the U. S. and the U.S.S.R. Kinopanorama (des cribed below) was featured at the Russian exhibit, held in the New York City Coliseum from June 30th to August 10th, 1959. About one million Americans saw this super version of Cineorama. In Moscow's Sokolniki Park from July 25th to September 4th, the American exhibit was housed in a 78-foot-high geodesic dome. Included in the 30,000 feet of display space were Eames' slide show, large displays of American culture (including the site of the famous "kitchen debate" between Richard Nixon and Nikita Krushchev), and a separate, movable dome to house the ever-heralded Circarama. Close to three million Russians toured this American pavilion.[101]

Eames' presentation, Glimpses of the U.S.A. was shown on seven TV—shaped screens,[102] each one 20 feet high by 30 feet wide, stacked in a configuration of four above and three below. Many slides (2,200 in all) were used to present an all—encompassing view of American life. Hundreds of the slides were taken directly from popular American magazines to give an honest picture of U.S. culture o Accompanying the slides was a simple, non—editorializing narrative.[103]

The Russians also had an exhibit in Moscow to accompany the American dome; Kinopanorama was featured at the pavilion, as it had been earlier

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[100] Youngblood, Expanded Cinema, p. 208.

[101] Wallace L. Littell, "Fairs and Exhibitions," Britannica Book of the Year 1960 (Chicago, 1960) pp. 246—247

[102] Schrader, "Films of Eames" p.5.

[103] Perrin, "Projected Images in Education," p.4

in New York. Kinopanorama was a very impressive replay of Cineorama. Twenty—two screens arranged in two rings of eleven screens each surrounded 300 spectators. The lower screens were 12 feet high and 90 feet around; the upper ones rose 13 feet above the lower level and were tipped forward at a 59° angle. Skyline on one level and sky as rockets blasted up into the second level were among the effects possible with the two—layer arrangement. Mirrors were also employed to eliminate the dead areas where cameras did not perfectly match—frame.[104] One Russian critic called the display a "montage" indicating the possibility that multiple images were employed.[105] If so, Kinopanorama advanced beyond the constant 360° panorama of Circarama and Cineorama; if not, the Russian exhibit was merely a grander version of the earlier forms.

One other use of multiscreen from the 1952—1960 period should be mentioned. In 1960 Standish Lawder made his original version of a 30—minute, 2—screen slide and audio tape show called The March of the Carter Snakes. Beginning with photographic slides of various sorts (single and multiple images, natural and abstract forms), Lawder progressed to "sandwich" slides-two pieces of glass containing such materials as lipstick, butter and fingernail polish. These slides were left in the projectors until the heat caused the ingredients to burn, buckle, bubble and otherwise produce movement from a still format. Lawder presented his “marching snakes” often in the mid—1960’s. [106]

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[104] Ibid., pp. 34—35, and Cooney and Allen, “Nonlinearity,” p. 306.

[105] Cooney and Allen, Ibid., p. 306.

[106] Film Culture, Winter 1966, p. 8.

111. Electronic Media and Performers

Only two significant uses of projections and live performers were reported in the period under consideration; both examples were designed by Josef Svoboda. Another hit of the 1958 Brussels Fair was Svoboda's Laterna Magika show. Although film and actors had been used before by Svoboda and Alfred Radok, Laterna Magika was the smoothest blend ever made of this type of media interplay. Not only were there interchanges between live performers and projected images, but the screens were also as mobile as the actors. Eight screens occupied the 50-by-24-by 20-foot stage while three film projectors and two slide projectors threw images to all parts of the performance area, including the rear wall which served as a wide screen for rear projection, The screens could either move, change size or fold up completely, depending on what effect best suited the script. Multispeaker stereo sound accompanied this presentation which was devised by Radok and realized by Svoboda. As with The Eleventh Commandment, projections and live elements were interdependent so that only juxtaposition of the two gave a total work.[107]

Laterna Magika consisted of twenty—four separate units, totaling about two hours' performance time. One act featured a man dancing in front of a film of Czechoslovakian mountains; then a filmed ballerina was superimposed over the mountains and the dancer "carried" his partner for the rest of the dance on a large, white tray held under her feet. Another scene involved Czech actress Sylvia Danickova speaking to two filmed images of herself e One image spoke French, the other spoke Flemish and she responded

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[107] Burian, Sceneography of Svoboda, pp. 83—85

in English. Thus, a simultaneous appeal was made to speakers of • both Belgian national languages and to American tourists. After emerging as one of the favorites of the Fair, Laterna Magika went on the road to Prague, Moscow and London.[108]

From an aesthetic point of view, Laterna Magika had one big problem which still exists. The magnificent technique of the show was used to carry scenes of very frivolous content. Even Jarka Burian, an admiring biographer of Svoboda, admits that Laterna Magika has not yet advanced past the stage of a travelogue.[109] Stan Brakhage has also recorded a similar opinion, that the show had great technique but in the end was just a meaningless government production.[110] It would seem that Radok and Svoboda were not encouraged to tamper with the commercial success of Laterna Magika.

It must not be forgotten, also, that this touring show was government sponsored and financed. Most ventures of that type are judged by the sponsor on mass audience appeal, not avant—garde criticism.

Fortunately for the development of multimedia, the principles of Laterna Magika were transferred to the legitimate stage by Svoboda. The classification of the original form as multimedia is, admittedly, tenuous, but this entertainment showcase does emphasize a different use of electronic media than the giants of Epic Theatre employed.

Recalling the discussion

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[108] Perrin, “Projected Images in Education,” p, 39.

[109] Burian, “Josef Svoboda,” p. 138.

[110] Brakhage, “Moving Picture Book,” p.

on film and actors from the previous chapter, the author notes that- most early uses of film in the theatre were for scene transitions, newsreel effects, and titles Piscator's Sturmflut made use of film to extend the perspective and Burian's Fruhlings Erwachen created a sea of projections that engulfed the actors. Burian's use of electronic media came the closest to the idea of juxtaposing media messages with live actors. Still, the reports of all these events indicate that Laterna Magika alone went far enough with the combination of actors, films, slides and sound to be considered multimedia. Epic Theatre used electronic media to enhance a play that existed without the projections Laterna Magika has no existence without both electronic media and live actors.

An even better dramatic use of the Laterna Magika technique was Svoboda's October 1959 production of Josef Topel's Their Day. In this play the stage was equipped with nine mobile screens, each of which was covered by two slide projectors. Three of the screens were also used for projection of film. Often film was projected on the black velvet curtain at the rear of the stage, so that the image was visible only when crossed by a moving screen. As the play -about youth encountering the situations of the city- progressed, the screens presented "a mosaic of city life"[111] which had active and passive relationships to the actors. Svoboda called the play "a confrontation of selected realities.[112]

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[111] Svoboda in Burian, "Josef Svoboda," p c 139.

[112] Ibid., p. 139

IV. Environments

The concluding section of this chapter will be brief since Environments of 1952—1960 are relatively unimportant to this study. Allan Kaprow produced his first Environment during this period, but it has diminished in significance when viewed with the retrospect of Merzbau and Happenings. Environments for Kaprow turned out to be a necessary transitional step from action—collage to Happenings In searching for ways that his Environments could even further alter the physical surroundings in which they were shown, Kaprow gave the spectators actions to perform, and soon Environments had evolved into Happenings.[113] The first Environment was produced in an abandoned barn near Kaprow's New Jersey home and transported to New York's Hansa Gallery, (cofounded by Kaprow) for display, March 11—29 ,1958.[114] This work was filled with hanging sheets of plastic, cellophane, colored cloth, Scotch tape and painted surfaces of various sorts. Taped electronic sounds from five separate decks played for 15 minutes every hour as people wandered through the maze.[115]

The only other work from this period to be discussed is Robert Rauschenberg's Broadcast (1959). Until the mid—1960's Rauschenberg had little to do with the actual development of multimedia. His importance lies in the general influence he exerted on the contemporary art- world, which led

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[113] Kirby, Happenings, p. 46.

[114] A11an Kaprow, pp. 21 and 42

[115] Kirby, Happenings, p, 46.

to some aspects of multimedia. His combines of paint, objects, fragments and collage date back to the mid—1950’s These constructions surely indicated to Kaprow the direction the latter would take away from the confines of traditional painting. Rauschenberg's large silkscreens with repetitions of photographic images (early 1960 's) look like a documentation of a multiscreen projection show. He was also one of the first artists to incorporate functioning machines into his paintings, so as to produce environmental alteration in his section of a gallery.

One such example of machine use was Broadcast (1959) Three operating radios were put behind the surface of the canvas so that the tuning knobs projected out for the viewers to change stations at will. The paintings colors were originally planned to be bright and loud; however, the final version was more achromatic in order for the looking and listening to occur in time rather than simultaneously.[116] This led to a later piece (Oracle, 1965) in which five sound sources were located in different parts of a room. The progression of such display environments into true multi—media came through the work of USCO, which will be discussed in the next chapter.

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116 Andrew Forge, Rauschenberg (New York: Abrams, 1969), pp. 111-117.

Chapter Three

Emerging Spectacle: 1961-1966

I. Multiscreen Presentations

January 1961 marked the opening of the University of Wisconsin's Multimedia Instructional Laboratory. The success of this operation led to the current multimedia saturation of the education world and to the cultural popularity of "multimedia" as the name for multiple screen and sound shows. Professor John Guy Fawlkes, the former dean of the University of Wisconsin's School of Education, originated the laboratory based on a similar facility he had seen at the World Agricultural Fair in New Delhi (1960) The show Fawlkes saw in India was a 5—screen Telemation display built for the U.S.Departments of State, Agriculture and Commerce. Since the Fair ran from December 1959 through February 1960,**117** surely many thousands besides Fawlkes saw the Telemation presentation; still, few seized the opportunity for innovative development, and Fawlkes was one of the few with a vision for the future.

TelePrompTer Corporation was called in to install a Telemation system at the University of Wisconsin as a permanent step toward more effective teaching. Previous success with this type of system in military instructional situations surely was the deciding factor in installing such an expensive facility. Remodeling the existing small auditorium into the

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117 Richard D. Hubbard, “Telemation: AV Electronically Controlled,” Audio Visual Instruction, November 1961, p, 437,

Laboratory cost $17,000 alone; purchase of equipment cost $30 ,000 more and installation of the new audio—visual gear ran another $33,000.[118] Onto a 7 ½ —foot x 14 ½ foot rear projection screen, images poured forth from a 16mm Bell and Howell JAN sound projector with Xenon light 9 two 99—slide capacity Du Kane 2-inch-by-2-inch slide projectors, one 59—s1ide capacity TelePro 6,000 3¼-inch-by-4-inch slide projector with a 3,000watt blub, a television projector, an opaque projector and an overhead projector, Sound came from a turntable, a stereo audio—tape system, and/or the lectern microphone. The lectern had controls for all equipment, plus rheostats for the room lights and a height control for the lectern itself, Lectures could be completely automated (machines activated by punch—card signals which were cued by audio tape signals), semi—automated (machine—control cards activated by punched holes in the script sheet as it ran through the teleprompter), or manually controlled from the podium.[119]

Since the Laboratory was set up independent of any department, a full—time staff was hired to produce lectures for the faculty, an average show took about 120 hours of preparation, excluding initial research and conceptualization by the professor. So, even though there was a large enough staff to finish two new shows per week, a lecture was usually planned six to eight weeks ahead of the needed time. After the concept of each production was determined by the instructor and the program designer, faculty assistants would gather material from which the artist and the photographer would make slides. A programmer added any other requested visual.

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118 Gerald F. McVey, "Multimedia Instructional Laboratory, " Audio Visual Instruction, February 1966, p, 85.

119 Ibide, p. 82, and Hubbard, "Telemation, pp. 437 and 438.

material and put the finished Show into final viewing order. Quantity of production kept the costs down to an average of $300 for one 50—minute automated presentation.[120]

The first lecture presented in the Multimedia Instructional Laboratory was on January 309 1961 by Professor Michael B. Petrovich for his Russian History course, Students were enthusiastic about the new facility so other professors were soon utilizing the Laboratory and producing permanent lectures that could be updated from time to time. Over the course of a few years, the heaviest users of the installation were Russian History, Art Survey, Human Abilities and Learning, History of the Theatre and History of Motion Pictures. Many similar facilities were installed on college campuses in the mid—1960’s; even high schools and colleges that could not afford massive installation or renovation costs made new use of multi— screen/ audio tape lectures, so *'multimedia" was soon alive and running. The Wisconsin facility seems to have been the first Telemation unit which did not bear the trade name, A source who requests no identification says that the name "Multimedia" was suggested by an employee of the lab as a catchier alternative to Telemation. TelePrompTer Corporation was never able to set the public straight.

Two other examples of multiscreen educational presentations were the "Think Box" designed by Kenneth Issacs in late 1962 and “An Approach to the Civil War.” designed for a high school history class in mid-1964 The

120 McVey, Ibid, p.81.

"Think Box" was a 12—foot cube into which four speakers and twenty—four slide projectors poured an environmental barrage of sights and sounds. Issacs called the interior overload Matrix and used the cube as a true "learning environment" to show interrelationships of many facets of a subject.**121** The Civil War presentation was developed by Alvin B. Roberts and Don L. Crawford of Western Illinois University to illustrate the advantages of a total media approach to a lesson. In addition to a 3-screen slide, film and tape shows the complete unit plan contained other films, tapes, records and diagrams for various types of classroom activities.**122**

Multiscreen presentations were available for the large audiences at the World's Fairs of 1962 (Seattle) and 1964 (New York). These events are discussed in Appendix 11 since the shows at these Fairs were technically impressive but otherwise no advancement over previous multiscreen works. More significant works were done in 1964 and 1965 by USCO, Don Snyder and Aldo Tambellini.

In early 1964 the nucleus of what would later be called the U S Company (USCO) traveled from San Francisco to Woodstock, New York, presenting various versions of their Verbal American Landscape show. The Company at this time consisted of Gerd Sterns his wife Judy, Michael Callahan, and

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121 Kenneth Issacs, "Think Box," Indus trial T)egign, November 1962, PPS 48-518

122 Alvin Ba R.oberts and Don L. Crawford, "Multiscreen Presentations : Promise for Instructional Improvement," Audio Visual Instruction, October 1964, pp, 528-530,

whatever gear could be carried in their car. Compared to later USCO ex—travaganzas, this show was rather mild, using only four slide projectors, four speakers of taped sound, and three 16mm films-one film of a December 1963 event called Destruction (where participants brought cherished objects before a panel of judges who decided if the objects should be destroyed), one film of the "Contact is the Only Love" display and another film called Y. The performance at Salt Lake City's University of Utah set off a major scandal for the university administration since the Y film was judged to be lewd by the local John Birch Society chapter. Y juxtaposed highways and highway signs with closeups of a nude woman; the soundtrack was a mix of highway sounds and orgasm sounds. Needless to say, the stay in Utah was short.

Other, more calm engagements were at the University of Oregon (Eugene,Oregon, January 1964), Carleton College (Carleton, Minnesota, April 1964), and the University of Wisconsin at Madison (April 1964). Since the show depended on house equipment and student participation wherever it was presented, the physical arrangement of each showing was different. At the University of Wisconsin a significant improvement was made with the use of the Kodak Carousel slide projector, now a standard item in most multimedia presentations. Since the previous versions of Verbal American Landscape had used manual slide projectors, the pacing of the slides had been dependent on the dexterity of the projectionist. With the Carousel projectors, a new slide could be flashed every second from the circular tray of eighty slides.

In early October of 1964, the Verbal American Landscape was shown to an audience of 500 at the University of Rochester This performance was historic for the USCO troupe for two reasons: (1) the Rochester showing marked the first time the group was known as USCO (originally condensed from "Company of US") (2) all projectors and sound equipment were furnished by In addition to the two tape playback decks and four speakers acquired by Callahan, there were four Kodak Carousels (mounted on tripods to straddle auditorium seats) donated by Paul Williams and two 8mm projectors bought by USCO to show the films made by Steve Durkee. As before, at least one 16mm film and a collage soundtrack were used e The main tape was called the "Billy Master" referring to Billy Holliday-and this was a collection of speech fragments from personalities who had influenced Stern. Beginning with cuts from 1932 speeches by Franklin D. Roosevelt, the tape worked its way up through Timothy Leary and Marshall McLuhan. McLuhan also spoke in person before the 1964 show in Rochester, then he and the USCO members answered audience questions after the V. A. L. presentation a In April and May of 1965, V. A, L. was given at Brandeis University, adding an oscilloscope, strobe machines and diffraction machines to the previous media elements,[123]

A very impressive multimedia work called Spectra—Mach I was produced by Don Snyder in mid—1965, Synder had already achieved fame for

[123] Usco, "Our Time Base is Real," Tulane Drama Review, Fall 19669 pp. 80—81 and personal correspondence with Gerd Stern and Michael Callahan, February 1972

spectacular effects with abstract—pattern dissolve slide shows (one image fades out as the next image fades in) when he created the larger scale of Spectra—Mach I. Four 16mm projectors, two 4—track audio tape decks, and four slide projectors were necessary for this production. It was done first in June 1965 as part of the "Psychedelic Explorations" festival of the New Theatre of New York City. Later showings the same year included the New Cinema Festival I (November) followed by a repeat at the FilmMakers Cinematheque, December 7—12.[124]

Aldo Tambellini evolved his previous experiments in multimedia into a masterwork called Black Zero in 1965, This production involved hundreds of hand—painted black and white slides and films, all involving some variation of the black/white circle theme. A large black balloon, again representing the "black zero" concept, slowly emerged, grew, and burst to climax the presentation. Sound consisted of taped electronic 125 music, plus the occasional use of live, amplified cello music.[125]

The USCO presentation at the New Cinema Festival I (see page 84) served as the prototype for Hubbub, a grandiose, 2 hour work utilizing four film projectors (two 16mm, two 8mm), four Carousel slide projectors , stroboscopes, an oscilloscope, live "dance" by the painter Steve Durkee, and a 12—track stereo tape blasted over four speakers. Hubbub was presented on December 7, 1965, at the Rhode Island School of Design,

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124 Film Culture. Winter 1966, p. 8.

125 Youngblood, Expanded Cinema, pp. 381—383.

on December 9th at the Massachusetts Institute of Technology, on December 12th at the State University of New York at Buffalo, and on January 18—23, 1966 at the Film Maker's Cinematheque in New York City. Six movements CATHODE RAY, HICHFREETHRUSAFEWAY, Y, GHOST REV, DIFFRACTION FILM, and OMIX-constituted the show; the second and third movements were carryovers from the Verbal American Landscape, while the others were made either for the Ghost Rev show at the New Cinema Festival I or made especially for Hubbub, DIFFRACTION FILM, made by Jud Yalkut (who joined USCO in 1965), was shot through a multi diffraction filter and accompanied by sounds of water, birds and frogs. OMIX was a strong, simple use of the oscilloscope combined with sounds of a heartbeat and chanting of the Hindu holy word “0M.” Other sights and sounds from the total work included people walking in cities, slogans, road signs, screen celebrities, common objects, commercial products, highway images, Beatle songs, speeches, and television ads. Reactions were mixed at all the performances, with the R.I.S.D. students being the most hostile even though this audience was given an additional element — live rock music from The Overwhelming odds,[126]

11. Environmental Theatre

No study of multimedia would be complete without a description of the first USCO presentation on November 12th and 14th, 1963, at the San Francisco Museum of Art. The group was not known as LYSCO at the time, but the principal members of the later commune (Gerd and Judy Stern, Michael Callahan, and Steve Durkee) participated in the first show, known as Who R U and What's Happening? Stern's one—man show at the Museum or Art (including "Contact is the Only Love") opened concurrently with the multimedia

[126] Persona1 correspondence with Stern and Callahan, April 1972.

presentation, the latter originally conceived as a means of defraying part of the expenses of the "Contact" octagon. Stern now admits that this first performance was a bit ambitious for its time in ITSCO’s development, but its magnificent impact overshadowed its unresolved technical problems

On the stage of the Museum’s auditorium, Stern constructed four transparent plastic booths, each of which held four people (including Allan Ginsberg). The booths were connected by microphone to the sound system mixer and by telephone to a stage panel of four sociologists, headed by Dr. Howard Becker. Each sociologist was isolated from the room’s sounds by headphones, so his conversation with his booth was carried on without knowledge of the other speakers. In addition to the conversation generated by the people in each booth (who did not know each other before entering the booths, hence the title of the work) there were sounds broadcast to the audience sounds from tapes, sounds from video broadcasts, public telephone messages (time, weather, lost dog reports) and amplified sounds of the audience themselves, all of this was mixed on stage and fed to four speakers, one in each corner of the auditorium. Two of the booths had closed—circuit television broadcasts to stage monitors; in addition there were other stage monitors which showed commercial broadcasts. Four manually—operated slide projectors, located in the aisles of the auditorium, filled the stage screens with examples of the Verbal American Landscape-photographs of words from news media and street signs. All of this was received well by the audience, who eagerly participated (one man even unplugged the telephone jacks several times) but the review in the San Francisco Chronicle panned the event. Much of the

criticism centered on the fact that the hall's natural reverberation caused frequent feedback in the sound system. A simpler version of the same show was given at the University of British Columbia, Vancouver, in January 1964 at the annual arts festival. This Vancouver show was actually the trial version of the Verbal American Landscape. The Canadian presentation used only four slide projectors, two tape decks, and the 16mm film Y. Another participant at the Vancouver festival was Marshall McLuhan, who was a major influence on the works created by Gerd Stern. A report by McLuhan to the National Association of Educational Broadcasters (the basis of his book Understanding Media,) had been eagerly read by Stern in mid—1963. McLuhan ᵛ s reaction to the Vancouver presentation was not enthusiastic at first, but better rapport was soon established between Stern and McLuhane.[127]

One of the few events of the mid—1960's to exceed the spectacle of the USCO performances was the production of Karlheinz Stockhausen's Originale in September of 1964. Judson Hall (across 57th Street from Carnegie Hall in New York City) served as the location for this lavish extravaganza. The room was a small, rectangular auditorium with mirrors on one wall, a small balcony at one end and a small stage at the other-before the transformation. For the performance, a large metal scaffolding for people and equipment was erected directly across from the mirrors, and chairs were put on the stage and in clusters around the floor area.

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127 "USCO" Tulane Drama Review, pp.78-79 and personal correspondence with Stern and Callahan

Allan Kaprow directed the 94—minute production that looked to be utter chaos, even though all entries and actions were carefully regulated by the time on a large central clock. The Stockhausen score, Kontakte, consisted of street sounds, static, and instruments; it was performed by audio tape accompanied by Max Neuhaus on percussion and James Tenney on piano. Other activities included Allan Ginsberg praying to Krishna, Michael Kirby hawking newspapers, Robert Breer running a TV camera and receiver and also showing one of his films, people yelling through bullhorns, and other people feeding goldfish in hanging bowls One girl stripped to her underwear while members of the audience were pelted with leaflets, dried beans, pink toilet paper, and rotten green apples. Most of the audience showed enough spunk to throw the apples back. At the next-to-last of the five nightly performances, the scheduled dog and chimpanzees were delayed in traffic, so a lady and her blind dog were brought in off the street. She had been associated with the Futurists in Milan years earlier and thoroughly enjoyed Originale. Reports indicate that a good time was had by all, except Nam June Piak, who was handcuffed to the scaffolding by some pranksters at one performance.[128]

Another big event in the field of Environmental Theatre was Robert Whitman's The Night Time Sky. Given in May 1965 at New York's First Theatre Rally (organized by Steve Paxton and Alan Solomon in TV studios at Broadway and 81st Streets[129]), Whitman's production certainly contained

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128 Kirby, Art of Time, pp. 99—102 and pp. 114—115, and "Stuffed Bird at 48 Sharp," Time, September 18, 1964, p. 81.

129 Mekas, Village Voice reprints, p. 11.

One of the most memorable climaxes in all of cinematic history. At the beginning of the show, the audience moved through a tunnel while ship noises were heard. A large tent—like structure of white sheets was at the end of the tunnel, and a film of a ship leaving port was projected on the sheets. The spectators pushed aside the cloth "door" covering to enter the central dome, 50 feet in diameter and 17 feet high. Lighting came from outside the tent, changing the entire environment from green to red as films and sounds simulated the open sea and a boiler room. At various times people appeared in holes in the dome to perform actions. A girl in one of the openings played several records; another girl projected glass marbles with an opaque projector. For the finale a film was shown on the dome, giving the spectator a view up through a toilet seat as a man dropped his pants, then dropped huge feces toward the audience, Whitman said the spectators left, "fertilized by the experience."**130**

In 1966 the rock—band light show hit New York in full blast, As mentioned earlier, this phenomenon began in the late 1950's on the California coast (and can be traced back in principle to color organ recitals in the late 19th century) but little documentation of actual presentations of light shows appears until early 1966 in New York City. The Velvet Underground, a raunchy rock group who were uninhibited enough to sing about heroin and sado—masochism, presented one program of live music and projections at the New Cinema Festival I in November 1965 (see section V, this chapter)

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130 Robert Whitman, "The Night Time Sky," Tulane Drama Review, Winter 1965, pp. 101—107.

After the new year began, the Underground were found appearing on the same bill as a series of 2-screen Andy Warhol films generally known as the “Uptight” series.[131] In early April of 1966 the Dom nightclub (23 St. Mark’s Place) in Greenwich Village became the temporary home of the sight and sound barrage known as the “Exploding Plastic Inevitable,”[132] Properly, the "Exploding Plastic Inevitable" referred only to the projections, which were three simultaneous films. Usually, this name was also applied to the total show which contained music by the Velvet Underground and the singer Nico, ″whip” dances by Gerald Malanga and partners, and flashing color and strobe lights. After about a month’s stay at the Dom, the entire troupe made a tour of Los Angeles, San Francisco, Cincinnati, Minneapolis, and London.

The world, featuring twenty—one screens of film, slides and closed-circuit video coordinated by USCO was the first successful permanent venture of this type in New York, despite initial association with the disk jockey idol, Murray the K. The World premiered on April 1st, and the Cheetah was open by the end of the month.[133] By 1967 psychedelic rock clubs had spread nationwide.

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131 Bos1ey Crowther, "The Screen," The New York. Times, February 9, 1966, p. 32. One of these films, MORE milk, YVETTE, shown on February 8, 1966, at the FilmMakers Cinematheque, featured a transvestite ″movie star” eating a hamburger with milk while the other screen showed a man being whipped. Later the Velvet Underground performed and films were projected around them.

132 Rainer Crone, Andy Warhol (New York: Praeger Publishers, 1970), p. 31, and Marilyn Bender, "Black Jeans to Go Dancing at the Movies: It ᵛ s Inevitable," The New York Times, April 11, 1966, p. 47.

133 Earl Wilson, "It Happened Last Night, The New York Post, April 28, 1966, clipping with no page number, and personal correspondence with Gerd Stern and Michael Callahan.

One of the few reported multimedia events that occurred outside of the U. S. happened on October 24, 1966, in Buenos Aires. The work was Marta Minujin's mammoth multi—mass—media Happening Simultaneity in Simultaneity. Although the original piece was quite complicated, perhaps it can be summarized as follows. A week prior to the actual event, a group of sixty local celebrities came to a TV studio and were filmed and photographed as they entered. Near midnight of the 24th, thirty—five of these same celebrities returned to the same TV studio, dressed as they had been the week before. Each entrance was broadcast to home viewers who knew of the event from previous publicity. As a celebrity entered the studio on the night of the performance, filmed front shots from the preceding week were shown on the back wall of the studio; filmed rear shots were shown on the front wall, and a series of nine side—view slides were projected on the studio's side wall. After each entrance display, the person was given a transistor radio and instructed to sit in a chair facing a TV set.

At 12:04 am the studio participants and home viewers all watched the same 10—minute videotape and listened to the broadcast on Radio Municipa1 and Radio Libertad (switching stations was required to hear the entire broadcast) 500 home viewers received a simultaneous telephone call ("You are a creator. Look at your environment.") and 100 of these people also received telegrams ("You are a creator, signed "Simultaneity in Simultaneity") while they watched three TV celebrities receive telephone calls and telegrams. Marta introduced the TV celebrities, but no sound was heard

since her speech had been printed in that day's newspaper, original plans for the event to be even larger in scope failed to materialize when calls from Allan Kaprow in the United States and Wolf Voste11 in Germany did not come through by way of satellite. There were even some unrealized plans for international air travel by the three Happeners during the course of Minujin's presentation.**134** All in all, this Happening remains as one of the most impressive, original uses of multimedia or mass media.

111.Electronic Media and Performers

Only two or three of the electronic—media theatre events from the period under consideration have been classified as multimedia. The other examples of this theatrical form would be more properly called mixed media exchanges between actors and a film. Some of these New Theatre presentations were quite impressive and have been often redescribed in print. Following is a brief look at the more important ones.

Roberts Blossom and Robert Whitman have probably done as much significant work with film and live actors as anyone else in the New Theatre. Blossom has presented examples of what he calls Filmstage since 1961. Jonas Mekas recalled that one such example of Filmstaqe, done at New York's Living Theatre in 1961, combined the live presence of Blossom with his image on film and slides and his voice on audio tape. Other works by Blossom include Duet for One Person (March 1963) Unresolved (1964), and A Rehearsal (1965)**135** Presumably, some of these presentations could be called multimedia, while Whitman's work's all seem to be the mixed media form of

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134 Michae1 Kirby, "Marta Minujin's 'Simultaneity in Simultaneity,'" The Drama Review, Spring 1968, pp. 147—152.

135 Mekas, Village Voice reprints, p. 10, and Roberts Blossom, "On Filmstage, Tulane Drama Review, Fall 1966. Pp. 68—73.

performers in relation to themselves on a single film. Water, by Whitman, was given in Log Angeles on September 20th and 21st, 1963; this was one of his earliest pieces in which the film—actor interchange was exploited. Water was basically a Happening which the audience watched from a vinyl cubicle as the participants were drenched with artificial rain and colored liquids. A film projected onto a sheet in the performing area showed a girl in different solid—color dresses. The same girl, clothed in a wet print dress, stood in front of the projector so she was fused with her image.**136**

Of course, no section on projections and actors would be complete without at least one entry by Josef Svoboda. The work cited in this chapter is Svoboda's production of the Luigi Nonno opera Intoleranza. Presented in Boston (February 1965) with cooperation from the Boston Opera Group, this work was Svoboda's only major dramatic production in this country. Laterna Magika, shown at the 1964 New York World's Fair and at Hemisfair, could hardly be called legitimate theatre. Intoleranza utilized four video projectors on three 12—foot by 16—foot screens, and a large screen at the back of the stage was used for rear projection of film. In addition to projected video tape images, there were also closed-circuit projections from two house cameras (one covering the stage, one on the audience), and remote broadcasts from two studios up to three miles away. One studio broadcast additional actors (who monitored the stage actors) while the other provided special effects. Among the projection

136 Kirby, Happenings, pp. 173—183.

effects used were images in negative form and 30-second delay replays of the stage action-so a performer could respond to himself.**137**

The most unique of the film—actor presentations of this period were the work called "Unmarked Interchange" done by the ONCE group in 1965. For a festival called “ONCE AGAIN” at Ann Arbor, Michigan, they erected a drive-in type screen on the roof of a parking garage and showed the Fred Astaire—Ginger Rogers film TOP HAT. During the film, panels and drawer—like sections of the screen opened to reveal people performing diverse actions. One man read pornographic sections from The Story of O, and a girl walked across a narrow catwalk to throw custard pies in his face; another man played a small piano, while a couple sat at a table with a candlelight dinner. All sounds were amplified along with the film’s soundtrack, so the end result was a controlled chaos of action and interaction. This event marked one of the few times since Piscator’s newsreels that film not made for a production was used in a theatre piece.**138**

Other uses of electronic media and performers took place at the New Cinema Festival I in November 1965, these events are discussed in section V of this chapter.

IV Environments

By 1961 Allan Kaprow was turning from Environments to Happenings, and Rauschenberg had moved from combines to silk screens Some other

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137 Burian, Sceneography of Svoboda, p. 103,

138 Kirby, Art of Time, pp. 122—123.

artists continued in the tradition set by Kaprow and Rauschenberg; sculptors were usually more successful than painters, however, About the only major painter of the mid—1960’s who extended forms off of his canvas in any significant manner was the Pop artist, Tom Wesselman. His "Great American Nude" series, done 1962—1964, put the nudes into one-wall rooms furnished with real objects The grander versions had functioning TV sets, fans, radios, and ringing telephones. Possibly of this series was the most magnificent, combining an 84—inch by 102—inch canvas with a real radiator, wall phone, desk and chair, and a window complete with artificial foliage and taped street noises.[139]

Two sculptors who became synonymous with environmental settings in the mid-1960’s were George Segal and Edward Kienholz. Both of these men have been connected to Pop Art by occasional critics, but neither of them properly belong in that category. Most likely their use of real objects in their sculptural environments has been mistaken for an interest in Pop iconography, Segal worked in New York concurrently with the cream of East Coast Pop; still, his inclusion of real objects and structures in his work was more for enhancing the mood created by his figures than for incorporating symbols of popular culture. Many of his environments used walls and furniture that had no trademarks of any kind. Segal structured lonely spaces populated by isolated figures. His white plaster people were cast directly from the models, so the sense of reality was indeed eerie. Famous Segal environmental sculptures included a gas station (with Coke

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[139] Lucy RG Pippard, Pop Art (New York: Frederick AO Praeger, 1966) pp. 111-114.

machines and tire rack), a washateria, and a woman shaving her legs in her bathtub. His earliest works of this type (example, Dinner Table) began appearing about 1961.**140**

The sculpture of Kienholz is surely as striking as that of Segal; it may even be more memorable because it is so grotesque. Kienholz did not stop with merely putting objects into his environments. He altered the objects and created strange juxtapositions that are like nightmares compared to Segal's interiors. One of his first full—environment tableaux was Roxy's (1961) This was the ghastly re-creation of a 1943 Las Vegas bordello complete with a madam crowned with a horse's skull. Kienholz's most celebrated Environment was The Beanery (1965) featuring seventeen dummy figures each with a large clock for a head inside a ghoulish, but actual, beanery hut.**141**

The man who brought environmental sculpture into the realm of multimedia was US CO's leader, Gerd Stern. His beatnik poetry of the late 1950's evolved into poetry collages by 1961, and in December 1962 he had a show at Allan Stone's New York gallery. This show was arranged by the painter Steve Durkee (a friend of Stern's) and included collage poetry and kinetic poetry (words in conjunction with machinery, images, and lights) The climax of Stern's kinetic poetry came a year later at the San Francisco Museum of Art with the opening of his one—man show on November 129 1963.

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140 Kaprovo, Assemblage, p. 360

141 Maurice Tuchman, "A Decade of Edward Kienholz Artforum. April 1966, p.41.

In addition to works from the Allan Stone gallery show, some new collages, and a bending mirror piece, Stern had the completed version of his 7-foot octagon "Contact is the Only Love." This complex work had involved months of fund raising and work by Stern, Michael Callahan, and Roger Summers Incandescent, neon and florescent lights flashed such highway ideas as “Yield,” “Turn Ahead” and “Go On Go On.” These signs operated at rates that varied from once a minute to 480 times per minute, while rotational sound on both sides of the octagon played a radio—rock— station music collage familiar to many highway drivers. The completed work was made of two—sided Masonite—faced plywood (Harborite) and supported by a concrete—filled tractor tire.[142]

By the mid—1960's, even industry had entered the field of display environments (not to be confused with the multiscreen displays occasionally used by government agencies and businesses since the late 1950's) One of the more impressive Environments constructed for an industrial fair was seen at the XIIIth Triennale in Milan during 1964. This particular exhibition building, called “Introductory Section-Leisure Time,” was executed by Vittorio Gregotti, Lodovico Meneghetti, and Giotto Stoppino, all of Milan. After touring the introductory room of leisure paraphernalia — toys, sports gear, etc.-visitors entered a huge, stark room of gleaming metal stairways (that led nowhere) and walkway tubes Passage through the tubes led to the dark “Corridor of Instruction,” where visitors sat to see slides of advertising slogans. Mirror images of dummies mounted

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142 kas "USCO, " p, 3 and personal correspondence with Stern and Callahan.

on the ceiling were also a rude shock for the viewer. The final chamber, "Caledioscope" was an octagonal room 34 feet high and 79 feet long. All the surfaces were highly reflective, so when two 9-minute films were shown, the viewers were emerged in color and movement.[143]

At least passing mention should be made of Robert Rauschenberg's Oracle (1965) since it was his only piece of true environmental sculpture. After he made Broadcast in 1959, Rauschenberg experimented with different means of making an environmental sound piece. First he tried five painted panels which would conceal speakers, but this project was abandoned and the panels were retained as the painting Ace (1961).[144] Collaboration with Bell Laboratories engineer Billy Kluver finally resulted in a successful work. Rauschenberg gathered objects from the public dumps of New York City (his usual method of working) and equipped them all with sound,[145] Four of the objects-a funnel—shaped industrial duct, a window frame with a duct, a car door, and a staircase—console (with hanging rubber tire) were mobile, and the fifth, a cistern that pumped water through a shower spray into a tank, was stationary, All of the objects had radios which could be tuned and adjusted in volume by remote control from the console. Each radio was also capable of automatically changing stations at a set speed. After 19659 Rauschenberg generally moved away

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143 Wolfgang Clasen, Expositions, Exhibits, Industrial Trade Fairs (New York: Frederick A. Praeger, 1968) pp. 72—75.

144 Forge, Rauschenberg, P. 117.

145 K.G. Pontius Hulten, The Machine (New York: Museum of Modern Art, 1968), p. 189.

146 Forge, Rauschenberg, pp, 117-119.

from all painted and sculptural forms in favor of experimental theatre pieces.

The USCO group warrants a final entry in this section because of their fine exhibition at the Riverside Museum in New York City from May 8—June 19, 1966. Four rooms of the museum were filled with paintings, sculpture, weavings, silkscreen posters, kinetic poetry (including "Contact is the Only Love"), and presentations based on electronics, lights and taped sounds. This exhibition served to integrate all aspects of all previous work done by the diverse members of USCO; the chaotic barrages of the Verbal American Landscape and Hubbub were now balanced by meditation chambers of lights and art objects. Occasionally some collage and kinetic poetry displays accompanied the road shows, but not since the San Francisco Museum display and show of 1963 had the many facets of USCO been brought into such total harmony. The exhibit had originally been called a "be—in" (the first use of that word), but is now remembered as "Down by the Riverside," after the title of the film made by Jud Yalkut of the exhibition.**147**

V New Cinema Festival I

The November 1965 festival at the FilmMakers Cinematheque (As tor Place Playhouse, 434 Lafayette Street) was known as the New Cinema Festival I.**148**

The festival lasted for several days and included many diverse avant—

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147 Personal correspondence with Stern and Callahan.

148 The Talk of the Town," The New Yorker, December 4, 1965,p.52

garde works. Among the pieces presented were some already discussed: Standish Lawder's March of the Garter Snakes, Don Synder's Spectra—Mach I, and a segment of Blossom's Filmstaqe featuring dancers, slides projected on the dancers and film projected in the background.[149] Also mentioned was the participation of the Velvet Underground in Part III ("The Mysteries of the Essence Chamber") of Angus MacLises' Rites of the Dreamweapon. As the Underground blasted away with rock music, a stageful of strange objects was lit by a revolving red—green beacon. People danced and walked on the stage at random while two projectors beamed on a thin screen in front of the stage. One of the projectors had no film and the other contained a short film loop of unrecognizable images. Occasionally, the projectors swiveled around the room to illuminate the walls and the spectators; frequently the projector lenses were covered with various colored filters.[150]

Multi screen's chief exponent at the festival was Stan VanDerBeek with three multiple projection works, Move Movies used four film projectors, three slide projectors, and a flashlight. Two of the projectors faced screens on the stage, while the other five were carried around by assistants who often beamed the images onto the audience. Feedback #1: A Movie Mural employed five film and three slide projectors and two tape decks; this piece filled the entire auditorium with images and sounds, much to the delight of the audience. Pastoral: et al was a dance piece in which the dancers carried miniature screens that received films of more

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149 Mekas, Village Voice reprints, p. 12.

150 Talk of the Town," pa 52.

dance by Elaine Summers and Bert Supree.[151]

One of the classic dance and film works, Ed Emshwiller's Body Works, was also included in the New Cinema Festival I. Emshwiller's presentation featured four dancers in white costumes onto Whom were projected images of themselves from three 8mm projectors and two 16mm projectors, all hand—carried. Three portable screens and one fragmentation mirror were also used in this excellent 30—minute performances.[152]

Ranking with Body Works as a monumental film—dance mixed media work was Robert Whitman's Prune Flat. Interaction between live performers and their filmed counterparts was so identical at times that reality became a very confused issue. Throughout most of the performance, two stage actresses matched action with their film doubles on a large screen at the back of the stage. The highlight of the show came when a third actress, in a long white gown, mimicked her own disrobing actions that were projected on her gown; when she completed this part of the performance, her nude image was superimposed onto her actual presence in the white gown.[153] On the same night's program with Prune Flat was Claes Oldenberg's Movie house (the audience stood in the aisles with film projected on them while actors wandered about in the seats) and Rauschenberg's Map Room II (activities of people on a stage with various found objects-tires, a mirror, an old sofa, etc.) Another Happening-type ritual was Piero Helizar's

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151 Mekas, Village Voice reprints, p. 12, and Renan, American Under—ground Film, pp. 187-190, and "Talk of the Town," p. 54.

152 Film Culture, Winter 1966, p. 5, and Renan, ibid., p.236

153 Youngblood, Expanded Cinema, p. 381.

The Last Rites, in which a tiny 8mm image on a huge screen was watched and blessed.[154]

USCO's contribution to the festival was called Ghost Rev; as usual there was plenty of action from four Carousels, two 8mm projectors, and four speakers of sound. However, the main attention in the piece was put on a film made by Jud Yalkut from a speeding motorcycle. Three copies of the same film were shown as separate images, as similar images moving at different projector speeds, and as related superimposed images-occasionally of differing sizes as different projection lenses were used. Even the sound accompanying this piece was more complex than usual in that a crude quadradial system was used. Callahan's soundtrack consisted of four monaural tracks fed to four separate speakers with a special switching device to give directional control to the sound.

A taped interview with Gerd Stern and Michael Callahan reveals that performers were added to the USCO piece for the first time since 1963, Carolee Scheeman and two of her dancers painted words on the screen as the words were flashed on the screen in the form of title slides; thus the painted words remained after the word image was gone and provided a further depth to the other projected images. Steve Durkee continued this action for a couple of performances when this USCO show reorganized as Hubbub in December 1965 and January 1966.

The surfacing avant—garde culture in the U.S. that now embraces multimedia presentations, media environments, and New Theatre electronic

154 Kostelantz, Theatre of Mixed Means, pp. 83-94 and Mekas, Village Voice reprints, p. 12,

media works was certainly established in New York by the end of 1965. New Cinema Festival I was a magnificent gathering of the major artists who would shape the aesthetics of the current American cultural transformation. Only Cage and Kaprow were absent from the list of contributors to this stellar festival of creative minds

V1. Nine Evenings of Theatre and Engineering

The site for the 1966 E. A. T. (Experiments in Art and Technology) festival was carefully chosen to be the same 69th Street Armory in which the notorious 1913 modern European painting show was held, Critical reaction to the 1966 event was as divided as it had been fifty years earlier, but the show was a success for its creators and E. A. T. continues as a functioning organization today. E. A. T.'s founders were Robert Rauschenberg (who was very involved in theatre pieces by that time) and his Oracle collaborator, Billy Kluver (of the Physical Optics and Electronics Research Department of the Bell Telephone Laboratory, Murray Hill, New Jersey.) The Nine Evenings, which were different nights between October 13 and October 23, 1966, marked the first public display of the union between artists and technicians Some presentations were more successful than others, but all depended on the competence of the engineers for their very existence.

Events presented were the following: Physical Things by Steve Paxton, engineered by Dick Wolff; Solo by Deborah Hay, engineered by Larry Helios; Vehicle by Lucinda Childs, engineered by Peter Hirsch; Carriage Discreteness by Yvonne Rainer, engineered by Per Biorn; Grass Field by Alex Hay, engineered by Herb Schneider; Two Holes of Water—3 by Robert

Whitman, engineered by Robby Robinson; Kisses Sweeter than Wine by Oyvind Fahlstrom, engineered by Harold Hodges; Open Score by Robert Rauschenberg, engineered by Jim McGee; Bandoneon by David Tudor, engineered by 155 Fred Waldron; Variations VII by John Cage, engineered by Cecil Coker.[155]

The first four events listed above were dance pieces, of which only Carriage Discreteness has much relation to this study. In this work, sixteen people wearing wrist walkie—talkies were directed by Ms. Rainer to carry around objects within their enclosure. Actions were slow, stiff, and rarely involved more than two performers at a time. The sound system carried a conversation between a man and a woman while two screens showed films of W. C. Fields and James Cagney. There were also cardboard strips dropped from the ceiling and a man who swung down from the balcony. Since most of the piece was so slow, the audience tended to be quite bored with Carriage Discreteness; during the second performance of this work, a man entered the arena and tossed one of the foam blocks to a performer. As he was led away, he explained that he was only trying to get some life into the event.

The other dance pieces were not so interesting as Carriage Discreteness.

Solo also had dancers performing stiff movements while eight other people moved brown platforms by remote control. Vehicle was highlighted by Alex Hay in a transparent box above the floor and various projections on three screens behind the performers Physical Things involved people with transistor radios walking around in a huge, transparent plastic

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[155] Doris 'Hering, "The Engineers Had All the Fun," Dance Magazine, December 1966, pp. 36—40.

dome and cylinder apparatus. One reason for the bad reviews this latter work received may have been the fact that thirty people needed 45 minutes to disassemble the work. This was especially bad since Physical Things was the first presentation on the night it was done.

The two sound pieces-Bandoneon and Variationg VII- are described by other writers as being major occurances in the field of electronic sound production, but they hardly seem involved with multimedia. Similarly, Kisses Sweeter than Wine was a series of anger—motivated actions (pillow fight in a golf cart, huge head of President Johnson carried around) seemingly unrelated to electronic media. This leaves the works of Alex Hay Whitman, and Rauschenberg as the most relevant to the present study.

Hay's Crass Field began with the artist slowly laying out squares of flesh—colored canvas with numbers stencil led on them. When he completed this action, he sat in the center of the squares and sound devices amplified his body noises over the speaker system. Then, as Hay's enlarged closed—circuit television image watched the area, Steve Paxton and Robert Rauschenberg meticulously picked up each square with slender poles and carried the canvas pieces to one of two piles. After all squares had been retrieved, the three men left the arena, Two Holes of Water—3 by Whitman featured sounds of typing and Vietnam destruction, plus films of trave1, penguins, a girl disrobing, girls standing before their reflections on a balcony, and close—ups of hands; there were also remote—controlled, plastic—covered cars. This work received some of the better reviews since its structure was more powerful.

Open Score by Rauschenberg employed electronic media in a manner

similar to Grass Field. The piece began with a tennis match between Frank Stella and Mimi Kanarek. An electronic “ping” at each ball/ racquet contact was amplified to the audience; then the light dimmed and the tennis game continued as a series of sounds only. The next section of the work involved 300 people who entered the darkened Armory and were introduced on audio tape as their images were broadcast on three large, closed circuit television screens. Electronic media was used in an ironic way in Open Score because the media were capable of telling the audience something they could not see in front of themselves; the secret was that the television camera operated with infrared light. Rauschenberg presented his work again at the end of the festival, the second time without the taped introductions. It seemed that art and technology had suffered a temporary breakdown because one of the engineers had accidently erased the tape.[156]

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[156] Kirby, Art of Time , pp. 130-131 and Hering, Ibid., pp.36-40.

Chapter Four

Recent Developments: 1967-March 1972

I. Multiscreen Presentations

By the end of 1967 the world was well aware of the concept of multi—media, largely due to a misunderstanding. There were over 100 films of diverse sorts shown at Expo 67,[157] and since many of these were multiscreen presentations in elaborate pavilion settings, the fifty million visitors to the Fair [158] certainly saw much in the way of multiscreen spectacle. In addition, the news media gave more pictorial coverage to the multiscreen wonders of Expo 67 than had been given to previous Fairs, so multiscreen now had a truly international audience. Due to the vague generalities of popular culture, multiscreen easily became "multimedia" and the phenomenon spread far beyond its previous habitations. As far as Expo 67 events are concerned, only the old standby,
Laterna Magika, is classified as multimedia by this author Still, a couple of the multiscreen presentations demand descriptions because of their massive scale.

Without a doubt, the most grandiose multiscreen show at Expo 67 was The National Film Board of Canada’s theme pavilion, Labyrinthe. Roman Kroiter directed the project which was designed by Colin Low, coordinated by Hugh O'Conner and constructed by the Montreal architectural firm of

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[157] Judith Shatnoff, "Expo 67-A Multiple Vision," Film Quarterly, Fall 1967, p. 2.

[158] Frederick P. Pittera, “Fairs and Shows,” Britannica Book of the Year 1968 (Chicago, 1968), p. 338

Bland, Lemoyne, Shine in cooperation with the engineers N. J. Pappas and Associates and R. R. Nicolet and Associates. The building was five stories of poured concrete, hollowed out by the three viewing chambers and partitioned passageways that gave good directional movement, even though a feeling of confusion was created. Kroiter pointed out that the metaphor of the exhibit could be explained thusly: the building structure is the world and a visitor's path through it is his thread of life. Life's experiences are represented by the images viewed in the theatres, and the Minotaur to be encountered in the final chamber is the individual limited nature of each viewer.[159]

Visitors (over a million) often stood in line outside for hours before moving through the three chambers of Labyrinthe. Automated control of the entire production allowed thirty shows a day for six months, with no more than three hours of show time lost during the entire operation. Chamber I was a tear—shaped room with four balconies on either side of a floor screen 30 x 20 feet in area. At the large end of the room, another screen of identical size rose perpendicular to the floor screen. Sound came from five large speakers behind the screens and 288 other speakers spread throughout the balconies The projectors (one of which had to be suspended from the ceiling, the other laid on its side) were Century JJ—3's, with Hughes 5 KW Xenon lamp housings and Panavision—Steinhei1 95mm lenses for showing the 70mm, 20—minute dual film.[160] In this section, the hero (youth)

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159 Labyrinthe, Technical Bulletin Number 8, The National Film Board of Canada, March 1968, pp. 1—6.

160 Ibid., pp. 7—8.

grew strong with rock bands, surfing and motorcycles but then was confronted with the "monsters" of the world — freeways, riots, gambling, drunkenness.[161] The screens alternated between contrasting images and panoramic extensions of the same scene. Size and angle of the screens often gave a feeling of enormous depth.

Chamber 11 was an M-shaped maze of mirror prisms and thousands of tiny, colored, carefully—programmed lights. Five channels of various sounds also bombarded the chamber, while the sixth channel of the master track carried the light control information. Chamber III was as equally impressive as the first two, with five large screens arranged in a cruciform pattern.

The five screens of 35mm film were shot with a special yoke of five Arriflex cameras mounted and synchronized together with a National Film Board—designed DC interlock. Small film magazines (200 feet) were used for the location shooting, so that the lenses could be placed only 9 1/2 inches apart. Century WMDA 35mm projectors with Hughes 2.5 KW Xenon light and Kollmorgen 2—inch and 2 1/4—inch f 1.9 lenses were used for projection of the 5—screen film. The lenses were also equipped with water cooling devices to permit 10—second still framing (at which point the film was closely approaching the effects of film and slides used together) The producers admit that the multiple screen format was chosen over a single 70mm print because of economic and technical considerations; so multiscreen in this case was the product of necessity, not invention. [162]

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[161] Shatnoff "Expo 67," pp 8-9

[162] Labyrinthe, Technical Bulletin, 10-12.

Chamber III's 5—screen film showed the meeting and conquest of the "Minotaur" in the form of a crocodile killed by Ethiopian hunters. Further progress of the film contrasted various situations-old and young, primitive and technological cultures and then showed a universal unity of man through his rituals of birth, life and death. Transitions from one scene to the next usually came through just one or two screens introducing the new images while the old scene continued on the other screens, The cruciform was used in most of its possible combinations-single screen shots, vertical and horizontal panoramas, 5—screen coverage of one scene, different images on some or all screens.[163] Labyrinthe's display of multiple screens is highly appreciated by this author as an advancement over multiscreen panoramas, but the concept of multimedia was not really brought into this performance. As with the Eames—Nelson lecture of 1953, Labyrinthe's cruciform was a multiscreen equivalent of what was intended to be a single-screen film.

The other superstar from Expo 67 was the Czechoslovakian Diapolyekran exhibit, designed by the old master Josef Svoboda. Literally the name of the exhibit means "transparency multiple screen," which describes quite well this mammoth multiscreen slide show entitled The Creation of the World. The total screen area of 22—by—32 feet contained 112 2—foot square cubes, arranged in fourteen vertical and eight horizontal rows. Within each cube were two Carousel S—AV projectors (made by Kodak AG of Germany) mounted one above the other. Special shutters on the projectors allowed instant dissolve

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[163] Ibid., p.10 and Shatnoff, "Expo 67" pp. 9-11

from one machine to the other so no cube screen was ever blank for a second except by design. This 15—minute show used between 12,000 and 15,000 slides, with fourteen new images appearing every second on the average. The cubes could even move up to 2 feet out from the wall to increase the depth of the display.

Control of this exhibit was almost too astounding to believe. All signals originated on a 35mm film frame with 840 opaque and transparent dots on each frame. Light passed through the proper dots and struck two parallel banks of 840 photoresistors. Two banks of these were employed to insure against interference from stray light. Of these 1,680 photoresistors, 1,568 were needed to control the show and the rest operated the control system itself, Light striking a cell decreased its resistance which triggered the proper switch of a possible 1,008. The switch activated the necessary parts of the 240 miles of circuitry which changed slides and moved the cubes. Diapolyekran’s master film ran at 25fps and issued up to 19,600 commands per second; the entire 15—minute show (mostly mosaics of several scenes, but occasionally one full—screen image) took 5,300,000 commands to run properly. Kodak's equipment proved amazingly durable for 164 the 183 days of 15—hour day presentations.[164] The effect of this display was simply overwhelming to the audience. Later, stage audiences were treated to the Diapolyekran technique in two of Svoboda's plays, The Suzanna Play (see Appendix Il) and The Soldiers, (see section III, this chapter).

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[164] Horst W. Staubach, "Czech this Show!” Modern Photography, August 1968, pp. 38-39.

Following the success of Expo 67, the next major collection of multiscreen events where at Hemisfair in San Antonio, Texas, from April 6th to October 6th, 1968. As was the case with the 1964 and 1967 Fairs, most multiscreen works were remakes of previous developments. Laterna Magika was the only example of the format repeats that qualified as multimedia, but one new exhibit did go beyond the scope of ordinary multiscreen. The Institute of Texan Cultures (the largest structure at Hemisfair, naturally) featured a 20—minute mixed media show that seemed to be a cross between the Brussels Polyekran show and the various 360° environmental presentations that had been cropping up since 1955.

A 45—foot high, 90—foot diameter dome served as the projection area for this narrative about the multiplicity of Texas cultures, produced by The Office of Cordon Ashby, San Francisco. Rectangular forms of various sizes faceted the entire dome; sixty—five of these surfaces were plastic screens stretched over aluminum tubing, varying in size from 4 x 5 feet to 12 x 16 feet. Six 35mm Simplex projectors, ten 16mm Bell and Howell JAN projectors, thirty Carousels with Xenon light sources and a 4—track Ampex sound system were used to present the show. As is the normal procedure in presentations of such complexity, the entire show was automated and controlled by computer and cues on a channel of the audio tape. Six months of shooting, four months of editing, and one million dollars worth of production and installation costs were required to produce this gem of Hemisfair.[165]

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165 The People of Texas." American Cinematographer, August 1968, pp. 596-598, 604.

Whether or not The People of Texas was a multimedia presentation, in the truest sense of the word, is open to debate. Its content could be regarded as a documentary, but at least the Texan Cultures show tried the effects of still and moving imagery in an environmental setting; this was a most welcome relief from the 360° panoramas of previous displays. Dramatic narrative in a multimedia, total environment has been an unrealized dream since the days of Piscator's Total Theatre plans. The People of Texas came close to realizing that dream, but the content was weak from a dramatic standpoint. Surely this facility could someday be used for solid, multimedia, environmental narrative; such a move would be a great advancement in the evolution of multimedia as an art form as well as a method of communication.

Early February of 1969 marked the occasion of the 3—day "Crosstalk" festival in Tokyo. This gathering, described by Stan VanDerBeek as the "first international-multi-media, musical-Japanese-American Festival,"[166] was held in the basketball gym designed for the 1964 Tokyo Olympics. VanDerBeek's entry was Found Forms, in which assistants carried seven 8—by— 12—foot screens around the basketball court while he followed them with projectors mounted on swivel bases. Besides VanDerBeek, other American artists who participated were Cordon Mumma, Robert Ashley, Salvatore Martirano, and John Cage-who presented a work for prepared pianos, electronic instruments, and a 10—channel sound system. Cage's score was written on

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[166] Stan VanDerBeek, "Notes from Stan VanDerBeek," Film Culture, Winter and Spring 1970, p. 39.

The New York Times, February 5, 1969, p. 39,

plywood blocks, and the indentations in the wood grain also indicated musical elements. Japanese artists in the festival included Toru Takemitsu, Toshi Ichiyunagi, Joji Yuasa, Toshi Matsumoto, Takahiko Iimura, and Tatsumi Hajikataø Hajikata% contribution was a work for one dancer, eleven old women, ten crows, and a giraffe, done to George Caciappo's "Holy Ghost Vacuum or America Faints"[167]

Also in the spring of 1969, true multimedia emerged at the high school level at Henry H. Gunn Senior High in Palo Alto, California. This is not to say that all high school "multimedia" before 1969 was merely illustrated lectures, but accounts available to this author indicate that the Palo Alto event was the first reported example of true multimedia in a public high school. The production was coordinated by a faculty member, Richard M. Glendening, and presented three times to an enthusiastic crowd of 1800 students, teachers, and parents at each showing. Man and Power was the theme of the presentation, which was divided into four segments: (1) The Creation (2) Power Conflict (3) Renewed Hope (4) Love and Brotherhood. Music from twenty—three different selections composed the soundtrack; among the cuts were Block's "Senfonca Breve," "Where is Love," from Oliver, theme music from the James Bond film YOU ONLY ONLY TWICE, rock by the Iron Butterfly, folk by Simon and Garfunkle, and an ending segment of the Beatles' "All You Need is Love." Projection equipment used included two slide projectors, six film projectors, and two overhead projectors to do liquid abstractions. These

[167] "Festival Blending Music, Dance, Drama and Film Opens in Tokyo" The New York Times, February 5, 1969, p. 39,

overhead abstractions were used mostly in the Creation section, along with two films of germinating seeds. Two films of missels and space launches were shown in the Power Conflict section. Other projections used were a 6—minute animation film of thermonuclear effects on life forms (while this film, A TERSE VISION, was shown everything else except the soundtrack stopped), a film of constellations, and 150 slides of various subjects photocopied from books. Films were often shown simultaneously and reversed if more time for projections was needed.

Section three featured a choral reading from Kahil Gibran's The Prophet (augmented by close—up slides of nature) and section four used slides of students plus other slides of women, children, couples, and families represented in famous paintings and sculptures. The performance ended with the Beatles' music and a 10-minute ballet duet-an unusual element to be accepted by a high school audience.**168**

Recent uses of multiscreen have not brought significant advances in the art/ communication form. As stated earlier, the most promising hope is for the development of a Polyekran—type narrative drama. The exhibit which is still in operation at the Institute of Texan Cultures in San Antonio, and the Movie Drome developed by Stan VanDerBeek seem to be the best present answers to the question of multimedia's next evolutionary stage. Yet, the former is used like a travelogue and the latter still depends too much on sensory bombardment. Obviously, the next progressive step is not being taken amid public fanfare, However, one group of artists

168 Richard M. Clendening, "Psychedelic Multimedia Happening," Scholastic Teacher, (insert in Senior Scholastic) April 18, 1969, pp. 18-19.

New York City may have already crossed into a 1970's concept of multimedia. This group operates a television environment known as The Global Village.

In September 1969. John Reilly and Rudi Stern started the experimental Global Village in a Manhatten loft. Using the television monitors in a 360° wrap—around configuration, Reilly and Stern showed various multiscreen video advancements. Among other things shown were interviews with Abbie Hoffman and Gerry Rubin, abstractions, a couple making love in a New Jersey meadow, and Martin Luther King juxtaposed with Budwiser Beer ads. In early 1971 the Global Village moved to 91 Second Avenue (near the now—defunct Fillmore East), and set up a circle of twelve monitors, half of them for color. The first production in the new location was The Battle of Algiers, which mixed original film with films of hardhats, students, and police. At last report Global Village remained the only outlet for non-commercial video experiments, and even this one oasis was in financial difficulty.[169] If allowed to survive the rigors of the present economic drought, Global Village should produce some excellent advances in the areas of environmental projection and multiscreen narrative.

11 Environmental Theatre

Hopefully no one with religious leanings will be offended by the inclusion of multimedia worship services in the Environmental Theatre section. The implication is not that worship is a form of theatre (although ritual is considered the antecendent of theatre) but rather that in multi— media worship, a presentation was made for an audience and this presentation

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[169] Chloe Aaron, "The Video Underground," Art in America, May—June 1971, p.75,

sufficiently altered the audience's awareness of its usual worship environ— ment. Slides and film have been used in religious services since the early part of this century,**170** and undocumented multimedia worship services were conducted from the mid—1960's.

One of the earliest examples of multimedia worship to be cited in print was a Friday night Sabbath service held by John Cage in Spring Valley, New York, in 1967. In late July of that year, Rabbi Louis Frishman of Temple Beth El in Spring Valley allowed Cage to present his contemporary service. Rabbi Frishman, in conjunction with Rabbi Robert Schreibman of Temple Beth Sholom (New York City), aided Ken Dewey and the other participants in pre— serving the essence of the Sabbath service in the radically new form. The entire service lasted 90 minutes, beginning with a brief Reform service followed by film, slides, and taped sounds of the Lower East Side Jewish ghetto in Manhatten. The famous Garment District was shown as it looked in both 1967 and in the early 20th century.

Frances Alenikoff opened the art part of the service by lighting a candle as LaMonte Young played long, somber notes on the organ. Ms. Alenikoff then danced a Sabbath prayer, accompanied by Felix Fibich, while Gershan Kingsley's electronic music played. Cage read the sermon (quotes from McLuhan) as Laura Foreman danced around the pulpit and the doors of the ark. The service was concluded with taped music, flashing lights, and prayers by the rabbis. Questioned afterwards, the congregation had mixed feelings about the affair but the rabbis were quite pleased.**171**

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170 William L. Roger and Paul Vieth. Visual Aids in the Church (Phil— adelphia: The Christian Education Press, 1946) entire book.

171 Richard F. Sheppard, "John Cage Holds a Jewish Happening," The New York Times, July 24, 1967, p. 21.

A distinctly different type of Environmental Theatre was used in 1967 to protest the Vietnam War. In New York City, the "Angry Arts Against the War in Vietnam Week" (January 29—February 5) included three performances of American Atrocities in Vietnam. Second Avenue's Gate Theatre served as the first locale for this underground theatre work, while the later versions were done at the former Courthouse at the corner of Second Avenue and 2nd Street. Electronic media used in the play were Alain Resmai's

1950 film about Nazi concentration camps, NIGHT AND FOG (color and black and white, 30 minutes), slides of soldiers and peasants in Vietnam, slides of anti—war art by Goya, Bosch, etc., and audio tape sound effects.**172** That same year, the New Orleans Group presented Ionesco's Victims of Duty and the electronic media (film, slides, and audio tape) continued the show after the actors were finished. Some of the audience remained, enthralled by the media presentation, for an hour after the performance was over.**173**

Since many Environmental Theatre artists consider audience participation to be a cherished goal, they should certainly have been impressed with the format (if not the content) of Expo 67's Kinoautomat. Raduz Cincera, another talented Czechoslovakian director, created this film which was structured by audience vote. Five times during the film, ONE MAN AND HIS WORLD, the film was halted each time at a crucial point in the absurd melodrama and a live emcee asked the audience to vote on which course

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172 Sau1 Gottlieb, "American Atrocities in Vietnam: A Documentary Environment the Drama Review, Spring 1968, pp. 168—178

173 Richard Schechner, "6 Axioms for Environmental Theatre, The Drama

Review, Spring 1968, pp. 41—64.

the action should follow. Buttons at each seat and a blinking tally board made the process easy and entertaining. With all twists of the plot, thirty— two outcomes could result from the same basic film, so the mood of each audience had a direct bearing on the content of the film. Success at Expo 67 led to an inclusion of this theatrical form at Hemisfair, where enthusiastic crowds again filled the theatre. Cincera remarked about his production:

> What we are doing here really is making a sociological and psychological study about group behavior. We are learning that people decide not on a moral code but on what they like to see.

At least passing mention should be made of the Michael Butler Broadway production of Gerome Ragni and James Rado's "American Tribal Love Rock Musical," Hair. Beginning as an 8—week sell—out show at Joseph Papp's New York Shakespeare Festival in Papp's Public Theatre in 1967, the show achieved enormous international success after its opening on Broadway (April 29, 1968) at the Biltmore Theatre.**175** Hair brought no milestones to New York; environmental Theatre had been done by Reinhardt in 1924, and even another electronic mixed media rock musical (Your Own Thing-an adaption of Shakespeare's Twelfth Night with six screens of slides, film, and abstract

projections) opened on Broadway three months before Hair. The importance of Hair lies in the international publicity and acceptance that this play received, thereby enabling such devices as film projection and environmental

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174 Perrin, "Projected Images in Education," p.53

175 Hair program notes, (Natoma Productions, Inc., 1969), p. 12.

performing to reach a larger audience than Reinhardt and the Epic Theatre masters ever achieved. Contemporary mass communications obviously aided Hair in becoming a monumentally successful vehicle; a vehicle which carried many aspects of the New Theatre to a general audience Compared to most Happenings, Hair still looks more like traditional theatre, but Hair was radical enough for a large portion of its supporters. It took many of its viewers further than they had ever been from ordinary legitimate theatre, thereby making them aware of the possibilities that the underground had accepted for years. The belief that Hair's slide and film projections (which were not even used in some traveling productions) constituted multimedia furthered the mass consciousness of this phenomenon also.

Summer 1968 brought a strange blend of rock discotheque atmosphere and avant—garde music at New York's Electric Circus. Each Monday night for most of that summer, a series of "Electric Ear" concerts was given at the Circus, featuring such serious musicians as Mel Powell, Pauline Oliveros, Michael Sahl, David Behrman, William Russo, Lejaren Hiller, and Morton Subotnik.**176** Two pieces of interest to this report were Shelter 9999 by Alvin Lucier and Takahiko Iimura, and L.'s T.C.A. by Salvatore Martirano

Shelter 9999 began with four people in dark glasses making clicking noises like bats, followed by 45 minutes of taped electronic music and three screens of slides and film (much shot from newspapers) by Iimura.

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176 Dona1 Henahan, "The Avante—Groove: We're All in It," The New York Times, July 7, 1968, section II, p.11; Donal Henahan, "Cantata Warms the Electric Ear,"The New York Times, August 6, 1968, p. 26; and Donal Henahan, "Computer Tunes Heard at 'Circus,'" The New York Times, August 20, 1968, p. 32.

The final 15 minutes consisted of brilliant white lights flashing off and on; afterward, Lucier and his colleagues departed blowing conch shells.[177] Martirano's L.'s G. A. (Lincoln's Gettysburg Address) is an event "for gas masked politico, helium bomb, three 16mm movie projectors, and two—channel tape.[178] In addition to Martirano's electronic music, there were films by Ronald Nameth and poetry by Michael Holliday. This piece was one of the few Electric Ear works with a strong narrative content, rather than an abstract performance nature.

Another worship service to be considered in this section occurred during October 1968 in the University of Michigan (Ann Arbor) Episcopal Canterbury House. Chaplin David Burke presented a multimedia Sunday service as the culmination of a seminar on contemporary worship. This student center was used during the week as a coffeehouse, so the surroundings were already familiar and comfortable to the participants. Music was provided by a folk trio, who used both acoustic and amplified instruments, Additional sound came from tapes of the Beatles "Flying" and "The Fool on the Hill" (a song frequently interpreted as referring to Jesus) Posters, theatrics by the visiting San Francisco mime troupe, and 8mm film by Craig Hammond all combined to give the participants a meaningful ritual celebration.[179] Surely the most magnificent example of Environmental Theatre ever produced was John Cage's 1969 HPSCHD. Presented on Friday, May 16 of that

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177 Theodore Strongin, "Noisy Crew Brings 100th—Century Life to Electric Circus," The New York Times, August 13, 1968, p.44.

178 Youngblood, Expanded Cinema, p. 378.

179 Myron B. Clay, Jr., Multimedia Worship (New York: The Seabury Press, 1969) pp. 6—7, 37,

year in the University of Illinois' 16,000 seat Assembly Hall, the 5—hour event was a marathon of sight and sound. HPSCD is the computer abbreviation for harpsichord, an instrument that enjoyed maximum use that night. Seven of these amplified harpsichords produced excerpts from Mozart that would have astounded the composer. Three of the musicians played fixed versions of Mozart's 18th—century “Introduction to the Composition of Waltzes by Means of Dice,” (a chance composition obviously admired by Cage). They were each allowed to play the sections of their solos in any order they chose. Neely Bruce and Yuri Takahashi played fixed collages of music from Mozart to the present, and David Tudor offered “computer print—outs for 12—tone gamut.” Phillip Corner was allowed to play any Mozart he wished; in addition, all of the musicians were free to play any part of any other musicians' solo.

As if the sounds from these seven instruments would not be enough to fill the huge auditorium, Cage added taped electronic music composed by himself and Lejaren Hiller-on fifty—two separate sound systems encircling the rear seats of the Hall. Each speaker had its own tape deck and amplifier, so the volume could be altered continuously on all fifty—two compositions Since the electronic pieces involved octaves of five to fifty—six tones, the variety from the loudspeakers was endless and chaotic.

Sound was prolific at this performance, but by no means dominant. Literally thousands of visuals bathed the place in light and form. Each of the forty—eight large windows in the building were covered with translucent plastic so that projections could be shown on them and seen from

both inside and outside. Around the exterior of the building were fifty— two slide projectors to keep the windows filled with images e Eleven 40— foot plastic screens ringed the center of the performance space; over these central screens hung an enclosing screen 125 feet high and 340 feet around. Ronald Nameth programmed 100 films and 8, 000 slides concerning the concept of man’s ever-increasing awareness of his position in the universe-from cave paintings to space walks-the immensity of this presentation had a universal impact about its very nature, a nature that fit Cage’s ideal system of anarchy. Cage is a believer in the cooperation of many to produce a whole, rather than the wielding of power by one to direct all elements. HPSCHD certainly exemplified the mind of its creator.[180]

III. Electronic Media and Performers

Many psychedelic celebrations were held in New York City (and surely other places as well) in late 1966 and during 1967, These festivities used film, slides, dancers, and amplified music to achieve states of mind—expansion (usually the festivities were aided by drugs, but the media were quite stimulating in themselves) Some of these techniques found their way onto the legitimate stage in 1967. Astarte, presented by the Joffrey Ballet in the New York City Center, was an interpretation of the love—goddess myth in terms of a psychedelic experience, utilizing electronic media. Trinette Singleton and Maximiliane Zamosa coordinated the dance,

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[180] Youngblood, Expanded Cinema, pp. 374—378; and Richard Kostelantz, "They All Came to Cage's 'Circus’” The New York Times, May 25, 1969, section II, p. 23.

the Crome Syrcus provided rock music, Gardner Compton made films, Thomas Skelton constructed kinetic scenery, and Midge Mackinzie supervised the entire project.[181] Also in 1967 the Boston Opera Company utilized the psychedelic slide patterns of Jackie Cassen and Rudi Stern in a presenta1tion of Stravinsky's The Rake's Progress.[182]

By May of 1969 the psychedelic experience reached the stage of the Seattle Opera House in a 40—minute work called Mantra, conducted by Henry Holt. Title III of the Puget Sound Arts and Sciences Program sponsored this modern operatic work, which featured six dancers, three opera singers, four light artists, an amplified rock trio, a jazz trio, a 25-piece orchestra, and three 200—pound fiberglass circles. Mantra was composed by Peter Phillips and choreographed by Mary Statone. The Retina Circus provided the dazzling light show, while the fiberglass sculptures were conceived by Doris Totten. Generally, the reaction of the Seattle audience to this work was positive, especially among the younger viewers.[183]

In the last twenty—five years, Josef Svoboda has designed nearly 400 stage productions-many of them done as part of his job as Chief Designer and Technical Director of the National Theatre in Prague. His designs for these plays include some of the most innovative work in the history of the theatre, with these facts in mind, it should come as no

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181 Masters and Houston, Psychedelic Art, p. 146

182 Ibid., p.34.

183 Raymond Erickson, “Seattle Goes Psychedelic,” The New York Times, May 18, 1969, section II, p. 19.

wonder to the reader that Svoboda appears on these pages as often as Cage. Another Svoboda play, The Soldiers, done in Munich in March of 1969, will now be elaborated.

The Soldiers, a modern German opera by Zin-merman, incorporated the wall of projection boxes known as Diapolyekrane For this play, the scale of Diapolyekran was reduced from the level of Expo 67 (thirteen screens were used instead of 112), but the size of each projection box increased from 2—feet square (the Expo dimensions) to different sizes up to 12—by-18 feet. These screens slightly overlapped, and two large boxes for actors were incorporated into the screen cluster. Front projection screens could be pulled across the front of the acting boxes, thus adding two more projection surfaces to the thirteen rear—projection screens, all surfaces used only black and white slides, but color film was used on three of thescreens.[184] Svoboda said the visuals presented “a collage of military life from Rome to the Franco-Prussian War in confrontation with World War II and Vietnam.”[185] Such effects as the Goya etchings on the horrors of war juxtaposed with contemporary war tragedies were brought to a climax as the screens moved off the stage to reveal a huge, flashing, screeching war machine" moving through the darkness toward the audience.

One final work to be discussed in this section was a recent production of the world’s first rock opera, Tommy. Peter Townsend of The Who-an English superstar rock group-aided by the other members of his

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184 Burian, Sceneography of Svoboda, pp.95—966

185 Burian, “Josef Svoboda,”p. 142

talented quartet, wrote Tommy in early 1969. Throughout the rest of that year and into 1970, The Who performed their creation in England and the United States. Generally, the story line (a strange Messiah tale of a deaf, dumb, and blind boy who became a pinball champion) was carried by projections and a minimum of acting. Later productions of the work were done that did use actors in addition to the musicians; one of the most exciting versions of the opera was done by the Drama Department of Memphis State University.

Tommy ran from October 31st to November 13th, 1971, at Memphis State, with enthusiastic audiences for the entire two weeks. Keith Kennedy, who directed Memphis State's successful version of Hair, was in charge of Tommy as well, His stage was a giant tarot card which extended out into the audience; a large box at the rear of the card—platform served either as a backdrop or as another platform for actors. Behind the box was an equally large screen which was used as a front—projection surface for films, and a rear projection surface for slides. Performers could also do shadow play behind the screen when it was back lighted. A rock band performed the score, while neon sculptures of word and symbol fragments flashed all around the auditorium. When this show was originally done by The Who, the emphasis was on the rock—concert quality of the music; at Memphis State the visual elements (including the performers) balanced the dramatic force of the music. The opera ended with the failure of the hero's Movement, and seemed to pose a final. question of "what’s next? "**186**

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186 Personal conversation on November 21, 1971, with Gil Bleau, who was a consultant for the Memphis State Hair tribe and who personally observed the version of Tommy described above,

IV. Environments

Following the striking example set by the USCO electronic media Environments, other artists made eye—catching electronic displays in the late 1960's. One of the better specimens of this form of multimedia was Otto Piene's 1967 work, The Proliferation of the Sun. Building on his experience as one of Europe's most accomplished Happeners, Piene added spectacular use of electronic media to a Happening format to produce Proliferation. The piece was done in New York first (twenty performances in Aldo Tambellini's multimedia theatre, The Black Gate), and was then presented at the Kunst halle in Nuremberg. Accounts of this show are sketchy, but it used about a dozen projectionists, 8,000 slides, microphones, audio tape sound, bal— loons, and compressed air in a 35—minute performance situation. Through all of this, the spectators laid on the floor, absorbing the bombardment.**187**

Stan VanDerBeek had been involved in environmental projection for some of his entries at the New Cinema Festival I in 1965, but in 1968 he surpassed the scope of his previous auditorium environments. While serving as a film artist in residence at Colgate University (Hamilton, New York) in March of 1968, VanDerBeek commandeered the entire art building for a massive multimedia work called Feedback. All the windows in the building were covered so that the entire structure was darkened for projections The day—long Environment utilized every light projection machine that VanDerBeek could secure.**188**

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187 Henning Rischbieter, Art and the Stage in the 20th Century (Greenwich, Connecticut: New York Graphic Society Ltd., 1968), p. 248.

188 VanDerBeek, "Notes," p. 40.

An event which helped further public consciousness of multimedia (intermedia) was the Intermedia ‘68 festival. This collection of environments, sculptures, and activities was cosponsored by the New York State Council on the Arts and the National Council on the Arts. During the spring of 1968 it toured college campuses in the Northeast and Midwest. John Blockman Associates produced the eleven events which were displayed first at the State University of New York at Stony Brook, beginning on February 15th.

When the show came into New York City, it was held at the Brooklyn Academy of Music in March 1968. Among the events were Dick Higgins' Dance Music #2, in which the participants waved incense sticks; Tambellini’s Black Zero; a song, dance, and piano act-Word, Dance, Music by Al Carmines, Renny Carlip, and Aileen Passloff; Carol Schneeman's Illinois Central Transposed, a theatre piece with slides, dances and audience participation; Elm City Garage Works, a Happening by Ken Dewey; a dance presentation by Trisha Brown Schlichter; an electronic audio concert by Terry Riley; Allan Kaprow’s Round Trip, where people rolled a large paper ball from each end of a tunnel to meet in the middle (another Kaprow contribution was Overtime, in which 200 feet of fence was moved 1 mile through a woods); and Les Levine's Photon: Strangeness 4, an Environment of wires and television cameras with two wires which gave off 1,000 volts of electricity when touched together-just enough for a mild shock that could be passed among the participants.**189** By now the reader has surely noted

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189 Grace Glueck, “Brooklyn Is Host to 'Intermedia ’68’” The New York Times, March 95 1968. p. 22; and Elenore Lester, “Tune In, Turn On-Walk Out?" The New York Times Magazine, May 12, 1968, p. 30; and Howard Junker, “Mixed Bag” Newsweek, March 18, 1968, p. 112.

that this festival's name had little to do with the substance of the events. However, one display that did qualify as true multimedia (or intermedia) was the Ten—Foot Fanflashtic by USCO

Jonathan Ayers, USCO's aerodynamics expert, had to use three months of experimentation and $6,000 worth of test and final equipment to bring the project to completion. The original concept called for a large cylinder full of Dow Chemical Plastic—Pak (a packing material somewhat akin to plastic elbow macaroni) and fans to blow the material around in the cylinder, As the idea grew, a support apparatus with an aluminum floor was added around the cylinder to hold forty participants. Many black, white and color balloons were used so that the entire project would hover above the ground while four strobe lights flashed with twenty flashes per second in various combinations to provide fifty—five possible silhouette patterns, A 20—minute sound tape of rock and classical music plus babies crying and other sounds looped continuously as people rode the Fanflashtic (electric fan, flash of strobe lights, tick off and on of lights)Since people only stayed about 15 minutes at the exhibit, most never realized that the sound was a loop. Audience response to the work was quite good, especially from the young.[190]

Certainly, the most extravagant multimedia Environment to be con— structed in recent years was the Venezuelan exhibit “Imagen de Caracas,” presented in that country’s capital city in 1970. Two years of construction were required to make this massive addition to the city’s special display site Despositivo Cuidad (Mechanical City)-celebrating the 400th birthday of the city.

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190 Lester, "Tune In, pp. 30, 68—69,

"Imagen de Caracas" was a full-acre building supported by sixteen 78—foot steel columns, four of which formed a center space of 9,620 square feet containing a stage. Eight 35mm film projectors were paired on the four columns and projected film in all directions, but not as an attempt at coordinated 360^0 cinema. Slides were projected from forty-eight projectors suspended from the ceiling of the building. Each projector carried a separate message content in its slides so that no formal narrative was made from all these images. Instead, there was a complete Environment of information for each viewer to process individually. Cross—reference symbols were included among the different projections, though.

Eight box—like screens, 33 feet high and 65 feet wide, were spread throughout the building. These screens of tubular metal framing and reflective aluminum viewing surfaces were either portable or attached to the floor or ceiling. Other projection surfaces included forty—one geometric forms (cubes and rectangles, some with sides as large as 324 square feet) hung from the ceiling. Sound came from forty—six loudspeakers spread around the ceiling, plus several 8mm projectors which showed sound films. Many other lights, slides, and photo displays added additional information; live actors were even employed to emphasize certain film sequences. The audience was guided around the maze of activity by reflectors on the central columns and ascending wooden platforms that allowed people to see more of what was happening.[191]

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[191] Inocente Palacios, ″Imagen de Caracas,″ The Drama Review, Winter 1970, pp.130-132.

A statement by the participating artists described much of the content of the huge display on Caracas' violent history with a quote from Antonin Artaud.

> Great social events, conflicts between races or between societies, natural forces, intervention of fate, magnetism of hazard were manifest there, whether directly through the agitation and gesture of characters whose stature was of gods, heroes, monsters of mythic dimensions, or directly, through material manifestations [192]

In April of 1971 the city of Nuremberg also had a major celebration; the German fest was in honor of the 500th anniversary of Albrecht Durer's birth. Included among the many special displays made for that celebration was Josef Svoboda's Noricama-a 10—minute, 10—screen show about Nuremberg's history. His presentation was made in the great hall of Nuremberg Castle in conjunction with a display of graphics concerning the same subject. Svoboda's show featured five rectangular panels that together comprised a screen 13 feet high and 36 feet long. Any or all of these panels could move up to 12 yards forward, retaining their images. In front of the vertical five screens were four horizontal screens that could flip up to receive an image. Each panel in the display could show a separate image or part of one large image. Four—channel sound accompanied the presentation.[193]

February 1972 brought an Environment substantially different from the ones previously described. In Los Angeles, a group of twenty—six women.

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[192] Ibid., p. 133.

[193] Jarka BurIam, "The Scenic World of Joseph Svoboda," Saturday Review, August 28, 1971, p. 35 and Burian, Sceneography of Svoboda, p. 197.

artists transformed an old mansion into Womanhouse-a 17-room expression of the women's exasperation with their wife/mother/homemaker roles in a male—dominated society.

This exhibit was put together by the participants in the feminist art program at the California Institute of the Arts, the only program of its sort in the nation. About 4 visitors saw many striking displays that drove home the problems of female stereotyped roles. The sheet closet contained a mannequin embedded in the shelves, the kitchen was covered with sponge "fried eggs" (many of which resembled female breasts), and the staircase was topped with the front half of a dummy bride while the back half of the dummy was sunk into the wall at the bottom of the stairs. Hopefully the message of the Environment got across to the visitors, because the house has now been demolished to make room for apartments. **194**

V, Multimedia in Austin, Texas

Most of the events described up to this point have taken place in the traditional entertainment capitols, especially New York. This does not mean that these cities are inherently endowed with better artists, but it does indicate that events which occur in news media centers are more likely to be reported in national publications than events which occur away from these centers. Even the national news weeklies are New York—oriented, and seem to cover only political events on a broad scale. These coverage limitations present quite a problem to a researcher of a contemporary subject, such as multimedia. In an attempt to partially alleviate the problem, this author would like to present a report on the state of multimedia in Austin,

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194 “Bad-Dream House,” Time, March 20, 1972, p. 77.

Texas. All material in this section was gathered by personal observation and interview, since no published accounts exist,

Austin is what would be considered a small city, with about 300,000 population and no heavy industry. The main flow of commerce into the city is in relation to the state capitol and the main campus of the University of Texas (40 students), both of which have long been located in Austin. Currently there are two commercial media production companies in Austin (in addition to television and radio stations), both of which include "multi—media" in their offerings.

Neither of the two producers. Richard Kidd and Fred Miller is based in Austin because of the volume of local business; there are probably no more than a dozen demands for commercial mixed media presentations per year locally. Curiously enough, both men decided to work from Austin because they enjoy the location as a place to live. Telephone and airline connections enable them to reside in Aug tin while producing films, slide shows, and other types of media presentations for clients all over the country. This represents a changing trend in electronic media production, a trend that began in the 1950's with films shot entirely on location rather than in a Hollywood studio, Modern air travel and telephone communication has allowed producers to move away from New York and California without losing their competitive status. Austin is only one of many homes of nationally—oriented producers.

The University of Texas at Austin offers one of the few graduate programs in multimedia (within the Radio/ Television/ Film Department) in the country, and one of the first to graduate with a concentration in this field is the author of this study, as part of the course work involved in

preparing for this degree, the author conducted an experiment, in March and April of 1971, concerning the effectiveness of multimedia worship services. The experiment was undertaken to fill one of this researcher's many gaps in his knowledge of religious multimedia-a subject with a very tiny bibliography. To conduct the experiment, a 2—screen slide, film and audio tape presentation based on the rock opera, Jesus Christ Superstar, was made by this author and shown to a number of typical worship communities around the University of Texas. Several religious student centers serve this campus, but none of them make regular use of electronic media in the worship services Some of these centers had used some form of electronic mixed media shortly before 1971; these communities — Baptists, Lu— therans, Methodists, and Catholics (plus a university religion class and a graduate Communications seminar) were the ones tested since they would not be affected by the novelty of multimedia worship. Non—Christian religious groups were not tested, since they could not be expected to have the proper background knowledge to evaluate the content of the show.

The original hypothesis of the study was that the media presentation-an unorthodox look at Jesus and the Easter story-would be more readily received by people who had shown themselves to be theologically unorthodox by means of a pretest. Inconclusive results of the study showed some verification of the hypothesis, but every group tested showed vigorous enthusiasm for the presentation, no matter what the theological stand of the group. Even the most confirmed fundamentalists received the show well, indicating an entertainment factor which was judged separate from the con— tent of the show. As a matter of fact, the theology sections of the post—test

showed confirmation of pretest scores, but absolutely no correlation with the scores that rated enjoyment of the show. All this says that an entertaining show will be accepted even if its content is not; the value of that information is open to question. To some it would indicate that multimedia shows are good for the services, since they are appreciated by the congregation. Others would say that the entertainment value of a show does not justify its expense, if no reaction to the content can be utilized in the service. Whatever the results indicate, they are far from definitive because a procedural error eliminated all but nineteen of the roughly 300 subjects at the Catholic Student Center. This left a survey of 109 subjects out of a potential 400, so the researcher was reluctant to draw any

definite conclusions. The one result that did seem evident, though, was that the electronic media presentation was very welcome in the services in which it was incorporated.

Another facet of Austin multimedia that is unique for the national picture is the Experiment Theatre, the only one of its type in the nation. Multimedia theatre on a permanent, commercial basis originated in San Francisco in 1970 with the San Francisco Experience Theatre on Ghiradelli Square, this alternative to single—film theatres shows a half-hour sound, film, and slide travelogue of San Francisco for twelve hours daily. Another similiar theatre (owned by the same corporation) operates in Honolulu with a Hawaiian travelogue, and still another theatre of the same type is planned for New York City, while these facilities served as the model for the Experiment Theatre (a part of the Experiment store, a subdivision of the John

Roberts Corporation), they did not provide a model for the content The

basis of operation for Experiment Theatre is dramatic narrative multimedia, a contemporary alternative to the conventional film. Equipment available for the experiments in this 150-seat theatre includes four Kodak Pageant 16mm projectors, twenty Kodak Ektagraphic slide projectors complete with ten modified dissolve units, and Sony quadradial sound. All this gear is directed by a 24—channe1 computer/ sequencer built especially for Experiment Theatre.

Richard Kidd Productions prepared the first multimedia presentation for Experiment. This initial show was a 1—hour slide/ film/ sound piece called Keep Truckin!; basically, the story line concerned the life and problems of a Texas truck driver. Neither the production crew nor the theatre management was entirely pleased with the finished product, with technique problems and a weak story line being the most frequent criticisms cited.

Audience response and attendance were, likewise, much weaker than expected, At the time of this writing, continuation of the theatre depends on audience approval of the second presentation which opens on April 14th, Beyond, the second Experiment show, is a space—flight visual extravaganza with much actual outer space footage supplied by N. A.S A. Good response could possibly revive plans for other Experiment Theatres at ten other large university campuses around the country Failure of the early shows at Experiment would surely nullify the hope for more theatres, since the project was an economic gamble from the start. The future is impossible to tell at this juncture Someday soon multimedia theatres may be open nationwide, encouraging extensive development of the new- communication art; then again, multimedia theatres may be shelved as was Cinerama in 1939 to await some distant revival.

While this report was in its final printing stages, another mixed media event occurred in Austin, one that could be a first step toward a significant

development. Dr. Richard Byrne, professor of Radio/Television/Film at the University of Texas, directed a graduate production in making a 7-screen, 360° presentation called Threshold. This 12—minute show was an attempt at the same principle (dramatic narrative multimedia) as is being explored at the Experiment Theatre, but Threshold went one step further by putting the dramatic narrative in an environmental pro-jection situation. The show ran from April 4—8 at the annual, University-wide display festival, Showcase.

Threshold is loosely based on Joseph Campbell's Hero with a Thousand Faces, with just a touch of ideas from Isaac Asimov, the hero (Media Child) enters a junk shop where he views an old TV that sends him into confrontation with the archetypal gods of Hedonism, Academia, Science, Politics, and Religion. All these encounters which rock the audience with fast—moving slides and collages of sounds finally leave the hero with a mysterious "boon" which signifies his new—found confidence, knowledge, and achievement. While all members of the participating class deserve credit for the slide/ tape presentation, major honors go to Jim Sturdivant}

Guy Deuel, and Mike Hayde for the script; to Dr. Byrne for the photography

*Unfortunately for the development of multimedia theatres, Experiment has already proved to be a loser as this report goes to print, Beyond lasted only one week and was replaced by reruns of old films. From this author's standpoint, the Kidd productions were more to blame for the failure than the general concept of a multimedia theatre.

and to Lance Covington for the aerial planning. The quadrasonic sound was recorded and mixed by Bob Culbertson and David Ham. Coke Dileworth, Austin architect, designed the theatre and the projection system (a through-the-slit process, similar to Circarama).

It is impossible for this author to give an objective evaluation of Threshold, since he is so personally connected to the creators, any extreme of praise or damnation would have to be seen in the light of personal association with the show; suffice it to say that the presentation came close to living up to its intentions The narrative line was obvious, even though specific characters and sequences were more understandable from the program notes than from the actual viewing. Some criticism of image barrage would have to be tolerated, but the story was clear enough to take this show out of the realm of mere sensory stimulation. There was a narrative to be grasped, and it did come across in an entertaining, Clever manner. Possibly the most serious objection this author would make concerning Threshold is that the story had much potential for subtle elaboration which was lost by the brief over—simplified format. Only the bad aspects of each god were shown, giving the impression of a rather typical youth—rebellion attitude. Conceivably, this author has not made the connections of these typical protests to the concept of archetypes, but the criticism stands anyway.

Chapter Five

Concluding Observations

Many historical surveys end with a sum-nation of the major events and an optimistic prediction for the future of the subject. Since both of these elements were included in the Introduction of this work, it seems useless to restate them. A more worthwhile ending would have to account for the distain that many people currently hold f or multimedia, The author cannot help but feel a certain sense of protection for his pet subject as he becomes aware of frequent criticisms for mixed media productions. objections have been voiced in the business world:

> Multi—media has become a buzz—phrase; a term often given to a bunch of unrelated slides on three screens with noisy music and some philosophical statement from the people who put it all together.[195]

Other complaints have come from educators, this one from John Silber, former dean of the College of Arts and Sciences at the University of Texas at Austin and presently president of Boston College:

> McLuhanism is an intellectual miasma, many educators have embraced it, plunging headlong into meaningless— ness with light shows and multi—media extravaganzas on almost any subject.
>
> The formula is simple: turn on three speakers light up three screens, set a couple of strobe lights flashing; then, only Chen, begin lecturing in the midst of confusion and divisionary activity.
>
> In sharp contrast to orchestration, the multi— media faddists throw raw unordered data out at students This unhappy consequence of instant culture,

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[195] Leslie Buckland, "Communication Not Chaos in Multimedia," Audio-Visual Communication, November—December 1971, p. 9.

> this pursuit of simultaneous chaos is only an extreme for reductionism.[196]

Film critics have whittled away at electronic mixed media almost from its first inception. Avant—garde journalists have been quick to point out that most multiscreen displays at the World's Fairs have been devoid of significant content; in the same vein, critics from the popular culture journals have lashed out at non—narrative multimedia works (especially the products of VanDerBeek and USCO) for being confusing barrages of unrelated information.

All of this conflict and criticism is worrisome to this author, because he sees much similarity between the novelty appeal of multimedia and the appeals of such defunct novelties as Cinerama, films, Smellovision, Etc. The demise of these latter attempts at cinema expansion was due largely to lack of sufficient development: (1) producers of these novelty films were playing on stimulation factors that had no intrinsic relation to the content of their films, (2) viewers who were looking for either a good story or good cinematic art were disappointed with the superficiality of Cinerama, et al, Multimedia now seems to be drifting toward the same dangerous path. Information—overload presentations can be philosophically justified as being counterparts of real-life situations, but this is hardly reason to continue offering these information explosions to people who want comprehendible narrative content. Multimedia must become more understandable if it is to survive as an effective means of communication. The main problem to be overcome is the lack of knowledge about constructing a workable multimedia show.

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196 Mike Fresques, "Silber Asks 'Civilian G.I. Bill," The Daily Texan, February 12, 1972, p.

Too many people are mixing uncoordinated visuals and sounds for this criticism to be denied. Very often these misguided creators have never had any experience or training in using multiple elements for communication of an idea. Familiarity with single—image films or traditional lecture situations can be helpful in understanding multimedia, but training in these fields is not always enough to help cope with the complexity of multiple presentations. Specific training in multimedia can be valuable, but only if the instruction itself gives the student as much concrete information as is known about the subject. A multimedia course that simply allows students to mix sounds and sights and then evaluate each other's work is not enough to constitute proper training in multimedia. Such trial-and-error methods usually serve only to separate the students with inherent talent from those who are not so gifted. The instructors have failed all these people if no serious attempt was made to examine the whys and hows of the subject of multimedia. Possibly no beginning multimedia class should ever get to the stage of production without the class understanding why a multiple approach would ever be employed rather than a conventional single medium approach,

Training in such a subject as multimedia should be very intensive. Not only does a student have to be qualified as an operator of various types of equipment, he must also know how to compose his visuals and sounds so that his output is not confusing This requires knowledge of composition chat could easily occupy a semester's worth of design. Other necessary skills are the abilities to communicate an intended message, emphasize without overstating, persuade with tact, and understate, when necessary,

With all of this knowledge at hand, a student should be reasonably prepared for successful production, but an instructor would surely ask-and how can all these skills be taught effectively in one semester? The obvious answer is that they cannot be taught properly in such a short period of time without some previous foundations in all of these required areas. Multimedia should be taught as an upper—division course with prerequisites in communication theory and production (and basic design if this is feasible). Also, textbooks of some sort need to be written immediately so that each class will not have to reinvent Cineorama or Poly— vision. For knowledge on so vast a subject to be passed on to students only by word of mouth is incredible. This situation must be remedied.

A student of multimedia literally has to be a student of each medium he employs, since any element used without knowledge of its qualities and effects will probably distract from the coordination of the other media, included in the areas that a multimedia expert should master are sensory experiences-heat, cold, motion, darkness, glare, silence, loud noise, stimulating pleasure, pain. The eyes and ears of the observer are the senses usually exploited, but proper stimulation of the other senses could be enormously effective. Mastery of such diverse skills would surely lead a student up to the post—doctoral revel, but a person with such intense training would then be qualified to pass on substantial knowledge to upper—division undergraduates. Knowledge and professional training are the key words for the future of multimedia; if this field cannot adopt the rigorous disciplines of other serious areas of endeavor, then multimedia is destined to pass the way of previous undeveloped novelties.

Appendix I

Multimedia. ad.: using, involving, or encompassing several media.[197]

Since approximately 1961, the word multimedia has become a bona fide part of the English language, enjoying particularly frequent exploitation in the U.S.A. The word is used to identify events that range from serious theatrical experimentation to frivolous displays of multiple screens Probably the most common “multimedia presentation” consists of one, two, or three screens of slides with music or voice on audio tape. Even though there is no established body of authoritative literature on which to base any final evaluation of the term, it would seem that a brief look at the

usage of the word "multimedia" would be illuminating to a student of the subject. In 1961 the word Multimedia was included in the title of the Multimedia Instructional Laboratory, designed by the TelePrompTer Corporation for the University of Wisconsin. This college facility was, presumably, the first of its type (although similar operations had previously been installed by TelePrompTer at military bases) Throughout the 1960's more multiscreen/ sound laboratories were built in U.S. colleges and public schools; concurrent with this expansion of facilities, the term "multimedia" was with increasing frequency in education magazines. As a result of all this activity, the concept of "multimedia" enjoyed general acceptance at all levels of education by the late 1960. Unfortunately, the word often seems to have been applied very indiscriminately to virtually any use of audio—visual aids.

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[197] Webster’s Seventh New Collegiate Dictionary. (1969) p. 556.

Judging by the magazine terminology from various fields of American life, "multimedia" must have entered popular language from the education magazines. None of the business, religious, or popular culture periodicals which now make liberal use of “multimedia” used the term before 1961

The New York Times Index provides a good indication of the growth of multimedia. In 1966 there was one article concerning a mixed media event; this was listed under the heading of "Happenings”. By the next year, there were three ‟multimedia” articles under "Happenings" and one under "Communication”. 1968 was the great breakthrough since ‟Multimedia” gained its own category with almost twenty entries. The following year was a repeat success, but the last two years have shown a sharp decline in the number of "Multimedia" articles, with only about ten each year. Another major index, The Reader's Guide to Periodic Literature, had enough "multimedia" articles to warrant a heading for the subject in Volume 29 (March 1969—February 1970), However, “intermedia” made the Reader's Guide in Volume 28 (March 1968—February 1969).

“Intermedia” had been used by the Underground since the mid—1960’s to describe various New Theatre and Expanded Cinema events. The origins of "intermedia" are rather obscure, but the term was apparently used

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198 Dick Higgins claims to be the first to apply the word “intermedia” to events previously known as Happenings. Film Culture, Winter 1966

by avant—garde artists as a reaction against the commercially popular "multimedia

Definitions of intermedia include the following:

> Intermedia refers to the simultaneous use of various media to create a total environmental experience for the audience [199]
>
> .... a cross—fertilization of all the traditional arts-music, dance, theater, painting, sculpture, poetry, -with film and other technological by—products-Its goal is to involve audiences or participants in an experience on a direct, even visceral level.[200]
>
> "intermedia" art that exists between prevalent definitions or makes use of materials and concepts from two different disciplines.[201]

The above definitions show a uniformity in concept concerning intermedia; yet there seems little reason based on content of events to equate the "multimedia" of education and popular culture with the "intermedia" of the avant—garde. Nevertheless, many authors use either term to describe events of both types. Should the terms be considered non—interchangeable? Also, how should the various synonyms of intermedia terms such as cross media, Expanded Theatre, Expanded Cinema, and Total Theatre be treated regarding "multimedia?" The answer depends on the attitude of each contributor to the field a Some are willing to accept any term in order to prevent tension and facilitate communication; others, particularly individualistic artists, will cling to a pet phrase and totally disassociate their work from the general field of intermedia or multimedia.

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199 Intermedia Systems Corporation (Gerd Stern and other members of USCO) in Youngblood, Expanded Cinema, p. 348,**200** Lester, "Intermedia," p. 30.

200 Lester, "Intermedia," p.30.

201 Dick Higgins, paraphrased by Michael Kirby, in The Art of Time, p. 13.

As stated before, there are no real authorities to turn to for definitions or clarification. Semantic cooperation among participants is the only hope for coherency. There is obviously a distinct conceptual difference between the multiscreen works of the education and popular culture worlds and the intermedia theatre pieces which employ projections and sound in some performance context. Further, it does not appear that either "multimedia or "intermedia" currently is used as a broad enough term to cover both sides of the topic.

Rather than add to the confusion by coining some new version of Gesamtkunstwerk, this author calls for a return to the older term, mixed media, as the super—category word. All that is needed is the addition of the prefix "electronic" to indicate mixed media works that utilize electronic media. Almost all of the other terms listed above indicate some form of New Theatre and do not necessarily connote any use of electronic devices; the exceptions are Expanded Cinema and cross media, both of which were rejected as arbitrary decisions by this author. Of those two terms, the former refers to many other types of communication besides mixed media, and the latter sounds a bit clumsy.

Admittedly, both multimedia and intermedia can be semantically defined as being identical to mixed media. Still, the past twenty years usage of all these words should bear out the decision to use mixed media as the super—category word of this study, with multimedia as a topic with in electronic mixed media. (See Chart I). Under these arbitrary conditions intermedia may be used as a synonym for multimedia.

CHART 1

Media Interrelationships

(Incomplete)

MOTION PICTURES

—— 360° multi-image

—— 360° panorama

—— multiscreen panorama

—— single screen, single image

—— single screen, multi-image

—— multiscreen multi-image

MIXED MEDIA

—— ceremonial rituals

—— mixed media paintings

—— mixed media drawings

—— environments

—— Happenings

—— Environmental Theatre

—— circus

—— drama

—— ballet

—— opera

—— assemblage

—— combine

—— collage

	Electronic	Mixed Media
illustrated lectures	slide shows	stage theatre with electronic media
		environmental theatre with electronic media

When setting the definitions for the limits of this study, the author had to make many arbitrary decisions. The first choice was to eliminate all forms of mixed media from the earliest rituals to the most recent opera which do not use electronic communication devices thin the range of possibilities left to explore, some further pruning had to be done, Thus the judgement was made to draw a line between events that juxtaposed separate elements and events that used different elements to present a redundant message.

Multiple images on one frame of film have been used from the first years of this century, but these multiple images constitute an extension of montage used to develop a single narrative. Tm-yen multiple images grew to multiple screens there was no change in the basic concept of several images telling the same story. In the 1960's, the communication form known as the slide show established itself as a prime example of a multiscreen presentation. Still, the use of multiple slide projectors is often an economic decision in lieu of a wide—screen motion picture; for this reason, many slide shows prove themselves to be equivalents of one—screen films.

The majority of multiscreen films or slide shows currently produced in this country are evaluated by this author as being one—screen film equivalents. Cinerama and Circarama are obvious examples of multiple screens being used for panoramas, not for juxtapositions of separate messages. Even slide shows are often synchronized to their soundtracks, in which case they become as much of a contained medium as a sound film.

The point to be made is that separate machines do not necessarily equate to separate communications media; each presentation must be

classified by its own format and content. Multiple screens of slides or film or even just one screen of visuals juxtaposed with a separate message soundtrack is a multimedia presentation, A multiple screen film such as WE ARE YOUNG (Expo 67) is not multimedia. The concurrent use of still projections and moving projections (including video images) is certainly electronic mixed media and may be multimedia as well. However, when these concurrent projections are put in the context of an illustrated lecture, the single—narrative qualities of the event usually override the effects of multiple delivery. Multimedia does not preclude classroom lectures, but most "multimedia lectures" observed by this author were very traditional lectures with multi—illustrations.

Perhaps Grace Glueck's description of this "new method of communication[202] summarizes the multimedia situation better than this entire appendix:

> Its jarring combination of stimuli sounds, sights, colors, smells, and moving images aim at reaching audiences by a saturated attack on all the senses, not just eye or ear. The multimedia technique is helping to convey information, provide entertainment, create aesthetic experience, sell products and even further 203 medical research.[203]

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[202] Grace Glueck, "Multimedia: Massaging Senses for the Message," The New York Times, September 16, 1967, p. 35.

[203] Ibid., p. 35

Appendix 11

Chronology of Significant Multimedia Events and Related Events

*Indicates works described in the text

+ indicates works designated by the author as multimedia

1900 Rauol Crimoin—Samson displayed his Cineorama exhibition at the Paris Exposition; his process was sometimes referred to in Russian literature as Cinecosmorama. The travelogue "balloon ride" was truly grand in scale, taking viewers via film to Brussels, England, the Riviera, Spain, Tunis, the Sahara, then back to Paris. *

1903 Edwin S. Porter's AIGRICAN FIREMAN used what is considered to be the cinema's first split—screen shot a vignette of the fireman's wife and child in an upper corner of the screen while the rest of the screen showed the sleeping fireman. This film also had the first American use of the principle of editing, developed about 1901 in England by G, A, Smith.

1904 St. Louis became the first public school system to hire an Audio— Visual Director. Amelia Mussiner became the Curator of the Education Museum at the game time the school board authorized the purchase of the school's permanent exhibits at the 1904 Lousiana Purchase Exhibition (a huge fair which was held in St. Louis)

Films were used as scene transitions in the Japanese Shimpa plays; this introduced film to the stage in Asia. *

1905 Charles Ives, an American composer who was influenced by the writings of Emerson and Thoreau and greatly admired by Schoenberg, wrote The Unanswered Question. This work called for two separate groups of musicians and a soloist to all perform independently of each other, without even rhythm synchronization; the work was not performed for many years because musicians refused to cooperate with the composer's intentions.

1909 Winsor McCay began his film/ actor stage show with Gertie the Dinosaur; this act was, presumably, the beginning of film on the stage in America.

Tomasso Marinetti published the first Futurist Manifesto on February 20th in Milan.

The first use of phonographs in public schools began in Milwaukee.

1910 Vsevelod Meyerhold advanced the idea of Environmental Theatre with his lively production of Don Juan*

1911 Film and actors came to Europe with the German productions of Eine Million and the Rund um die Alster review. *

Max Reinhardt inaugurated total Environmental Theatre with his London production of The Miracle. The Olympia Exhibition Hall made a good setting for transformation into a Gothic cathedral since it had dimensions of 440 feet in length, 250 feet in width, and 100 feet in height. *

In May, the Futurists opened their first major exhibit in Milan.

From there the show toured Paris and the other major art centers of Europe, building up support for Futurist ideas and products.

1915 D. W. Griffith T s BIRTH OF A NATION was released as the first American film spectacular, pushing the industry into an even more solid position; this film incorporated split— and triple—split—screen effects, thus strengthening the idea of multiple imagery begun by Porter.

Alexander Scriabin's Prometheus-a musical work written in 1910 to be performed with colored light projections was done for the first time as written in Carnegie Hall on March 20th. The critics were not impressed with the light shows and further works of this sort were not performed for many years.

1916 On February 53 the Cabaret Voltaire opened in Zurich to handle the antics of such Dada stars as Hugo Ball, Tristan Tzara, Jean Arp, Richard Hue Isenbeck and Marcel Janco. Only Janco does not have a story attributing the origin of "Dada" to him. The first public reference to the movement came in an article written by Ball in the only issue of Cabaret Voltaire, published in June, the first Dada Soiree was held on July 14 at Salle zur Waag; Tzara read the first Dada manifesto on this occasion. Other soirees are described in the text. *

1917 The Chicago public school system was the first to have a slide 1ibrary when the volunteer school—aid group, the Chicago Projection club, grew unwieldy and donated 8,000 slides to the Board of Education. The same year, a film library was begun in Chicago; other film libraries were begun in Newark in 1918, Detroit and Kansas City in 1919, and Los Angeles, Buffalo, and New York City in 1920.

1918 The Inter—Church World Movement (an American—based Protestant group) set up motion picture and slide departments; both of these media had been used by churches since the first years of this century. Dr. H.H. Casselman headed the film departmen

1919 Herman Rosse used projected scenery in The Drama of the Nativity and the Massacre of the Innocents, presented at the Chicago Art Institute. This is claimed by Rosse to be the first use of projected scenery in America.

1920 The Dadaists held an exhibition in the back room of a Cologne cafe, accessible only through the public urinal. This April show featured a little girl in a first communion dress who recited obscene poems and an Arp wooden sculpture with an axe attached so that visitors could destroy the work. The police closed the show, but it reopened when the judges realized that the most objectionable work was Durer's engraving of Adam and Eve.

1921 From June 6—30, the Paris Calarie Montaigne held Solon Dada, Exposition Internationale, the last major Dada show. Marcel Duchamp refused to send his works to the exhibition, so his catalogue numbers were shown instead.

1922 An American, John D. Elms, invented a camera with two lenses to shoot 2-screen 35mm films; his device was unsuccessful, due to projection difficulties. Muybridge had developed multiple lens cameras years earlier for his motion series.

Lee Simonson claims honors as the first to use the Linnebach projector in an American stage play.

1923 In February, Meyerhold did his Environmental Theatre production of The Earth in Turmoil, also utilizing filmed titles for the first time in one of his productions. *

In March, at the Proletkult Theatre in Moscow, Sergei Eisenstein directed Ostrovsky's Enough Simplicity in Every Wise Man, using a short comic film of the protagonist, Glumov, changing into such things as a donkey and a machine gun. This film was a parody of the contemporary Russian newsreel Kino—Pravda. *

The first modern planetarium (using projections for astrological effects) was opened on October 21 in the German Museum, Munich. It was developed by Dr. Walther Bauersfeld of Zeiss Optical Works.

1924 Reinhardt's New York production of The Miracle opened on January 15th, enjoying a successful run until November 8th q Afterward, the play toured other large American cities from Cleveland to Los Angeles. *

On May 26, in Berlin’s Volksbuhne, Erwin Piscator presented Alfons Paquet’s Fahnen (Flags), in which he used projected titles for the first time.

Eisenstein staged Gas Masks in the Moscow Gas Works.

Andre Breton published the first Surrealist Manifesto.

Kirt Schwitters transformed his Hanover home into the first Merzbau.

Laslo Maholy—Nagy designed a "Theatre of Totality" for actors and three screens of film; this theatre, along with other Bauhaus designs for projection/ actor theatres, was never built.

The Francis Picabia ballet Relache (Performance Cancelled) was performed in Paris at the Theatre des Champes-E1ysees by the Swedish Ballet. The ballet was strange enough with the dancers smoking, costume changes taking place on stage, a "fireman" pouring water into buckets, a nude couple standing near the edge of the stage in Cranach's Adam and Eve pose, and Man Ray sitting in a chair on stage and occasionally walking around-but the intermission featured the wild Dada film, Entr'acte (Intermission) by Rene Clair. This was the first ballet that had incorporated a film. Supposedly there was a soundtrack by Erik Satie, but this is now lost; Picabia claims that he wanted the soundtrack to be audience noises, but they would not respond even when he beseeched them.

1925 The Bauhaus moved from Weimer to Dessau, where the school was housed in quarters designed by Walter Gropius; many progressive theatre pro—ductions were done at the Bauhaus until Nazi pressure closed the school in 1933.

Robert Flaherty's film TWENTY-FOUR DOLLAR ISLAND was used as a projected background for the ballet "The Sidewalks of New York," done at New York City's Roxy Theatre.

The first Surrealist exhibition was held in the Calerie Pierre in Paris.

Eisenstein released his second film, THE BATTLESHIP POTEMIN, with simultaneous—viewpoint effects known as montage.

Piscator did Trotz alledem in Berlin during July. This play, with scenery by John Heartfield and music by Edmund Miese, used a newsreel film collage. *

1926 Able Gance released NAPOLEON, the first multiple—screen dramatic film. *

Piscator presented Sturmflut in the Berlin Volksbuhne in February, With scenery by Edward Suhr and perspective—extension films by I. A. HublerKah1a. *

Gropius designed Piscator's unrealized Total Theatre,

1927 The first feature film with sound accompaniment, DON JUAN, was released in August, the sound was provided by the Vitaphone process-a 17—inch amplified record. Another Warner Brothers film, THE JAZZ SINGER, was released in October, also with Vitaphone sound. The latter is considered the first sound film since the sound was synchronized to song and speech, rather than being used merely for background sound.

Claude Autant—Lara developed a 3—screen process known as Hypergonar. There is confusion as to whether this was three separate screens or three images on one frame of film. Whatever the process was, it constituted the only continuance of Able Gance's Polyvision. *

Piscator production of Hoppla, Wir Leben: opened on September 3rd at the Piscator—Buhne, with scenery by Traugott Muller, projection by John Heartfield, newsreel film by Kurt Oertel, music by Edmund Miesel, and choreography by Mary Wigman. *

Piscator's version of Alexei Tolstoy's Rasputin (adapted by Piscator, Felix Gasbarra, Leo Lani a, and Bertolt Brecht) was done at the Piscator—Buhne, opening on November 10th. The scenery was designed by Traugott Muller, the film was made by I. A. Hub1er—Rah1a, and the music was written by Edmund Meisel. For this play, a hemispherical scaffolding was constructed on a revolving stage, so that each scene change was wheeled around in front of the audience. Projection material was stretched upon the 52—foot diameter, 26—foot high acting area so that each of the fifteen sets had its own screen. In addition, a balloon—like screen above the acting area received the prologue film, a collage history of Czarism and the personal history of Nicholas II. This collage was made up of the Russian newsreel The End of the House of Romanov (1927) and seventeen feature films from Europe and America.

1928 The Good Soldier Schweyk opened on January 23rd at the Piscator—Buhne; this play was adapted by Piscator, Gasbarra, Lania, and Brecht with film by Hub1er—Kah1a, music by Meisel, and scenery and animation by George Grosz. *

Brecht's Three—Penny Opera was his first commercial success, and this play continued the acceptance of Epic Theatre, which had begun with Piscator.

The first all—sound film (the earlier ones had sound in only certain segments, THE LIGHTS OF NEW YORK, opened in New York in July.

Man Ray furthered the use of multiple images on a single frame of film when he used twelve simultaneous images in some segments of his L' ETOILE DE TER.

1930 Clarence Schmidt began his Woodstock habitation Environment. *

In June, Franz Hoerth did his production of Christophe Columb, using film to reveal the psychological innerworkings of the characters. *

1932 Oskar Fischinger's Experiments in Hand—Drawn Sound (an experiment in scratching a soundtrack directly onto a film) was first shown.

The Visual Instruction Association of America, The National Academy of Visual instruction, and The Department of Visual Instruction of the National Education Association merged, retaining the title of the latter organization. This group continues as the primary source of research and information concerning audio—visual usage in Ameri— can public schools. In 1950, the title of the organization was amended to The Department of Audio-Visual Instruction,

1935 Len Lye made COLOR BOX, the first film made entirely by drawing and painting directly on the film stock.

Able Gance made a Screen replay of NAPOLEON, onto which he added the first stereo soundtrack.

The Living Newspaper began the first of their 4—year series of productions.

1936 Mary Ellen Bute and Leon Therme produced RHYTHM IN LIGHT, the first of a series of abstract color pattern/ electronic music films.

Burian did his production of Fruhlings Erwachen, which blended slides, actors, and films into a stageful of activity. *

From December 9th until January 17th of the next year, the New York Museum of Modern Art held its historic Fantastic Art, Dada, Surrealism show organized by Alf red H. Barr, this was the first major introduction of these new European trends into the American art world. As had been the case with the equally historic 69th Street Armory show in 1913, American critics were stunned by the exhibition and reacted in various ways, As had also been the case with the 1913 show, which introduced Americans to Cubism and Futurism, the new show left its imprint on American art. Surrealism found its way into Abstract Expressionism and the early Happenings, while the Dada spirit is still manifesting itself in all forms of the arts.

1937 The Paris Exposition featured the Palace of Light, where Henri Chretien showed a super wide—screen film (297 feet wide, 33 feet high) using two projectors with anamorphic lenses. There were metal fingers 3 feet in front of the projectors to blur the frame edges and provide a complete panoramic cinema sweep.

1938 Fred Waller developed his first version of Vitarama (eleven screens of 16rmn film on a hemispherical surface) in conjunction with Ralph Walker for the oil industry pavilion for the 1939 World's Fair. *

During January and February, the Exposition Internationale du Surrealisme was held in Paris. *

In September, the Olson and Johnson review Hellzapoppin opened on Broadway. *

John Cage, influenced by the Futurist Luigi Russalo about the idea of noise as art music, made his first ' 'prepared pianos" by attaching wood, metal, and objects to the piano strings.

Waller and Walker! s Vitarama for the 1939 World v s Fair (five screens of 35mm film) was rejected by the oil industry, so Vitarama was transformed into a series of gunnery training devices for the U. S. military.

1939 Piscator fled from Europe and became a director at the Dramatic Workshop of the New School for Social Research in New York City. He remained there until 1951.

1940 Walt Disney's FANTASIA (a blend of animated cartoons and symphonic music) became the first film in America to be shown with stereophonic sound; the New York showing utilized ninety—nine speakers.

1942 Another major Surrealist show was held in New York, this one at 451 Madison Avenue. The exhibition ran from October 14—November 7 and featured an environment of miles of twine strung around the gallery by Duchamp.

1945 John Cage and Merce Cunningham collaborated on a ballet that featured the film VISUAL VARIATIONS ON NOGUCHI as a background for the dancers.

1946 The San Francisco Museum of Art held the Art in Cinema festival, the first substantial display of avant—garde films on the West Coast. The programs were the following: (1) “Some Precursors” (2) "The French Avant garde" (3) “Continental Avantgarde” (4) "Non—Objective Form Synchronized with Music" (5) "The Animated Film as an Art Form" (6) “Contemporary Avantgarde Film in America” (7) "Fantasy into Documentary" (8) “Experiments in the Fantastic and the Macabre” (9) "Poetry in Cinema" (10) “The Surrealists.” Virtually all existing major avantgarde films were shown in these programs.

1947 In the Paris Galerie Maeght during the months of July and August, the last major show of Surrealism as a functioning movement was held. Exposition Internationale du Surrealism was organized by Breton and Duchamp and featured almost every major artist associated with Surrealism.

1948 Seagram Distillers sent a 5 screen/” actor” show around the country to be shown at sales meetings. *

The Living Theatre troupe (one of the finer Off—Broadway groups) was begun by Judith Malina and Julian Beck. This contemporary drama group now gives some of the most exciting theatre presentations (recent example, Frankenstein) to be found anywhere.

1949 Pierre Schaeffer and Pierre Henry wrote Symphone sour un horrme seu1 (Symphony for One Man), one of the earlier landmarks in concrete music. This music was a combination of electronic sounds and taped sound.

1950 The TelePrompTer Corporation began its Telemation system (usually five screens of slides and film plus sound from microphones, phonographs, and/or audio tape). No actual accounts of these Telemation units being installed is reported until the late 1950's.

The first film/ actor play by Josef Svoboda and Alfred Radok, The Eleventh Commandment, opened on June 17 at the State Film Theatre in Prague, *

1951 Robert Motherwell wrote The Dada Painters and Poets, a collection of essays written by the originators of the movement; this book had some noticeable influence on the younger New York painters of the time.

Cage and Cunningham composed 16 Dances by methods of chance. Toss of a coin determined the type and order of the dance movements as well as the structure of the music.

Cage composed Music of Changes completely by means of coin—toss.

Cage composed Imaginary Landscape no. 4 for twelve radios and twenty-four performers one person for each volume and tuning knob.

3—D films by L. P. Dudley and R. and N, Spottiswoode were a great hit at the TeleKinema festival in London, but commercial producers hesitated at following up on this success. They balked at the inconvenience of the special glasses, but after the novelty of Cinerama made a big hit the next year, 3—D came into its own limited prominence in the mid—1950’s.

1952 The Paris Opera added smells to its production of Les Indes Galantes; a similar feat dated back to 1868 in London's Alhambra Theatre during a dance number in The Fairy Acorn Tree.

Cage composed his famous 4’ 33” for silent piano.

Cage held his celebrated “happening” during the summer at North Carolina’s Black Mountain College. This author begins the chronology of true multimedia with this performance. * +

The theatre version of Cinerama had its first showing when THIS IS CINERAMA opened in New York City on September 30th. *

On November 17, Hollywood premiered BWANA DEVIL, the first commercially successful 3-D film.

1953 Merce Cunningham's Collage used fifteen untrained "dancers" to perform simple movements like running and hair combing.

Samuel Becket's Waiting for Godot became the first commercial success of the Theatre of the Absurd.

The first educational television station, KUHT in Houston, began broadcasting on May 25. The first officially licensed educational television station, WCET in Cincinnati, began on March 11, 1955.

Early in the year, Charles Eames and George Nelson presented their multimedia "Sample Lesson" at the Art Department of the University of Georgia. The presentation consisted of eight segments: (1) a 10— minute film on communication needing a message, a transmitter, and a receiver capable of understanding, (2) ten minutes of 3-screen slide fixes and taped music — this section concerned visual communication, (3) a 10-minute film on transmitter—receiver relationships, (4) eight minutes of screen slide fixes and audio tape on the concept of abstraction. One example of this section was the juxtaposition of Picasso paintings, maps, and the Notre Dame cathedral in Paris, showing how they, all are abstractions. The movement up into the cathedral was intensified by opening up from one to three screens of slides, by building organ music to a crescendo, and releasing odors of incense into the room. (5) a 4—minute black and white French film about the origins of lettering and calligraphy 9 (6) three minutes of a UPA color film on “animated calligraphy of sound,” (7) a 10—minute 16mm color film by Ray Garner on ancient Egypt as a dead civilization transmitting live messages, (8) a 10— minute color film on the processes of communication. All original film was made by Eames, and the slides were made by Nelson. * +

1954 Varese released Deserts, the first large orchestral composition for instruments and taped electronic music.

Robert Breer made Image by Image I-a 10—second loop of 240 individual frames won for himself the distinction of making what was probably the first film with absolutely no continuity. Viewers managed to see patterns in the film anyway.

1955 Robert Rauschenberg made Bed by splashing paint on his quilt and pillow, then hanging these vertically on the wall. This was not his first “combine” of paint and real objects, but it was the earliest one to catch the attention of critics,

Disneyland opened in Anaheim, California and contained such attractions as the 360° projection environment Circarama * and the Monsan to Chemical Corporation’s Rocket to the moon. The "Moon Ride" was a much more sophisticated use of environmental projection than Circarama, since the

theatre was incorporated into the floor and ceiling circular projections. Visitors sat around the floor screen, where they could see simultaneous projections of the earth receding on the floor and outer space advancing on the ceiling, as if the auditorium were an actual spacecraft. Lighting and vibration effects in the small, circular auditorium added to the total feeling of a space ride. This exhibit is merely an updating of the Cineorama environment, but still it was one of the very few uses of environmental projection that brought the viewing area into the total concept of the display. Some theatres are just now getting into effects such as the Moon Rocket, and claiming that their productions are new discoveries. An item of interest to this subject (and one that has gone virtually unreported) is the current state of the Disneyland Moon Rocket, now that moon travel is an actuality.

The Japanese Gutai Group, the originators of Events, gave one of their first public performances at the Ohara Hall in Tokyo in October. *

1956 The Texas Baptist minister Howard Moody became pastor of New York City's Judson Memorial Church and steered the church activities toward the present program of avant—garde presentations Judson Memorial Church was one of the chief locations for development of New Theatre and multimedia in the late 1950’s and throughout the 1960's.

1957 Allan Kaprow made his first Environment in an unused barn near his New Jersey home. *

Henry Jacobs and Jordan Belson began their series of Vortex concerts in San Francisco's Morrison Planetarium. * +

On Sunday, December 8, the Gutai Group received attention on the front page of the art section of The New York Times. *

Stan VanDerBeek made Vision III, a presentation using three screens of film and slides.

1958 Rauschenberg had his first one—man show, at the Leo Castelli Gallery in New York City, where his combines caught the attention of many artists, writers, and critics.

The Congressionally—approved National Defense Education Act allocated funds for new research into the use of electronic media in the public schools.

Allan Kaprcyv,7 showed his first Environment at the Hansa Gallery March 11—29; he held his first Happening on April 15, at Douglass College, Rutgers University, New Brunswich, this first Happening was presumably considered a private affair by the Happening expert Michael Kirby, since Kirby does not treat the Douglass College Happening as the first public example of this art form. Other writers have called John Cage's untitled 1952 lecture the first Happening, but this is mostly a semantic problem. Kaprow's Happenings are derived in concept from Cage, and Kaprow was even a student of Cage v s when official Happenings were christened. *

The English version of Artaud's radical theatre book, The Theatre and Its Double, was published.

The Brussels Universal and international Exposition (a first—category World's Fair) was held on 1,500 acres of Heysel Park in Brussels from April 17-October 19. There were well over forty—one million visitors to this Fair. Among the exhibits were Cinerama, the Vortex concert, Laterna Magika, Circarama, Panorama, Aviorama, Congorama, and Polyekran. * Besides all of these multiscreen exhibits, there was also a sound work in the form of a Vasere tape, Le Poeme electronique. This electronic composition was played on 240 speakers in conjunction with a LeCorbusier film, although there was no prior coordination of the tape and film. This multimedia work was presented in the LeCorbusier Pavillion. +

1959 Rauschenberg made two of his most memorable combines, Monogram (which featured a stuffed goat with a tire around its middle) and Canyon (which had a stuffed eagle and a pillow projecting from the canvas).

This was also the year he did the radio painting, Broadcast. *

Ford Motor Company sent a 12—minute, 4—screen, color presentation called "The Search for Suburbia" to suburban shopping centers. The four screens of 16mm film made a viewing area 31 feet wide; usually four separate images were shown,

The U. S. and the U. S. S. R. traded national exhibitions, with the Russian display (including Kinopanorama) in New York June 30—August

10. In Moscow, there was an American pavilion with Circarama and

Charles Eames' 7—screen Glimpses of the U, S. A; there was also a Russian pavilion with another edition of Kinopanorama the Russian super version of Circarama. *

Svoboda's production of Jejich Den (Their Day) opened on October 4 at the Tyl Theatre in Prague. O. Kreja directed this play which had nine mobile screens; two screens rotated on their horizontal axes, three rotated on vertical axes, one hung free, one could fold up, one could move across the stage, and the last one had curtains on all four sides so its size and shape could be changed. * +

Kaprow’s 18 Happenings in Six Parts was given for the first time on October 4th at the Reuben Gallery. This work has been designated by Michael Kirby as Kaprow's first public Happening. In addition to performers, the work incorporated slides, audio tape, and records.18 Happenings is one of the few pieces of this type to be classified as multimedia by this author.* +

The World Agricultural Fair in New Delhi featured a 5—screen Telemation exhibit for the U. S. Departments of State, Agriculture, and Commerce. This Fair, which ran from November of 1959 through Feburary of 1960, attracted thousands of visitors including Dr. John Guy Fawlkes of the University of Wisconsin’s School of Education. His enthusiasm for the exhibit led to the first Multimedia Instructional Laboratory in 1961.

Charles Weiss used his AromaRama to add smells to Walter Reade, Jr.'s China travelogue named Behind the Great Wall.

1960 A teaching machine which combined a tape recorder with a slide or filmstrip projector was put into use at the University of Wisconsin. The mixed—media machine worked on the reinforcement principle, because it asked a question on tape (and showed a picture to augment the question) and then did not advance to the next question until a correct response had been marked on a special answer sheet. This device was only one example of many teaching machines which used audio—visual aids; all types of these machines were put into experimental use in the early 1960's.

On February 29th and March 1st and 2nd, a series of theatre works known as the Ray Gun Specs were presented by Claes Oldenberg and Jim Dine at the Judson Memorial Church. Al Hansen's part in these shows was to project hand—held films around the environment. One example was film of airplanes and parachutists projected on the walls and ceiling.

In April, the Gutai Group sponsored the International Sky Festival on top of the Takashimaya Department Store in Osaka; for this Event, paintings were hung from large balloons The American painter, Al Leslie, participated in the festival and then informed Kaprow of the activities of the Gutai Group.

In June, the Martha Jackson Galleries held the show "New Media—New Forms" in which there were assemblage sculptures by Schwitters, Arp, Rauschenberg, Jasper Johns, Kaprow, Louise Nevelson, John Chamberlin, and Oldenberg. Sculpture was being considered in a new light since the previous March 17th, when Jean Tinguley’s machine Homage to New York destroyed itself in the garden of the Museum of Modern Art.

In November, the Reuben Gallery in New York hosted Robert Whitman t s Happening, The American Moon. This work made especially good use of film as a non—objective element in theatre. *

Standish Lawder made the first version of his kinetic slide show, The March of the Garter Snakes. Juxtaposition of sound with this abstract visual show qualifies this piece as multimedia. * +

1961 In January, the University of Wisconsin opened its Multimedia Instructional Laboratory, built by the TelePrompTer Corporation. This facility was the first of its type in a public education situation, and it was also the first audio-visual mix to go by the name of multimedia. * +

In March, Purdue University installed film projectors in its foreign language labs, augmenting the tape recorders which already existed in these facilities.

Also in March, the San Francisco Actors' Workshop did a version of King Lear (directed by Herbert Blau) that used taped electronic music by Morton Subotnik during the storm scenes.

George Segal and Edward Kienholz both gained public attention for building complete Environmental sculptures from found objects, Segal also added cast—plaster figures.

Rauschenberg executed Pantomine, in which two functioning electric fans were incorporated into the canvas to give the illusion of blowing the splattered paint, The sense of ambiguity between the fans movement and the paint's solidity was quite striking.

Roberts Blossom began presenting his Filmstage series of actor/ film/ slide/ audio tape theatre combinations, * +

The Italia exhibition used a version of Circarama that was changed from the original format * to a format of nine screens and stereo-phonic sound.

Francis Thompson made his 3—screen film ATOM for the Atomic Energy Commission to send on a tour of Latin America.

In October and November, the Museum of Modern Art presented a massive show, “Art of Assemblage,” which so effectively summarized the 1950's junk sculpture trend that the movement was virtually dead thereafter. By early 1962. popular culture objects were being treated in a more refined way by the emerging Pop artists.

1962 In April, the Department of Audio Visual Instruction (DAVI) of the National Education Association held a convention in Kansas City at

which James D. Finn and Robert O, Hall presented a 3—screen slide/film/audio tape show (dimensions of the Audio Visual; Revolution) about contemporary audio—visual technology. The show was well received by the convention delegates and furthered the concept of "multimedia" in education; however, reports indicate this show was more of an illustrated lecture than a true multimedia combination.

Kenneth Issacs built his "Think Box" educational cube, in which a person was bombarded by twenty—four glide images and four speakers of sound* Accounts of this device indicate that enough juxtaposition of separate ideas was being used for this to be considered a multimedia Environment. * +

Rauschenberg produced Barge, a 6 by 32 foot horizontal canvas in which he combined organic paint manipulation with silk screen images of satellites, car keys, trucks, highways, people, birds, diagrams, cities, athletes, and the Velasques Venus. These multiple photographic images give the effect of a massive multiple—screen glide and/or film show. Surely works such as this one was influential on the New York filmmakers who were in contact with Rauschenberge

The Seattle World’s Fair Century 21 ran from April 21st through October 21st and attracted over ten million visitors to its 74—acre site. Included among the exhibits was Eames’ House of Science, a 6—screen, 15—minute film about the wonders of modern science. This presentation has become a permanent attraction at the park which remained on the Fair's site e

Tom Wesselman began his Great American Nude series of Pop paintings which often employed real objects in a sort of Environment situation.

Svoboda's production of Romeo, Julie a tina (Romeo, Juliet and the Darkness) was first given on September 14th at the State Theatre in Brno. This play by J. Fischer was directed in Brno by v. Veznik; H. Thein directed the Prague National Theatre version which opened on October 12th e Many mobile cubes with one side covered by a scrim screen were used in this production; only black and white slides were shown on the scrims. The play had a theme of man being ground down by the mass media of modern civilization.

Pop Art was given its first major introduction to the public in two exhibitions: New Paintings of Common Objects, held in September at the Pasadena Art Museum, and New Realists, held October 31—December 1 at the Sidney Janis Gallery, included in these shows were multiple image works by Warhol, and juxtaposed images on a huge scale by Rosenquist.

Gerd Stern had his first one—man show of kinetic poetry at Allan Stone's New York gallery in December,

1963 Several accounts indicate that 1963 was the year in which public schools began using “multimedia” visual—sound mixes, which had first been developed at the college. This by no means indicates that public school multimedia was widespread before the late 1960’s, but it was fast gaining acceptance in the East and Midwest at this earlier period.

Warhol’s SLEEP, a multihour film of a man sleeping, was originally shown in New York with two transistor radios set on the stage tuned to different rock music stations.

Whitman presented Water in Log Angeles on September 20th and 21st. This Happening made good use of juxtaposition of the filmed and live presence of the same woman. *

Gerd Stern often presented "Mosaic,” a poetry reading accompanied by slides of New York Pop Art,

On November 12, concurrent with the opening of Gerd Stern's show at the San Francisco Museum of Art which contained the sculpture/ poem "Contact Is the Only Love * + Stern and other nucleus members of USCO presented their first multimedia performance. This work, entitled Who R U and what’s Happening? used slides, closed circuit and commercial television broadcasts, audio tapes, and amplified conversation from twenty stage participants.*+

1964 USCO's Verbal American Landscape, a combination of slides, films, and audio tapes, was given at the University of British Columbia and at the University of Oregon in January *+

On February 27th, Elaine Summers presented Fantastic Gardens at the Judson Memorial Church. Screens were hung at both ends of the church to catch images from four stationary projectors and one hand—held projector. Single, multiple, and overlapped images were thrown on the screens, walls, columns, and people in attendance. The audience had small mirrors so that the projections could be even further diffused around the building. Unfortunately for the interests of this study, nothing is recorded about the nature or content of the projections. +

Alvin B. Roberts and Don L. Crawford made a screen slide/ film/ audio tape lecture about the Civil War as part of a coordinated media approach to teaching high school subjects. This presentation is only one example of many mixed—media school and business lectures done in this period. *

The XIIIth Triennale in Milan featured the industrial—display Environment "Introductory Section-Leisure Time," which made use of massive spaces and eerie darkness to present a weird look at advertising

Svoboda presented J. Offenbach's opera, The Tales of Hoffman, beginning on March 19th at the State Theatre in Wiesbaden, Germany. At least one Svoboda production of this opera used film to show the innerworkings of the protagonist, much the same as had been done years earlier in Christophe Columb. Svoboda indicates that this particular production was done sometime after 1958, and Embler claims the date to be 1962. However, Burian’s chronology of Svoboda's productions lists no Tales of Hoffman between 1958 and 1966. For these reasons, this 1964 version of The Tales of Hoffman is listed by this author as the one employing three screens of film in addition to the actors. Embler could easily be correct in saying that the correct date is 1962, but present information on this work is very confusing.

Bombardment. * Another display the same year was Victor Wurgler's Polyvision projection dome. Visitors stood on a central platform in the dome where they saw images on 8,000 feet of hexagon and pentagon screens. Wurgler used slides to create tranquil total environments around the spectators, rather than the feeling of motion which was inherent in the Circarama environment. Since rear projection was used, the room lights could be left on in the dome.

During April, USCO's Verbal American Landscape traveled to Salt Lake City, Minnesota's Carleton College, and the University of Wisconsin at Madison. At Madison they introduced Kodak Carousel projectors into their performance. * +

On Good Friday, Stern and Michael Callahan (also of USCO) delivered a special sculpture to the nuns at Los Angeles's College of the Immaculate Heart. The work, called Resurrection, was made by modifying a pinball machine to flash such words as "High," "Free," "Safe," and "Resurrection." The trick was that a nickel had to be deposited in order to turn the machine off.

Kienholz completed The Beanery, a macabre sculpture set inside an actual beanery hut.

Marshall McLuhan's Understanding Media was published.

In September, Karlheinz Stockhausen's Original. (Directed by Allan Kaprow) was presented in New York City's Judson Hall. This chaotic event used live performers, animals love and taped sound, film and closed-circuit television. * +

The New York World's Fair — "Man's Achievements in an Expanding Universe"— ran from April 22, 1964 until October 17, 1965. Because of the length of the Fair and because the Seattle Fair was supposed to be the only official World's Fair in the U. S. in the decade, the New York Fair was refused official sanction by the Paris International Exposition Association. Since the Paris Association boy— cotted the New York Fair for its thirty member nations, most of the national pavilions at the 1964 Fair were sponsored by private businessmen. The Fair (held on the sane site as the 1939 New York World's Fair) was large-646 acres-and well attended-over fifty-one million visitors-even though there was much criticism about the prices and poor planning. Exhibits included the following: Laterna Magika; "Wonderful World of Chemistry," a DuPont version of Laterna Magika in which Michael Brown directed three movable screens and live actors in a slick but empty presentation; the KLM Cinerama show which was on a planetarium dome and also categorized as impressive but meaningless; the New York State Pavilion which featured an 8— screen, 100-foot diameter replay of Cineorama; Environmental Cinema,

a 15—minute ride through 130 screens of American history images; To Be Alive, a 3—screen film for Johnsons Wax by Francis Thompson and Alexander Hammid, which received the 1965 Oscar for the best short documentary; Think by Charles Eames for the IBM Pavilion. This last exhibit seems to have been the most imaginative, although it also received much criticism for its lack of substantial content. 500 viewers sat in a "people wall" of tiered seats which was hydraulically lifted 60 feet up to the theatre. The show itself was a razzle—dazzle blend of a live announcer and multiple screens of slides and film. Accounts differ on the number of screens used, with estimates ranging from eleven to twenty—two; sixteen is a number given more frequently than any other.

USCO’s Verbal American Landscape was given at the University of Rochester in early October

1965 One example of the many unreported mixed media worship services from the mid—1960's was done by David Wood, an art major at Case—Western Reserve University in Cleveland, Ohio, this service, sponsored by the University Christian movement, used readers, three slide projectors, hymns, and a communion meal among the participants.

Rauschenberg completed Oracle, a five—piece environmental sculpture equipped with radio receivers. *

At the ONCE AGAIN festival in Ann Arbor, the ONCE group did "Unmarked Interchange, incorporating live actors into the same large screen that showed the film TOP HAT*+

Stan VanDerBeek published a Manifesto, calling for multiple screen environments (such as his Movie Drone) “both to deal with logical understanding and to penetrate to unconscious levels, to reach for the emotional denominator of all men, the nonverbal basis of human life.” (Youngblood, Expanded Cinema, p. 387,)

VanDerBeek made the screen film VARIATION 5 which blended Merce Cunningham’s dance, astronauts' space walks, and Nam June Piak's distorted television images. +

Filmmaking became more access able to all when Kodak introduced Super 8 cameras and projectors, complete with cartridge loading and automatic exposure,

Svoboda presented Intolerama in Boston during February, using film and video tape projections closed circuit broadcasting, and remote broadcasting. *+

James Rosenquist filled the Leo Caste Ili Gallery with his 10—by-86 foot painting, F—lll. This huge series of panels showed the profile of an F-111 broken by such images as spaghetti, a bomb, a girl under a hairdryer, a tire, and a cake.

In April, the Howard Wise Gallery in New York presented the first exhibition of computer art. Reviews were mixed, but encouragement was given to filmmakers to continue development of computer animation films

In April and May USCO presented the Verbal American Landscape at Brandeis University, adding stroboscopes and an oscilloscope to the previous effects, * +

The Dutch Pavilion at the International Exhibition of Transport and Communication in Munich featured a large rectangular exhibition hall where films were shown on three large screens One of the screens, 20—by--60 feet in size, hung on an end wall of the room, the other screens, circular in shape, were on the long walls above quarter—circle ponds which reflected the images This was designed by Wim Crouwell of Total Design in Amsterdam. Another impressive display from the Munich gathering was the Transport Exhibition of the German Federal Railway. Sixteen screens were hung in four rows from scaffolding (giving the feeling of a railway station) and sixteen film strips were projected from projectors mounted near the ceiling. The films were loops of different lengths, so the images were not repeated in the same order. The soundtrack had speech and electronic music.+

The First Theatre Rally was organized in New York in May by Steve Paxton and Alan Solomon. Included in this series of performances were Carolyn Brown’s Balloon (a 20 x 30 foot weather balloon for film projections, accompanied by dancers) on May 11—13, Rauschenberg's Spring Training (which included a dancer with a small screen tied to her back) on May 11—13, and Robert Whitman's The Night Time Sky (a Happening in a tent—like space, with sounds, performers , and projections * +) on May 14—16, Also at this festival, Whitman displayed one of his film/sculptures; “Shower” consisted of a shower stall complete with running water and a filmed, nude, showering girl projected on the door of the stall. Many viewers were fooled by the illusion, even though the girl was being washed with water of various colors.

Marta Minujin, assisted by the Bell Telephone Laboratories, constructed and exhibited an environmental telephone booth in late June. A person in the booth saw running water on the outer glass and his own image in the closed-circuit television floor, heard wind and echoes and his voice on instant replay tape from the receiver, and received a Polaroid picture of himself which was taken while he was in the booth,

Don Synder first showed his slide/film/audio-tape spectacular, Spectra—Mach I, in June at the New York City New Theatre's "Psychedelic Explorations.: + *

Aldo Tambellini first presented Black Zero, blending slides, film, taped electronic music, and a large black balloon. * +

In November, the New York FilmMakers! Cinematheque ran the New Cinema Festival I featuring Lawder's March of the Garter Snakes; * + Van— DerBeek's Move Movies, * + Feedback #1: A Movie Mural, * + and Pastorale: et al; * Ed Emshwiller's Body Works; * Don Synder's Spectra— Mach I; * + Blossoms' Filmstage; * + Oldenberg's Movie House; * Rauschenberg's Map Room II; * USCO's Ghost Rev; * + Whitman's Prune Flat; * Piero Helizcer's The Last Rites; * Angus McLise's Rites of the Dreamweapon (which featured the Velvet Underground in Part III, "The Mysteries of the Essence Chamber" * +) and very enthusiastic audiences.

USCO's Hubbub was given at R. I. S. D. and S. U. N. Y. at Buffalo in December. * +

1966 USCO presented Hubbub from January 18—23 at the FilmMakers Cinematheque

* +

On March 4th and 5th 9 Michael Kirby staged a Happening named Room 706 in a lecture hall at St. Francis College, Brooklyn. Equipment used included two slide projectors, two film projectors, one overhead projector, colored spotlights, and an audio tape deck for each of three performers. The first segment was the taped conversation between the three performer planners; Which each person's speech coming from a different tape deck. Other scenes had films of rehearsals and of people entering the room, slides of the room dimensions, projections of the script, and actors replaying the basic scene that had been repeated on audio tape and film, A complete script is given in Kirby's The Art of Time; the conclusion of the piece was applause on audio tape. +

Warhol released the multihour, 2—screen film THE CHELSEA GIRLS, which was the first commercial success of the underground cinema.

Warhol’s rock—light show generally known as "The Exploding Plastic Inevitable" (although this refers properly to the three films only) opened at the Dom nightclub in Greenwich Village. This show had appeared at showings of Warhol's films before April, but the appearances at the Dom were the real introduction of the light show— night club to the New York area. * + After the success of the Warhol review, two rock music—light show clubs opened in New York. The first was Murray the K’s World (with twenty—one screens of film, slides, and closed—circuit television); the second was the Cheetah. +

During the summer, Whitman presented his Happenings as a series of weekend Off—Broadway theatre productions The performances were generally successful, and they marked the first penetration of Hap— penings into the legitimate theatre.

On September 10th, Svoboda's production of Maxim Gorki's The Last Ones opened at Prague’s Tyl Theatre. Alfred Radok directed this tale of a deteriorating family dominated by a military officer. One large, crumpled screen filled the rear wall of the stage, and huge images that often counterpointed or emphasized the stage action were shown on this screen. Only film was used on this screen, but occasionally performers appeared on a balcony within the screen area, much the same as had been done in “Unmarked Interchange.” Another unusual element in The Last Ones was the use of clusters of actors performing simultaneously (while still other scenes were shown on the textured screen.).

October 13—23 marked the dates of the "Nine Evenings of Theatre and Engineering" held at New York's 69th Street Armory by the newly formed group, Experiments in Art and Technology (E. A. T.). Billy Kluver of Bell Telephone Laboratories headed the new organization; Robert Rauschenberg was his vice—president. The events presented were: Physical Things* by Steve Paxton, Solo* by Deborah Hay, Vehicle* by Lucinda Childs, Carriage Discreteness* + by Yvonne Rainer, Grass Field* by Alex Hey, Two Holes of Water—3* by Robert Whitman, Kisses Sweeter than Wine* by Oyvind Fahlstrom, Open Score* by Rauschenberg, Bandoneon.'* by David Tudor, and Variations VI by John Cage.

On October 24, Marta Minujin presented her mammoth mass—multi—media Happening, Simultaneity in Simultaneity, in Buenos Aires. This work probably had greater scope in terms of time, complexity, and distance than any work presented before or since Only Kaprow's Calling (gee Tulane Drama Review, Winter 1965) came close to equal ling the scale of Minujin’s work. * +

Psychedelic celebrations were common in New York in late 1966, Two of the many were Death of the Mind and Quasar. Death of the Mind was presented at the New York Village Theatre, using dancers and several projectors of abstract, hand—painted slides by Jackie Cassen and Rudi Stern, Quasar was done in December at St. Marks-in-the-bouweire Episcopal Church and used music, slides, lights, and dancers. +

Late in the year John Brockman Company (which consisted solely of John Brockman, a graduate of Columbia's School of Business Adminis— tration) put together a show for the Scott Paper Company that used the talents of Ken Dewey and USCO plus three slide projectors, one film projector, four stereo soundtracks, three screens of Nyler (an aluminum—like vinyl with more image bounce), and $15,000 worth of expenses The show was designed to be shown to company salesmen in order to stir up more business for one of the company products, Confidettes. Thus, Confidettes information and statistics were mixed with abstract images, Beatle and guitar music, and bird sounds. Strange as it all sounds, sales did go up 11% so the salesmen must have been greatly inspired.

In December, Film Culture published an issue devoted to Expanded Cinema (#43, Winter 1966).

1967 During the "Angry Arts Against the War in Vietnam Week" (January 29— February 5), three performances of American Atrocities in Vietnam were given in New York. This underground play used films, slides, and sound effects in addition to the actors, much like what had been done in Epic Theatre. * Another antiwar play of the same year, the New Orleans Group's production of Lonesco's Victims of Duty, used slides, film, and sound to continue the play after the actors had left. * +

In February, Barbara Ruben did Caterpillar Changes each night from the 20th through the 28th. She used multiple film projections in this work, employing different films and projection locations each night. On the night of the 21st, she used reel two of Jonas Mekas' THE BRIG on the left side of her screen, GUNS OF THE TREES in the center, and Storm de Hirsch's JONAS IN THE BRIG on the right. There was also a small square of THE BRIG's first reel moving all around the screen; this last effect was done by projecting the film from behind the screen into a small hand—held mirror and from that onto the screen. The films were all run without their soundtracks because sound was provided by taped Mothers of Invention music. Toward the end of the performance, all the projectors were cut to silent speed and music came from a live jazz band behind the screen. +

In February, the Contemporary Music Society commissioned Alwin Nikolais to do Somiloquy in the Guggenheim Museum auditorium. The

40—minute work used a taped electronic score (which took 150 hours to compose, as did the choreography) two slide projectors (which used 200 slides hand—made by Nikolais, these could cover a projection area of 20-by-20 feet), four leko spotlights, and twelve flashlights equipped with rheostats and gelatin filter globes. A scrim was stretched across the stage to accommodate all the projections which were carefully coordinated to the dancers. +

Aldo Tambellini opened the Black Gate Theatre, New York's first theatre devoted solely to "electro media" environments. Among the works that were presented there were Tambellini's own Black Zero.

During February, the Howard Wise Gallery presented "Lights in Orbit," a lumina show with works by USCO, Piak, Piene, and Thomas Wilfred.

Otto Piene presented his multimedia Happening, The Proliferationof the Sun, at the Black Gate Theatre in New York and Kunsthalle in Nuremberg. * +

In July, John Cage presented a multimedia Sabboth service at Temple Beth El in Spring Valley, New York. He was joined by fellow avant—garde artists in blending in music, dance, lights, slides, film, audio tape, chanting, and readings from McLuhan into a worship experience. * +

Cage and Ronald Nameth did Musicircus, an 8—hour spectacle of sight and sound which utilized some 3,000 participants (including individua1 musicians, musical groups, orchestras, and audience members. This author has been unable to locate more information. about this huge event.

The Joffery Ballet presented Astarte in New York's City Center, using dance rock music, film, and kinetic scenery in a psychedelic, dramatic setting. * +

Jackie Cassen and Rudi Stern provided dazzling, abstract dissolve slides as a background for the Boston Opera Company's production of the Stravinsky opera, The Rake's Progress. *

USCO presented Yin/Yang at the Institute for Contemporary Art in Bog ton and the Riverside Museum in New York City. Thig 10—foot revolving balloon served as a projection area for films, slides, and oscilloscope light. +

Jerry Schultz produced the Off-Off-Broadway play A Study in Habitation, in which the actors, playing a family, lived on the stage; the audience paid one admission price and returned to the theatre as often as they wished.

John Whitney's children John Jr., Michael, and Mark staged several multiscreen shows in 1966 and 19673 particularly in conjunction with the concerts of the San Francisco psychedelic rock group, The Grateful Dead. One of their biggest audiences was the crowd at the September Monterrey Pop festival, where they did a 9—projector show on three screens.

On November 17th and 18th, Deborah Hay presented Group One at The School of Visual Arts in New York. This avant-garde dance work began with a 6—minute, black and white film of twenty—two people in five different movements in and out of a corner formed by white walls. The dance itself was done by eight people with white poles and five people in formal attire who moved around in various groupings. This work was virtually a crystallization of the progressive dance pieces of the 1960's. Kirby's Art of Time carries a complete account of the work.

In Boston on November 7, "An Evening of Beauty and Reverence" was held featuring Dr. Harvey Cox (author of The Secular City), Sister Mary Corita (Kent) who presented a show of slides, film and music, Fr. Daniel Berrigan who read his poems, and Judy Collins who sang folk songs. This event was a strange combination of a religious service (a communion meal of bread and wine was shared) and an entertainment piece (tickets were $3.50) Its influence on future worship services in the Boston area is subject to question.

The biggest event in 1967 for multiscreen works (and to some degree, multimedia works) was undoubtedly Expo 67, which was held in Montreal from April 28th through October 29th. The Fair attracted over fifty million visitors to its 1,000-acre site; many of its most popular mixed media productions (Labyrinthe, Diapolyekran, Kinoautomat) are described in the text. Other shows of interest at Expo 67 were the following: (1) Stan VanDerBeek's and Kenneth Knowlton's computer film, made with the BELFLEX language, called MAN AND HIS WORLD; (2) Francis Thompson's CD—screen film, WE ARE YOUNG 3 done for the Canadian Pacific—Cominco Pavilion; (3) Caro lee Schneeman Happening, Night Crawlers, which featured Ms. Schneeman and her partner cavorting on a foam—rubber—filled Volkswagen while Vietnam films were shown behind them; (4) Art Kaneo's 3—screen, 20—minute film, A TIME TO PLAY, done for the U.S.A. Pavilion; (5) Walt Disney's Circle Vision for the Telephone Pavilion, featuring a 360° presentation on nine screens-23-by-273 feet total and twelve speakers of sound; (6) Christopher Chapman's film A PLACE TO STAND which was given at the Ontario Pavilion and featured multiple images on one 7mm frame of film; (7) Man: The Polar Regions, a theme pavilion where screens of film rotated around the audience; (8) Cine-Carousel in the Canadian Pavilion 9 where the audience rotated around five screens of Canadian history; (9) Svoboda's Polyvision, a 9 1/2

minute industrial show using slides, film, and sound; (10) Laterna Magika, with new acts in the same old format; (11) John Whitney Jr's untitled, 17 minute, 3-screen computer film that used mostly symmetrical patterns; (12) Canadian—Kodak's show which projected 8 minutes of slides on three water jets; (13) the Space Ride, a 40 minute, 5—screen planetarium show in the Soviet Pavilion. All Of these exhibits were visually impressive, but except for the events described in the text, they were all revised editions of earlier discoveries.

1968 our Own Thing, 9 a rock-musical revision of Twelfth Night, opened on Broadway in late January, followed by Hair in late April. The importance of these plays is hard to indicate, since they do not seem innovative in light of Epic Theatre; surely projections (possibly even film) had been on the Broadway stage since the late 1920's. Still, projections and rock music were not generally considered to be parts of the American legitimate theatre until these two plays broke down some old walls. Hair especially made use of environ— mental action and sexual emphasis that had usually been confined to Off—Broadway productions. The international success of Hair did serve to awaken a large general audience to many aspects of Underground Theatre, *

In March, Stan VanDerBeek turned the Colgate University art building into a total projection environment for a day.

Otto Piene and Aldo Tambellini did Black Gate Cologne as a multi— media environment to be broadcast by WDR—TV in Cologne, Basically the television studio was transformed into a replica of Tanbellini's Black Gate Theatre, with multiple images and sounds. Within this media Immersion, the audience maneuvered Piene's polyethelene tubing. Another version in Duesseldorf had projections on a mile—long section of tubing.

At California's College of Arts and Crafts at Oakland, Phillip Makana directed a. production of king Lear which used rear projection film, actors on video tape, actors on closed circuit television, and live actors a + While this seems no different in form from Svoboda's Intoleranza (1965), it does seem to be one of the very few reported stage works that employed the video medium.

"The Confluence of Civilizations in the Americas" the official title given Hemisfair ran from April 6th through October 6th in San Antonio, attracting over six million visitors. The popularity of multiscreen events at Expo 67 was reason enough for more of these exhibits to be used at Hemisfair, displays which have already been covered in the text were Laterna Magika, Kino Automat, and the multi—screen dome show at the Institute of Texan Cultures. Other events of interest were: Ford 10 minute, 360° film about American culture

and Ford products; General Electric's "GEnie, a version of Laterna Magika; Humble Oil Company's 5—screen film, MY NATO IS PAUL, about common life and American people; a multiscreen presentation of modern Japan; Kodak's Pavilion where projectors in hanging cubes threw film and slide images on other cubes; the U. S. A. Pavilion's huge American history hall where displays were presented with slides, photographs, print, sound, objects, and anything else that could be utilized to make the exhibit visually involving. One presentation that deserves special mention was the U. S. A. Confluence Theatre which seated 1,200 people in three separate viewing areas to watch Francis Thompson's program, US, about the good and bad in contemporary American life. The film had three general divisions, and at the start of the third section, the partitions between the audience groups rose up and away to allow all 1,200 viewers to see the 38—by—135 foot screen, the largest curvilinear screen in the world. This theatre was a joint project of Marmon and Mok Associates in San Antonio and Donald Desky Associates in New York; Thompson's film was government sponsored, and basically used the combined screens for Cinerama—like panoramas, although some triple imagery was incorporated into the documentary narrative.

The Fillmore East opened in March, thus completing the triad of major New York rock music-light show clubs The other two, the Cheetah and The Electric Circus, had opened in 1966 and 1967 respectively. San Francisco’s Fillmore West was a contemporary of the Cheetah since both opened in the spring of 1966,

Ron Globus, along with his brothers Richard and Stephen and technician John Bollinger, opened Museum of the Media on 14th Street in New York City. Their idea was to make multiscreen and sound shows that could be circulated to other museums. They have received little press coverage since the operation started; its present status is un— known to this author,

In May, the Seattle Opera House was the site of a psychedelic opera called Mantra, written by Peter Phillips and conducted by Henry Holt. * +

During the spring, a collection of presentations and performances known as Intermedia 68 toured college campuses in the East, Description of the events make most of them sound superficial or un— real ted to the subject of multimedia. Two exceptions were Caro lee Schneeman's antiwar piece, Illinois Central Transposed, and the USCO exhibit, Fanflashtic. * +

During the summer, a series of avant—garde music presentations known as the "Electric Ear" series were presented at New York’s Electric Circus.

During August, Svoboda presented Carl Orff's opera Prometheus in Munich.

The setting was a huge stair case from which a metal trapezoid ex—tended; Prometheus was chained to the trapezoid, which also served as a textured projection surface for large closed—circuit television images of the actor. At the climax of the play, the shaft was slowly withdrawn and bright lights reflected off its surface to blind the audience. When they recovered their vision, they saw only the empty staircase.

In October, the University of Michigan Episcopal student center con-ducted a multimedia worship service; this event was one of the few examples of this form of multimedia to be described in print. * +

M. Macourek's Hra Na Zuzauku (The Suzanna Play) opened at the Municipal Theatre in Frankfort on November 5th, Svoboda was the scenographer for this play, which was directed by J. Pleskat and concerned an absurd story of a doll—like female of the modern consumer world. Diapolyekran cubes were used, forty—eight of them stacked in six rows of eight cubes Each cube had eighty slides which were cued in the form of musical notes and "played" from a piano keyboard. Images in this satire were usually of mechanical and commercial objects.

During the winter, WGBH—TV of Boston conducted a series of experimental video works known as "The Medium is the Medium." Youngblood's Expanded Cinema contains fairly detailed accounts of many of these works, plus others done in 1967 and 1968 at KQED in San Francisco. Two works from the Boston series that seem especially geared for this report were an untitled work by Nam June Piak and Black by Aldo Tambellini. Paik's work combined twelve of his modified television sets (which produce beautiful patterns when the magnetic field of regular broadcasts are interrupted), two nude dancers, film of Ric— hard Nixon and other personalities, and a recording of Moonlight Sonata. All of this made quite a collage of images on the video tape, as did Tambellini's work, which used 1,000 slides, seven 16mm projectors, and thirty Negro children. The visuals were projected onto the children, and three video cameras mixed different views of this projection environment onto the final video tape. Both of these works would appear to be multimedia, but a semantic question arises because the final work was the video tape for the screen, not the activity in the studio. For this reason, this author hesitates to call any television event multimedia unless the video projection is part of another work which employs other elements.

1969 During January, the Museum of Modern Art presented a show called "The Machine," which contained Rauschenberg's Pantomime and Oracle, plus other art/ technology works from E. A. T.

In February, the "Crosstalk" festival wag held in Tokyo, with Events, Theatre Pieces, and multiple projection environments by Japanese and Ameri can artists, including VanDerBeek. *

In 1965 Jud Yalkut had become resident filmmaker for USCO; in March of 1969, at Oneonta, New York, he presented Dream Reel on Yukihisa Isobe's 50-foot diameter, floating, parachute screen. The presentation was divided into three sections: (1) Piakpieces, featured films of video distortions done by Yalkat and Piak; this section ran 15 minuets with five 16mm projectors (one with sound on film), four Carousel slide projectors, and a stereo tape of Takehisa Kosugi!s Dharma No. 8. (2) Festival Mix used three 16mm projectors four slide projectors, and a four—track stereo tape called Festival Mix Tape by Andy Joseph. and Jeni Engel. This section is a remixed replay of an eleven—channel presentation, which was originally given at the 1968 University of Cincinnati Spring Arts Festival. Images and sounds came from all aspects of the avant—garde world (3) Mix-manifestations utilized five 16mm projectors, two 8mm projectors, four slide projectors, and two four—track stereo tape systems The images and sounds were a collage of widely diverse realistic and abstract elements. +

Svoboda's production of L, J. Werle's The Journey opened at the State Opera in Hamburg on March 2nd. This play concerned Nazi occupation of Bohemia and tragedies which resulted from this occupation. Stationary rear projection cubes were used in this presentation, with each cube using four slide projectors to show just one large, composite image. This projection method was used to preserve maximum image brightness and clarity in each large slide image.

On March 23rd, Svoboda's production of The Soldiers opened at the State Opera in Munich; this play used fifteen projection boxes. *

NEA's Department of Audio-Visual Instruction held a convention in Portland, Oregon, at which they had their first Multi-image Festival; these shows (mostly done by U. S. C. students) were well received by the convention delegates.

In March or early April, Richard Glendening, a faculty member at Harry H. Gunn Senior High in Palo Alto, California, helped students coordinate a multimedia presentation on Man and Power; this show used films, slides, overhead projections, audio tape and dancers, * +

In May, the New York Howard Wise Gallery presented "Television as a Creative Medium," the first show of television and video tape as art. The highlight of the exhibition was Nam June Piak’s TV Bra for Living Sculpture, in which Charlotte Moorman (nude except for two tiny Sony television sets on her breasts) played a cello which interfered with the images of Dick Cavett on her breast sets.

Milton Cohen, of the ONCE group in Ann Arbor, presented Centers: A Ritual of Alignments in his Ann Arbor Space Theatre. This work,

similar to many of Cohen's pieces, used film, slides, and strobe projectors to throw abstract circular images on the walls of the room and eight revolving triangular screens. +

On the 16th of May, Cage presented his 5-hour marathon of sights and sounds, HPSCHD, at the University of Illinois. * +

Rudi Stern and John Reilly opened the Global Village a video environment for experimental works in New York City in September. * +

1970 Expo 70 was held in Osaka from March 15—September 13. This was the first World's Fair to be held in Asia, and it drew the record at— tendence for World's Fairs as well (over sixty—four million visitors). Among the events of interest to this report were the following: the Fuji Pavilion had viewers stand on a moving, circular platform that contained twenty—eight slide projectors (only the screen was stationary in this show); another feature in the Fuji Pavilion was a 210mm film with multiple images on the single frame and the sound from 126 speakers; the E. A. T. Pavilion contained the world' e largest spherical mirror and a floating water cloud; and the Japanese industrial firm of Midori—Kai sponsored an environmental projection display called "Astrorama." This last exhibit was quite large in scale-25 meters high and 30 meters wide so it could hold 1,000 viewers at a time. The 20-minute show concerned a fetus awaiting birth; however, the fetus was an embodiment of man's progress from Prehistoric time to the present, so a review of the highpoints of civilization (especially art) covered the environment. The show began in the dark with only the sound of the mother's heartbeat, and ended with a bud at the top of the dome, which blossomed down all of the walls.

In addition to the Multi screen Festival held at the annual convention of DAVI during the spring in Detroit, there were also examples of Environmental learning areas. Everett McDonald and Harry Din— locker presented a room with projection surfaces on all sides of the learning environment; Creative Center Incorporated showed a plastic, inflatable room with rubber floors, polyethylene tubular devices that contain seven projection areas, twenty-one slide projectors, an air compressor to keep the room up, and a multitrack recorder/ programmer to provide sound and operate the projectors. Construction costs of the latter room are between $3,500 and $4,000 and the programmer is an extra $2500.00

The mammoth exhibit of the history of Caracas, "Imagen de Caracas", was held in that Venezuelan city, Thousands of slides, films, and photographs were contained in the huge building. * +

1971 In April, Svoboda presented Paul Dessau's opera Lancelot. Many front and rear projections were shown on an ugly machine which also held the actors.

Also in April, Svoboda's exhibit Noricama was presented in the Nuremberg Castle. * +

Again, in April, Ken Burke conducted a study in Austin, Texas, concerning the effectiveness of "multimedia" presentations in worship services. *

During the summer, Eric Salzman and his wife toured South America presenting multimedia shows with film, slides, audio tape, live musicians, and live performers recruited at each stop. Mostly they were using Salzman's Feedback, which contained film and slides from VanDerBeek.

From October 31st through November 13th, Memphis State University's Drama Department presented a highly successful multimedia version of the rock opera Tommy. * +

1972 In January, the Experiment Theatre opened in Austin, Texas, as the first attempt to present multimedia in the context of dramatic narrative. Reaction to the first show was not good and the future of the theatre is currently unknowns * +

In February, the Brooklyn Chelsea Theatre Center began a production of Kaddish, adapted by Robert Kalfin from a poem by Allan Ginsberg eulogizing his mother. This tremendously powerful work about Naomi Ginsberg's gradual madness and death is made even more powerful with the addition of video tape images prepared by Video Free America,

Also in February, a group of twenty—six women artists from the California Institute of the Arts turned an existing house in Los Angeles into the Envir onment “Womanhouse” Through the arrangement of mannequin figures and household objects, the artists dramatized the dilemma of the contemporary woman locked in her social role. *

In April, Threshold opened at the University of Texas at Austin for a week's run. This environmental slide presentation, which employs a dramatic narrative, was prepared by a class of graduate students under the direction of Dr, Richard Byrne and Dr. Robert Brooks.

As noted in the text, the number of events considered significant: by this author rise greatly in the mid—1960 e s and taper off just as quickly in the lace 1960's and early 1970's e This does not indicate that less is being produced currently (just the opposite is the case where production is concerned); rather, it shows that fewer significant works are now being produced. Much of the vast flood of “mu1timedia” that now swamps American art, education, and business is merely a redundant recombination of the events listed on these pages.

Appendix III

Technological Developments in Various Electronic Media

1646 Magic Lantern (“Magi a Cataprica”) was supposedly developed by the Jesuit priest Anthanasius Kircher and published by him in Ars Magna Lucis et Umbrae, this device was basically a box with a candle and a convex lens; the candlelight was reflected through both the lens and a hand—painted slide. Thus, pictorial images could be projected in large scale. Kenneth MacCowan claims that the Magic Lantern wag not mentioned until the 1671 edition of Kircher’s book; further, he states that what is described in 1646 editions is actually an opaque projector. MacCowan claims that the Dutch scientist Christian Huygens made the first true Magic Lantern in 1655 or 1656.

1727 Johann Heinrich Schulze discovered the photographic principle that silver nitrate crystals darken when exposed to light. By placing stencils on silver nitrate—filled flasks, he was able to produce negative, photographic images. His process is not considered to be true photography, since he was not able to preserve the image.

1734 On December 21, in Paris, Pere Louis Bertand Castel displayed the first color organ. His instrument was a modified 5-octave harpsichord with colored paper strips connected to the keys; these strips were raised in front of a black screen as the instrument was played, it was called the Clevessin Oculairee

1824 On December 24, Peter Mark Roget (of Thesarus fame) presented his treatise on "The Persistence of Vision with Regard to Moving Objects" to the Royal Society in London. This principle of vision—persistence later led to motion pictures.

1826 Joseph Nicephore Niepce made the world's first true photograph with a camera obscura on a pewter plate coated with a mixture of asphalt (bitumen of Judea) and lavender oil. This photograph of Niepce’s courtyard is now owned by the Gernshiem Collection at the University of Texas at Austin. Accounts that credit Niepce with his invention at an earlier date are probably referring to the lithograph plates he produced by similar methods possibly as early as 1822.

1829 Joseph Antoine Ferdinand Plateau of Brussels published his first theories on the persistence of vision, specifically noting that sixteen images per second are enough to produce the illusion of motion from still images,

1831 Sir David Brewster (London) described the principle. of anamorphic lenses in his “Treatise on Optics.”

1832 Plateau illustrated his persistence of vision theory with the Phena—kistiscope, a rotating disk that flashed images in a mirror. A similar device, the Stroboscope, was also made that year by Simon Ritter von Stampfer.

1833 C. Wheatstone developed the Stereos cope, a binocular—like viewing device that showed a separate, identical picture to each eye thereby giving the illusion of depth to a flat picture.

1834 William George Horner (of Bristol, England) invented the Zootrope (Zoetrope) which was popularly called the "wheel of life." This rotating disk had images around the inner surface and slits in the top, so that a viewer looking through the slits at the rotating images appeared to see motion.

1839 On January 7, Louis Daguerre (who had formed a partnership with Niepce before the latter t s death in 1833) announced the invention of Daguerreotypes to the French Academy. Niepce had called the original process heliogravure, but Daguerre sufficiently altered the method enough to warrant a name change. Daguerreotypes were made with camera obscuras on silver iodide—coated copper plates, developed with mercury vapor and fixed with sodium thiosulfate (hypo)

On January 25, Henry Fox Talbot presented his discovery of a paper-negative photographic process to the Royal Institution of Great Britain. Unlike the one—original principle of the Daguerreotype, Fox's paper negative allowed many prints to be made. Still, Daguerre was given the official historical recognition for the invention of photography, a distinction Talbot coveted. The actual word "photography" was first used by Sir John Herschel to describe Talbot's process; Talbot referred to it as calotype.

In June, Hippolyte Bayard exhibited photographs in the rue des Jeuneurs in Paris,

The French Academy of Science recognized Daguerre as the inventor of photography on August 19, 1839.

1840 H. L. Child used alternating bright and dim lights with sliding Magic Lantern pictures to produce a "dissolve" effect. This was not really developed as a motion picture principle, but has recently been returned as an effect with 35mm slides. (Crude as it may seem, the Magic Lantern was the forerunner of modern slide, opaque, and overhead projectors.)

1850 W. and F. Langenheim of Philadelphia developed the photographic lantern slide, the. forerunner of modern 35mm slides.

1853 The Austrian military officer Baron Franz von Uchatius combined the principles of the Magic Lantern and the Phenakistiscope to invent a projector that could show a moving series of hand—produced images.

1860 Coleman Sellers of Philadelphia used photographs (of his sons driving nails) in a Zootrope.

1870 On February 5, Henry Renno Heyl showed his Phasmatrope (photographs in a projected Zootrope) to a crowd of 1,600 at the Philadelphia Academy of Music. This prototype of motion pictures used six poses of a waltzing couple in a cycle of three repetitions.

A photographer named Dragon invented microfilm in Paris, but his discovery went largely unnoticed until 1937.

1871 Dr. Richard Maddox developed the dry—plate photographic process to reduce the inherent clumsiness of the wet—plate system (adopted about 1850 because of the relatively fast exposures allowed by the cellulose nitrate emulsion used on glass plates) Gelatin emulsion was the answer because it retained its speed when dry.

1873 L. May discovered the photoconductive properties of the element selenium; this information was published in London by Willoughby Smith, and eventually led to television.

1874 In Dresden, Germany, Hugo Bahrs created a mechanically—projected moving cloud effect for theatre productions. This was the beginning of sophisticated scenery projection for the stage.

On December 9, Pierre Jules Cesar Janssen photographed Venus passing in front of the sun with a photographic pistol that took forty—eight shots in series around the edge of a circular negative.

1875 George Carey of Boston designed a television transmission system that would have used a separate circuit for each picture element transmitted.

1876 Caspar Briggs made an animated system of Magic Lantern slides using a Geneva movement intermittent mechanism and a revolving shutter. This could be considered a development in the evolution of the animated film.

1877 Emil Reynaud, in Paris, perfected the Praxinoscope-a Zootrope with mirrors around a column in the middle of the drum. By watching the mirrors instead of the slits, a viewer saw only smooth action instead of the miniscule interruption caused by the slits.

Eadweard Muybridge made his famous series of photos of a galloping horse at the request of California railroad tycoon Leland Stanford. The twelve photos taken by twelve cameras proved that a horse does have all feet off the ground at one point during the gallop; action series such as these spurred the progress toward true motion pictures.

Thomas A. Edison invented the first successful phonograph, with the sound recorded on a tin—foil wrapped cylinder.

1879 On October 21, Thomas Edison perfected the incandescent light bulb; the importance of this invention to modern projection of moving and still images are truly invaluable.

1880 Muybridge is reported to have done Phasmatrope-type projections of his action series on May 4 for the San Francisco Art Association.

W. E. Sawyer in the United States and Maurice Leblac in France made proposals for television scanning systems.

1882 Etienne Jules Marey made a rifle-shaped camera that took twelve pictures in rapid succession around the edge of a negative disk.

1884 Paul Nipkow (Germany) developed a mechanical scanning—disk picture transmission system using selenium cells. An image was transmitted by means of a beam of light passing through a continuously—moving disk; the signal was passed by way of selenium cells and circuits to a receiver where the light passed through another scanner and formed an image because of persistence of vision. In crude form, this was the first television system,

1885 Chichester A. Bell and Charles S. Tainter received a patent for a phonographic wax cylinder in 1887 they began selling graphophones which used these wax cylinders.

1886 In Germany, Heinrich Hertz proved the existence of radio waves.

1887 In May, the New Jersey Episcopal pastor Hannibal Williston Goodwin applied for a patent on celluloid as an emulsion base for roll film. However, the patent was not granted until September 1898, by which time the Eastman Kodak Company already had a patent for the same type of film. Goodwin died soon after being granted his patent, but his company sued Kodak for patent infringement. By the first decade of the 20th century, the courts finally ruled in favor of the Goodwin organization (by then called The Ansco Film Company) and forced Kodak to pay $5 million in damages.

1888 W. Hallwacks of Germany began research into making a photoelectric cell; later perfection of this device made possible the development of electronic television transmission.

Marey perfected a paper film that could take up to forty pictures in rapid fire order.

Edison developed the first true motion picture camera; it shot forty-eight frames per second on Eastman's paper—backed, gelatin—emulsion film.

1889 In April, the Eastman Kodak Company applied for a patent on celluloid roll film. They began marketing this film in August, and the patent was granted in December despite Goodwin’s patent application on the same type of film in 1887. Goodwin was probably ignored because he lacked the necessary funds to complete Patent Office—required tests.

On October 6, Edison made the first true motion picture viewer in his New Jersey laboratory, using a device he called the Kinetoscope. This 4—foot high, 2—foot wide, single—person viewer showed his assistant, W. Laurie Dickson, sneezing. The 50—foot continuous film loop ran at forty—eight frames per second, so it only took 13 seconds for the complete film to run. Edison’s early Kinetoscope films were intended to be used with his phonograph, so the sound film (in a very crude form) also dates back to this time. Later Edison films were reduced in speed to sixteen frames per second, which became the standard silent speed along with the Edison 35mm frame size which also became standard. MacGowan casts doubts on this early date, but nothing conclusive has been proved.

1890 Ernst Abbe and Carl Zeiss invented the anamorphic lens. They were able to get a squeeze ratio of 2.5 to 1, so that an extra—wide image could be squeezed onto an ordinary 35mm frame, and then expanded to full width by means of another anamorphic lens on the projector.

1891 On August 24, Edison applied for a patent on his Kinetoscope; the patent was granted on March 14, 1893, but Edison thought so little of the potential of his invention that he failed to pay the extra $150 to cover an international patent,

1893 Muybridge's Zoopraxiscope was shown at the Zoopraxographical Hall of the Chicago Fair. The enthusiasm with which this projected series of animals in motion (shot with a battery of still cameras rather than with a true motion picture camera) was received indicated that motion pictures would be a successful commercial property.

1894 The first Kinetoscope parlor was opened on April 14 at 1155 Broadway in New York City by Andrew Holland; ten viewers connected to phonographs were used in this first parlor.

Emile Berliner began marketing the Gramophone, which used disk records pressed from a master zinc disk.

1895 On February 139 Auguste and Louis Lumiere patented the Cinematographe, a combination camera, printer, and projector.

On March 22, the Lumiere brothers showed their first film, LA SARTIE DES OUVRIES DE L'USINE LUMIERE (WORKERS LEAVING THE LUMIERE FACTORY) to the Societe d'Encouragment pour L'Industrie Nationale at the rue de Rennes (44) in Paris.

Alexander Wallace Rimington gave a color organ recital on June 6 in St. James Hall, London, using an instrument connected to fourteen arc lights. Rimington's color organ was part of a small symphony's performance of Wagner's "Rienzi Overture, Critic reaction to the performance was unfavorable since the projected colors came in flickering staccato patterns.

Thomas Armat invented the Vitas cope, the first American motion picture projector (the Kinetoscope was a viewer, incapable of external projection) in June. In September Armat exhibited the projector at the Atlanta Cotton States Festival. Edison was initially opposed to projection of motion pictures, but his financial backers finally convinced him to join forces with Armat.

On November 1, the German brothers Max and Emil Skladanowsky gave their first public showing of their projection device, the Biograph, at the Berlin Wintergarden Variety Show.

The Lumieres gave their first public showing on December 28 at the Grande Cafe, Boulevard des Capuchines, Paris.

Guglielmo Marconi made the first wireless transmission of radio signa1s (100 feet) In 1896 he acquired a patent on his accomplishment.

In Denmark, Valdemar Poulson succeeded in recording an electrical signal on magnetic steel wire; he applied for a Danish patent on December 1, 1898, and showed his invention at the 1900 Paris Exhibition,

1896 On April 13, Edison showed films with a Vitascope projector at Koster and Bial's Music Hall in New York City. By this time, however, Edison faced stiff competition from the Lumieres and others.

1897 In Germany, K. F. Braun developed a cathode—ray tube and florescent screen. These devices were vital to the final version of a totally electronic television system.

Beginning in 1897 and continuing through 1901, Marconi made many "first" wireless transmissions from Needles, on the Isle of Wight. All of these were important for radio, but Marconi's transmissions were actually wireless telegraphy. Among his "firsts" were the bridging of the English Channel with wireless transmission in 1899 and the first 200—mi1e wireless transmission in 1901.

C, Grivolas used stereoscopic images of complimentary colors to make the first 3-D film.

1900 At roughly the turn of the century, Adolph Linnebach improved upon the incandescent—lamp stage projector to develop the type of spotlight that still bears his name. Slides could also be used with this projector (like an ultra—bright Magic Lantern) to provide background scenery.

1906 Thaddeus Cahill, in Mount Holyoke, Massachusetts, invented the Telharmonium; this was the first machine which could produce sounds electronically. This forerunner of modern synthesizers used rotary generators and telephone receivers to turn electronic impulses into sound. The machine was described as complex, bulky, and impractical.

Dr. Lee DeForest invented the vacuum tube, which was the basic discovery for all devices which needed amplification of electronic signals; devices such as radio, television, and sound amplification systems for audio tapes and phonographs would have been lost without the vacuum tube. Besides amplification, radio also used the vacuum tube as a compact, efficient source for sending and receiving signa1s.

R. A. Fessenden became the first person to effectively broadcast music and speech as a true radio signal; his transmission was from Blant Rock, Massachusetts.

1907 The Russian, Boris Rossing, transmitted some crude geometric images on a cathode—ray screen, as television continued to evolve.

1911 In London, A. A. Campbell Swenton made an advanced proposal that cathode—ray tubes should be used in both the receiver and the camera in television transmission, rather than the mechanical scanning device still used for transmission.

1913 J. Elster and H. Geital (in Germany) produced a fast photoelectric cell, enabling rapid transmission of television scanning signals so more coherent pictures could be seen on the cathode-ray receiver.

1920 Filmstrips and filmstrip projectors were developed by John Bray of Bray Pictures Corporation. Beginning in 1931, these films trips were accompanied by programmed phonograph soundtracks.

1921 WBZ in Springfield, Massachusetts, received the first regular radio broadcasting license on September 15, Other stations, notably KDKA in Pittsburg, had broadcast on some basis for several years before WBZ.

Thomas Wilfred developed the first successful, soundless color organ, known as the Claviluxa

1922 Wifred's first public Clavilux concert was given at New York City's Neighborhood Playhouse on January 20th.

1923 Technicolor was perfected by Herbert Kalmus, who had worked on the project since 1918. This process replaced older methods of producing color films hand—tinted frames, colored film stock, and crude two— or three—color systems which had been used since the turn of the century.

Lee DeForest introduced a method for photographing the soundtrack directly onto the film, He used his Phonofilm process to produce shorts of Eddie Cantor, Phil Baker, and Webber and Fields. For the time being, his idea was rejected in favor of the Warner Brothers Vitaphone process, which used sound on large records (amplified by the DeForest vacuum tube),

V. K. Zworykin of Russia patented the iconoscope tube for use in television cameras,

1926 The first true color commercial film, THE BLACK PIRATE starring Douglas Fairbanks, was made, using the Technicolor process.

The National Broadcasting Company (NBC) organized the first national radio network; twenty-four stations were located from coast to coast so that the same program could be simultaneously broadcast across the nation.

J. L. Baird did the first true television broadcast; this demonstration in London used the mechanical scanning disk method to transmit 30—line pictures ten times per second. Limited television broadcasting continued in England after this great accomplishment.

1927 The first true television broadcast in the U. S. A. was made by the Bell Telephone Laboratories between New York and Washington, D. C. Herbert Hoover (then the Secretary of Commerce) appeared on this broadcast.

Synchronized sound came to the commercial film in both the Warner Brothers and the Fox studios. Warner Brothers used the Vitaphone process of large records (from 13 to 17 inches) to give musical accompaniment to DON JUAN with John Barrymore in August and a voice to Al Jolson in THE JAZZ SINGER, which opened in York City on October 6 the Fox used the German Tri-Ergon system (with. assistance from Lee DeForest and Theodore Case) to produce WHAT PRICE GLORY with the soundtrack directly on the film.

The first U. S. patent for magnetic tape recording was awarded to J. A. O'Neill.

The first electronically—amplified version of a traditional instrument-the Superpiano-was introduced. Soon almost all other musical instruments had electronically—amplified cousins.

The first national radio broadcast (NBC) was made; it was the live coverage of a football game,

1928 Fritz Pfleumer received a German patent for audio tape; the tape and the necessary tape recorders were highly developed by the Nazis for military use during World War II.

In England, Baird made the first practical application of color television, again using the mechanical disk scanner.

1930 The first efficient sound—on—film projector was perfected by R. P. May of RCA.

1932 RCA made the first totally electronic television transmission, using cathode—ray and iconoscope tubes; the image consisted of 120 lines for each transmission.

3—D films made with polarized light became commercially feasible due to the Polaroid lenses developed by Edward H, Land. Polarized films were first shown by Chrysler Corporation at the 1939 New York World’s Fair.

1933 All—electronic television cameras and receivers were developed for commercial use.

1936 High—definition television service was established in London; 405 lines were transmitted once every second.

1937 Microfilm was reintroduced at the Paris Exhibition; the University of Chicago and the U. S. Department of Agriculture were the pioneer developers of the material in this country.

1938 E. H. Armstrong perfected FM radio,

1941 The FCC authorized commercial television to begin in America beginning on July 1st, the first sanctioned commercial television station was WNBT in New York City, which received its license on June 17th.

1946 Frank G. Back introduced the “Zoomar lens,” which allowed one camera lens to incorporate a range from wide angle to telephoto; this device is virtually a standard feature on modern television and Super 8 cameras, and is enjoying increasing use in still photography.

1948 The LP (long—playing) record was marketed, allowing a 12—inch record to be played at a speed of 33 1/3 revolutions per minute rather than the old rate of 78 rpms, Microgrooves on the record made the big difference.

1953 In the U. S., the National Television Systems committee developed a color television receiving system that was compatible with existing black and white receivers. Color television was then marketed in the U. S., beginning in 1954.

The first Cinemascope (wide—screen, using anamorphic lenses) feature, THE ROBE, was released in September by 20th Century Fox. Cinemascope was a successful move to undermine the popular novelty of Cinerama (which had been enjoying commercial success since its revival in 1952. Cinemascope used the anamorphic lens that had been displayed in Paris in 1927 by Henri Chretien. As Cinemascope proved to be a sound, economic move for theatre owners who did not want to bear the cost of conversion to Cinerama, other variations on the anamorphic lens were also invented. By the mid—1950's, a return was made to wider frames (65mm and 70mm) too.

1955 The first true electronic music synthesizer was made for the RCA Laboratories in Princeton, New Jersey, by Harry Oslon and Herbert Belar.

1956 Ampex introduced video tape recording on a segment of Art Linkletter's House Party. This major advancement for the television industry had been developed originally in 1951 by the Bing Crosby Enterprises, then sold to Ampex. Color video tape was then perfected by Ampex and RCA.

1959 TelePrompTer Corporation's Telemation system of slide projectors, film projectors, and audio devices controlled by a punch paper tape programmer was put into public operation at the Redstone Arsenal in Alabama Success of these Telemation units, which allowed controlled and sophisticated audio—visual lectures to be presented in rear—projection situations, led to their proliferation in permanent business, industrial, and military briefing rooms as well as in educational institutions. By the mid— 1960's more complex paper tape systems and infinitely more sophisticated electronic pulse systems became feasible These complicated programmers were highly valued by the diverse users of multimedia programs in all disciplines; further, these programmers opened up the possibility of the multi—screen extravaganzas of the New York, Montreal, Osaka, and Spokane World' s Fairs.

1961 Kodak introduced the model 550 Carousel slide projector with a gravity—fed, circular tray of eighty slides. The rapid changes allowed with this machine revolutionized the use of slides in avante-garde theatre, multimedia programs, classroom instruction, and home entertainment.

1963 M. V. Matthews and associates at the Bell Labs used an IBM 7094 computer to synthesize electronic sounds. This led to the remarkable achievements of computers being able to synthesize "speech" and "song." One of the first selections to be "sung" by a computer was "Daisy, Daisy."

1964 Kodak introduced the model 800 Carousel slide projector with a 7 pin AV port allowing the use of the kodak model 2 dissolve as well as other dissolve controllers

1965 Kodak released super 8mm film, cameras and projectors Film cartridges used with automatic exposure cameras opened up filmmaking to an entire generation of artists, educators, and students. Furthermore, film was now an economic possibility in low budget multimedia programs.

Sony made its half—inch? portable video tape recorder "Portapak" available to the public. Synchronized audio and video could be recorded live on eraseable videotape in a monochrome format. This instrument would prove invaluable in the development of video as a personal art form and in public access to cable television production intended for telecast to other cable users.

1971 Stephen Beck developed the world's first effective direct video synthesizer, making it possible to generate images without the use of a camera.

1972 Sony perfected and released a video cassette recorder capable of color video recording directly from a camera and limited audio mixing from secondary sources. This device, like the audio cassette recorder which preceded it, proved beneficial immediately in classroom situations, contemporary art and video galleries, and in distribution of privately—produced video programs for educational and cable telecast purposes.

1973 In late August at the International Radio and Television Exhibition in Berlin, Teldec (a subsidiary of Telefunken) showed its new video disk player, which was intended for release to the European public later that year. Using plastic "records" about eight and one—half inches in diameter which play the combined picture and sound through an ordinary TV set (in color or monochrome), this invention promised a new communication revolution. Cost of the records could be kept very low, and they are small enough to be sent through the mail in magazines. Present records contain about ten minutes of information (280 grooves per millimeter) with the promise of twenty—minute disks cf the same size and stack loaders that could accomodate a dozen disks. The cost of the player would be less than the cost of a video tape recorder, with better quality and cheaper software accompanying the disk player. The main limitation of the disk system is that no personal recording could be done on the disks. Philips and MCA have phototypes of a similar device which they hope to produce and market in the U.S.A. in 1976.

The Board of Commissioners of New Or lean's huge Louisiana Superdome revealed that six twenty—two foot by twenty—six foot television screens would be suspended in a hexagonal structure above the playing field. This video configuration would allow closed circuit closeup shots and instant re— plays to be shown to the stadium's 80,000 spectators, A similar video system actually went into operation in Washington D.C.'s new Centre Arena in 1974. Thus, large—scale video projection became a permanent public

entertainment technique after having been used since the 1950's for closed circuit broadcasts of boxing matches via the Ediphor projection system.

Periodically in the 1960s and early 1970s projected video was used in plays, political conventions, and rock concerts. Moreover, projected video has been in use in education since at least 1961 at the University of Wisconsin's Multimedia Instructional Laboratory.

Late in the year, Kodak made available their Supermatic Film Videoplayer which allows Super 8mm film to be used in conjunction with closed circuit or broadcast television sets. Combined with the low—light filming possibilities of Super 8mm cameras and film introduced earlier in the year by Kodak, the possibilities of film and video union were opened to thousands of people outside of the television industry. Film (rather than video) cassettes could be used for home viewing, learning carrels, cable TV broadcasts, and gallery displays. Thus, the advantages of film such as lower cost, inexpensive color, high definition, and comparative ease of editing could be merged with the acassibility of television. To complete this revamping of Super 8mm filmmaking, which now featured cameras capable of time exposures, in—camera dissolves, macro focusing, and other advantages formerly found only in 16mm and larger formats, Kodak made available the Ektasound Super 8mm camera. This new camera matched one of the main features of video recorders by allowing in— camera magnetic sound recording of the photographed subject. Additionally, there were newer Super 8mm projectors offered, with sound—on—sound re— recording features added. While in-camera recording of sound had been available for years in such machines as the expensive Wilcam news camera, the Kodak model joined sound recording, automatic exposure filming, and popular prices. This it was accessible to the mass audience of amateur and semi—professional film and multimedia producers.

Appendix V

Letters

The letters on the following pages were received by the author during the course of his research. They are re— produced exactly as they were received.

V I LLE DE MONTRÉAL C I TY OF MONTRÉAL

CA N A D A

PUBLIQUES SERVICE DES RELATIONS
HOTEL DE VILLE

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AIRMAIL

December 10, 1971.

Mrs Ken Burke,
1200 San Antonio St., Apt. c,
Austin, Texas
78701, U.S.A

Dear Mr. Burke;

Your query to "Information Office Man and His World" has been referred to my attention and I will endeavor to supply you with a list of information sources for your thesis on electronic multi-media.

More information on "We are Young" is probably available through the Public Relations Department, Canadian Pacific, Windsor Station, Montréal,

Labyrinth was a project of the National Film Board of Canada. You should contact its Information Director, at 3155 Cote de Liesse Road, Montréal.

The best source for the multi—screen efforts by the Czechs, other than writing to the Czech Government, Commerce Department, in Prague, would be to contact the Czech Consul-general in Montréal, 1305 Pine Avenue West, or perhaps the Czech Embassy in Washington.

One part of the Labyrinth film was shown at Man and His World (the permanent successor to Expo 67) last Summer, and the Czech producer Raduz Cincera has a new split screen film on display as commissioned by the City of Montréal (see enclosed release).

The best sources for the Brussels and Osaka fairs is probably the Bureau International des Expositions, 56 avenue Victor Hugo, Paris 8e. France, or possibly the office of Patrick Reid, director, Canadian Exhibition
Commission, 2487 Kaladar St., Ottawa, Canada. I'm not familiar with the

Moscow Fair, which was not in the same category as the others, but it was presumeably a commercial fair hence you should contact their embassy in Washington or write directly to the Commerce Department in Moscow.

Hoping this information will prove useful and wishing you the best of luck, I am,

Yours very truly,

Paul Leduc

PL/nb

Ecl.: release

Communiqué
News Release

de/from

pour publication
pour publication for release

872-6010

THE SOUND STORY

By Donald Bell

The brilliant Czech producer Raduz Cincera, whose inventive audience-participation film Kine-automat was one of the highlights of Expo 67, has created a new film and sound experience that is proving to be one of the major attractions at Man and His World in 1971.

A multi-screen presentation, “The Sound Story” is shown continuously at the former CP-Cominco Theatre on Ile Notre Dame

The 20-minute. bilingual fi1m, created especially for Man and his world, sets out, to prove audio—visually and in humorous way that the same sounds, or the same words can have completely different nuances of meaning according to the situation in which they are used. Cincera uses four screens; arranged in a T-pattern, and stereo sound to conduct his experiment.

In the beginning, the four screens show only pastel colored squares. The accompanying sound is a rhythmic clapping of hands. Later, the first screen shows two small children clapping hands.

2....

Gradually, the other screens show different pictures with the same clap-clap accompaniment: a lady having her back massaged by a masseur, an

old lady slapping a piece of dough about on a board, and a couple of teenage boys slapping each other angrily but in rhythm in a doorway.

The experiment is then continued in the grammar of' dialogue. A girlish voice is heard uttering-

"No....no....d’accord”

It is obvious that she can’t make up her mind. But about what? The screens offer several pictorial explanations: on one screens we see the girl in front of a jeweler’s showcase, trying to decide what to buy; on another, she is in a police station facing a line-up of wanted men. “No...no....” she says. Then “Yes” as he offers more and more money.

On the fourth screen, the same couple is seated on a couch and the young man is leaning towards her. Her words are the same “No....No” then a surrendering "d’accord”.

Cincera carries the idea further with comical story about people in four rooms in a boarding house with paper—thin walls; a confused gangster pair named Blimp and Biff on the “1 am” from the police, a married woman having an escapade with her lover, an awkward young man fleeing from his dominating mother, and the lady owner of the boarding house in the last room typing a letter.

They all react differently to the sounds that intrude. A rat-a-tat-tat can be machine-gun or a typewriter. A high point of farce is reached in a chase sequence triggered by mistaken sound-identities.

3....

But in the end, everything works out to everyone’s satisfaction. In spite of all the humor, Cincera points out that this multi—screen experiment is a serious examination of the relativity of feelings, words

and values as interpreted by different generations and different human beings.

Though there is no stop-start audience participation as in Kineautomat, the style is reminiscent of that earlier film which played before packed houses at the Czechoslovak Pavilion at Expo 67...and it is as lively and entertaining.

Filmed mostly In Montreal and Prague, “The Sound Story” was written and directed by Cincera. Co-producer was Jan Rohec, who also worked on Kineautomat.

Admission is 50 cents for adults, 25 cents for youths. Children under eight may enter free,

June 1971

Intermedia Systems Corporation
Cambridge, Massachusetts 02139
711 Massachusetts Avenue
617 868-9880

February 15, 1972

Mr. Ken Burke
1200 San Antonio Apt. C
Austin, Texas 78701

Dear Ken Burke:

Thanks for your letter of February 4th. I am sorry you weren't able to get in touch earlier but I will try my best to get you the information which you require. Let me suggest this. If you have any further questions after reading the enclosed material, write me a list. of very specific questions which I can answer either by letter or if you have a tape recorder available, I would dictate it into either a cassette or reel—to—reel format, whichever you might prefer. Please thank Dr. Byrne for thinking of us in the context of your thesis and when you next see him, tell him that I and his friend Mickey Sills have been seeing quite a bit of each other here in Cambridge

A book which you really should read is Kostalanetz' The Theatre of Mixed Means, Dial Press, 1968, It has chapters on a lot of the people of the world you are writing about, including a chapter on USCO. Some of this material is covered in another article by Kostalanetz in Harpers, which is among the material enclosed. Also valuable is the enclosed article from Tulane Drama Review. You might take a look at that whole issue which includes something by Vander Beek and other people, To get in touch with Aldo Tambelleni and Don Snyder, I'd suggest you inquire from Mrs. Madeleine Ferris, Creative Artist Program, 250 West 57th Street, New York City. They are part of the New York State Council on the Arts and should be able to get the addresses for you.

Actually the apogee of our USCO work was the show at the Riverside Museum which is the focus of the Life Magazine article on Psychedelic Art dated October 3, 1966. Psychedelic art was not our terminology, although it arose from a series of performances, "The Psychedelic Theatre" presented by USCO and the Castalia Foundation which were Dr. Timothy Leary's first ventures into show business.

The more I think about this information matrix, the more I would prefer to talk it into tape — perhaps in association with Michael

Callahan, who worked with me for so many years all through USCO and is presently a fellow director of Intermedia. So if you'll shoot a note back saying what speed you'd like it-reel—to-reel or cassette-we'll do that and we will also get together a performance, or perhaps even a more general USCO chronology for you. On May 4th of this year we are presenting a lecture at the Carpenter Center, Harvard University, which if we can get it together will be a wrap-up of our work of the past more than a decade. With best wishes for your thesis, Sincerely

Sincerely,

—4 Gerd Stern
/ President

GS/dj
Encs.

Intermedia Systems Corporation
711 Massachusetts Avenue
Cambrige, Massachusettes 02139

617 868-9880

Media in the Market

Seven years ago, Gerd Stern, one of the founders of USCO—the "Us Company," extravaganza at the San Francisco Museum of Art that plugged 64 live performers plus spectators into a barrage of simultaneous electronic messages sent to the eye and the ear through television, telephone, audio tape, slide projections and more. On the seventh anniversary of that spectacular day, Stern recently performed in another way, before conservatively dressed stockholders in a company he partly owns, Intermedia Systems of Cambridge, Mass.

It was probably the world's first multimedia stockholders' meeting but, compared with USCO's previous electronic free-for-alls, it was tame stuff: three screens, slides and gentle rock music—nothing more. Stern himself, once addicted to denims and sandals, is natty and neat. “I didn't wear a tie for fifteen years before Intermedia,” he says. When it came time to talk, he did not shout the old USCO message, WE ARE ALL ONE; he talked about new products, expanding markets, invested capital.

The fact is that USCO has gone public. Its core members—Stern, engineer Michael Callahan, artist Robert Dacey and psychologist Gunther Weil—are now attempting to market on a broad scale the multimedia avant-garde techniques that once blitzed esoteric lofts, galleries and museums. In this sense, they are pioneering again, making a move with wide sociological implications. USCO's associates in Intermedia are all solid businessmen. One of them is Ruben Gorewitz, a wizard at the financial organization of the avantgarde, who specializes in saving the fiscal lives of preoccupied geniuses such as Martha Graham, John Cage and Merce Cunningham. Another, Dr. George Litwin, left a full-timepost at the Harvard Business School shortly after he met Stern. "1 could tell right away that USCO had a fantastic ability to create intensee experiences through multimedia," he Says, "and I was sure we could market those insights to both education and industry.

Award: After a year of haggling with the Securities and Exchange Commission in Washington (over the precise meaning of a term like "multimedia experience"), Intersystems went over-the-counter in November 1969 and sold $600,000 worth of stock. Installed in an old theater building in the heart of Cambridge, Intersystems is now selling both its products (a line of low-cost, audio-visual programing units) and itself. "For a thousand dollars," Stern tells his investors, " we will make a media survey of a plant or a school or a church and recommend what to program as well as how."

The investors are cautiously optimistic. They share Litwin's belief that the future belongs to communication and education that hits the senses as well as the mind. They are encouraged by the award of an important contract to Intermedia by the New England Power Co.—to consult on a multimedia showcase for the public at its new power plant near Beaver Dam, in Massachusetts. Only the USCO group has reservations. "There was less hassle in the art world," one of them says, "or even in building discothéques."

Stern himself has no regrets. "The galleries and museums never supported us the way New England Power does. That's the major project of my life. I'm going to visualize the country's electric network in that display, showing how it brings us all together, which is what I've been trying to do from the start." Stern is attempting to realize one of the strongest directions in contemporary art—away from the cloistered gallery and the precious object toward strategies that directly affect the world. "I don't care whether I'm called an 'artist' or not," he says. "All I care about is the work, creating an experiential flow of information, making a physical impact."

Some Extracts from "Psychedelic Art"
Cover Story LIFE October 3, 1966

A recent exhibition at the Riverside Museum in New York City, put on by a pioneering group called USCO, indicated that a lot of people are eager to let psychedelic art turn them on. Many of the thousands who flocked to the show brought along their lunch so that they could settle in until closing time. A wide variety of light systems neon, strobes, oscilloscopes - is incorporated into the art made by USCO, a group of artists, poets, film makers, engineers and weavers who live and work communally. In their New York show, a plastic “eye” aflame with interior lights seemed to stare hypnotically at viewers. As some of the lights turned off and on, they activated gels suspended within the “eye”. The resultant slow movement tended to diminish the viewer’s sense of time. USCO’s use of light is often symbolic, in a nine-foot-high painting stands a male figure representing Shiva, the Hindu god of creation, whose out-flowing energy is symbolized by the central, pulsating light from which painted lines radiate. Superimposed upon the Shiva is a seated Buddha who is on an “inward journey”, his “divine light” immersed in the center of his being. At the edges of the canvas, red lights throb in the steady rhythm of a beating heart. These luminous fluctuations, allied with the symbolic imagery, are intended to induce contemplation. . . The spectators below are immersed in a contemplative, mystical environment created by USCO at the Riverside Museum. Sitting around an aluminum column, spectators listen to a collage of stereo sounds and smell burning incense while watching paintings with pulsating lights. The USCO artists call their congenial wrap-around environment a “be-in” because the spectator is supposed to exist in the show rather than just look at it. Such psychedelic art is not nearly so potent as LSD or other mind-expanding drugs, but most of its techniques do have a direct physical and mental effect, either tranquilizing or disturbing. Throbbing lights break up the viewer's time sense and give it a new rhythm. Under the incessant flickering of strobes, people appear mechanized, their movements jerky as in old time movies . . USCO also puts on a road show, called “We Are All One,” that has been performed all over the country. It simulates the psychedelic experience by use of slides, movies, strobes, oscilloscopes, stereo tapes, a dancer and a heart beat. The show has some inspired moments when all the audio-visual equipment combines to create a sensory overload that makes some viewers feel they are having . LSD-type hallucinations, The show finds its most receptive audiences at colleges. Young people who grew up with TV a

transistor radios and who take electronic equipment for granted have no difficulty in attuning themselves to the audio-visual bombardment. Older people who prefer what is called a rational sequential experience, i. e., just one movie or a single radio station at a time, tend to freak out. . Many psychedelic artists first gained recognition and employment in discotheques, which they decked out with flashing slides, movies and strobes. USCO's first big commission was to supply The World with 2,000 slides and 2-1/2 hours of 16mm films and to build the control console which operates the projection equipment. The way things have been going, psychedelic art was bound to come about, it is a logical merging of routes that art has been traveling for half a century. The Dadaists helped set the course during World War l. Their anarchical performances - simulating screaming of poetry and banging of drums, an orgy of gymnastics amid a conglomeration of masks, marionettes and junk - drove audiences wild. But the prime sources of psychedelic art are the innovations of recent years: the “Combines” made by Robert Rauschenberg, who merged painting with radios, lights, an electric fan; Allan Kaprow’s “Happenings,” freewheeling environments involving lights, taped sounds, textures and human antics; Op art, with its illusionistic vibrations; and the mechanized contortions of kinetic art. . In fact, just about everything going today is apt to be grist for the psychedelic art mill. The USCO group, in particular, shifts effortlessly from multichannel audio hookup to woven rugs, from proving out!! Marshall Mc Luhan t s theories on media to projecting Hindu philosophies. Their art is concerned both with tuning in on "divine geometry" and showing people M in a concentrated way what's going on around them all the time.

SCENE AND NOT HERD USCO

By Richard Kostelanetz December 1967

USCO, USC0-Those mysterious initials that magisterially appear in various places and contexts signify US Company (or company of us), a collective of artists who operate out of a forsaken church in Garnerville, New York, about an hour north of New York City. USCO functions as a frame, as well as a signature, for individual artists who move in and out. contributing to the collective effort and yet preserving their personal identities. The quickest measure of USCO's impact is the relation between its age and achievement; for in less than four years; it has completed a multiplicity of projects and established an international reputation.

The core members of USCO are its founders—a painter in his late twenties named Steve Durkee; a younger man with a considerable aptitude for electronics, Michael Callahan; and a thirty-eight year poet who had occasionally plied conventional trades, Gerd Stern. Their paths crossed in the early sixties, as they helped each other with their respective works. "Gerd was living near here," Durkee remembers, "and he was just turning his poetry into on-the-wall objects. As I had been making objects on the wall for a long time, I helped him. Since I understood that very thoroughly, he was able to say X, Y and A, and I was able to say A, B and Z. That was how the relationship started." A short while later, Stern, then in San Francisco, needed some technical help in making a tape collage, and Michael Callahan, as a technician at the local tape music center, became his collaborator. Not until 1964, however, did they all gather in Durkee's studio-home, the Garnerville church, to combine their collaborative instincts into USCO.

As each moved out of his respective art into collective work, the results of their collaboration became intermedia—works that straddled the walls which traditionally divided one art from another. USCO has produced objects of all sorts—posters as well as machines—but their primary medium has been the theatrical event. Some have been conventional performances, where an audience arrived at a certain time, paid an admission price and then took their seats, but USCO prefers to work in what Stern cans “the environmental circumstance,” where “you take a space and an open-ended piece of time, and you see what you can make it do to people.” In producing an environment USCO metaphorically creates a world of activity—just as, Durkee adds, a “God created the universe.”

The best OSCO theatrical pieces contain a plethora of communicative stimuli—slides, films (sometimes looped), colored and, or pulsating lights, sounds, objects end even odors—all of which usually function to evoke archetypal themes a particularly successful piece they characterize as “a beautiful mix.” The four room environment USCO constructed at the Riverside Museum in May, 1966, was probably their most elaborate and brilliant exhibition.

USCO designed this "system" to be a “meditation room,” full of basic symbols and materials— male and female, heartbeats, and above, seven spheres representing the seven planets. “We also had five elements,” Durkee remembers. "We had sand in the box in the middle; fire in the candles; we had air; we had water in the fountain around the periphery of the column, which was also the lingnam inside the psycho-sexual situation. There was an ‘om’ tape playing on a stereo tape recorder. Have you heard of ‘0m’? Dome, home, womb, tomb, bomb; the'om' is in a lot of important things. '0m' was the original

sound of the universe. What we had in that room, in short, was everything that is." Most of USCO's oldest admirers Most of USCO's oldest admirers consider the Riverside Museum display its greatest single work, and the exhibition has been memorialized in Jud Yakut’s color film, Down by the Riverside (1966).

The effect of an USCO environment is somewhat simiar to the psychedelic experience, for both an awareness of sensory overload disrupts all attempts at concentrated focus and also initiates a gamut of emotional and psychological changes. An intrinsic purpose of such an environment is the challenging of linear habits of organization. "We're dealing with the question of how you can get into the mind with information and images and whether literary sequential ordering is realty the only decent, rational and reasonable input," Stern remarks. Therefore, the connection with psychedelics, while valid, does not explain everything; although Durkee once extensively lectured on the new drugs (which he has since given up). USCO's pieces are designed to turn people on not to themselves but each other. Their principal theme, Durkee says, "is that we are all one. Once we have the understanding that you're not threatening to me and i’m not threatening to you—in other words, that you are myself outside of myself, —then we can begin to work together." USCO's environments present a field of elemental images precisely to make everyone undergo a common reception and then experience a shared awareness. Indeed their conception of arts posible purposefulness evokes echoes of the American Thirties, but the content of USCO's message is more ecumenical than parochial.

The close connection between electronic media and shared awareness has McLuhanish overtones, and sure enough McLuhan's ideas are conspicuously among USCO's influences. Back in 1960 Gerd Stern read an early draft of Understanding Media (1964) in the form of a report McLuhan submitted to the National Association of Educational Broadcasters in 1959, and that experience persuaded Stern to consider that artistic potential of the new media. Soon after, his own poetic impulses took off from the problems of black words on white paper and were channeled into tape collage. McLuhan himself has joined USCO for two performances, speaking after and sometimes before a mixed-media presentation, USCO concurs with his prophecy that today's cities will soon disintegrate into small communities, electronically interconnected: and from him, they also recognized how sensory overload in their home environment could recircuit their own sensibilities. "When you live in a twenty-four channel system, day in and day out—as did when we were doing our things at home, running them for twenty four hours a day, almost, Durkee.....end

R I V E R S I D E M U S E U M F O R R E L E A S E

UNiversity 4-1 700

310 Riverside Drive at 103rd St., N. Y. C 10025

For Release May 7, 1966

Be-ln
An environment by Usco

May 8 June 19, 1966

From Sunday May 8 through June 19 the Riverside Museum (310 Riverside Drive at 103 St.) will present a four room “be-in” by Usco. This exhibition will include paintings, sculpture, weaving poetry, kinetics , electronics, light, and sound.

Usco is a group of people at work together on the new electronic environment, making waves: analogs of head and heart for love and peace. “We are all one” , says a member, “in a world of simultaneous operations you don’t have to be first to be on top, Our center is an old church at Garnerville, New York, but much of the work comes from individuals and groups in the and all over the country. As with artisans in traditional societies, the work is essentially anonymous.” The Usco show is conceived as a "be-in" to get out of the art gallery "walk—through ⁿ world, Comfortable furniture combined with the pieces will make it possible to spend time living with the work. In one case visitors will sit in a fourteen—foot rotating cave.

Most of the pieces in this exhibition will be shown for the first time. An early Usco work, “Contact Is the Only Love " (1963) has been brought from the San Francisco Museum of Art. It is a seven-foot octagon, interlocking rhythms of sound as well as neon, fluorescent, and incandescent lights. The paintings are chakras, totems, waveforms, scriptural messages, tie-dyes, caves, mandalas, premises, portraits, and projections, The sculptures turn, turn and turns There will be several works in a newly developed diffraction medium. "Ideas of Order, " made of IBM surplus, plays itself a random game-a-minute of tic-tac-toe.

Much of the light and sound environment for this show will be programmed, but some of the variables, including stroboscopic light and oscilloscope images, will be playable by those who come.

Open Tuesdays through Sundays from I to 5 P. M,

Closed Mondays, holidays.

No admission charge.

For Information: ORIOLE FARB, Associate Director

-PROGRAM-

WHO R U?

Intermission

WHAT'S HAPPENING?

These performances are studies toward a larger multi—media presentation, The Verbal American Landscape. In my Guggenheim Foundation proposal for this work, I wrote: "The audience may be regarded and valued, from a viewpoint of effect, as still another recording apparatus capable of multi—level operations" Gerd Stern.

Sociologists on the control panel are Howard Becker, Sheldon Messinger, David Sudnow and Paul Mordeno intermission inquiries by Paul Verden.

Word-images for the slide poem were chosen by Ivan Majdrakoff and Gerd Stern and photographed by Ivan Majdrakoff who is also in charge of projection.

Projectionists for Tuesday are Max Finstein, Jacques Overhoff and Simon Perkoff.

Projectionists for Thursday are Ron Davis, Carl Glicko and Joe White.

The performance photographer is Fred Lyon.

Audio engineering is by Michael Callahan and audio—mix by Michael Callahan, Ramon Sender and Morton Subotnick — all of the San Francisco Tape Music Center. Most of the audio equipment is by courtesy of the San Francisco Tape Music Center.

Telephones courtesy of Pacific Telephone.

Closed circuit television cameras and monitors courtesy of Sylvania Electric Products and monitors courtesy of Airtronics, S.F. - specialists in closed circuit television.

Television receivers courtesy of the Woman's Board, S.F. Museum of Art, Victor di Suvero and George Walker.

Publicity by Lorrie Bunker of Consultants Inc.

Much thanks is due the entire museum staff, Julius Wasserstein and the initial encouragement of the museum's director, George Culler.

These performances are experiments in the effects of simultaneous communications We would be grateful for any observations, impressions and critique. Please address

such to Gerd Stern, in care of The San Francisco Museum of Art, McAllister St. at Van Ness Ave., San Francisco, California.

“.....In the electronic age whose media substitute all-at-onceness for one=thing-at-a-timeness. The movement of information at approximately the speed Of light has become by far the largest industry in the world, ...Patterns of human association based on slower media have become overnight not only irrelevant and obsolete, but a threat to continued existence and sanity.” H. Marshall McLuhan.

****

WHO R U?

AND

WHAT’S HAPPENING?

Conceived and produced by poet Gerd Stern in association with painter Ivan Mlajdrakoff, sociologist Howard Becker and the San Francisco Tape Music—Center, JudyMcBean, coordinator,

Starring Live Public Figures, Tape, Telephone, Television, Projected images....

from

THE VERBAL LANDSCAPE

On Tuesday, November 12, 1963

& Thursday, November 14, 1963

at The San Francisco Museum of Art

For Release From: USCO

21 Church Street

Garnerville, New York 10923

(914) 9472549

USCO FANS BLOW, STROBES FLASH, FOR INTERMEDIA' 68 FESTIVAL

Ten-Foot Fanflashtic by Usco IS one of eleven works and events to be presented as part of Intermedia '68, a Festival of happenings, mixed-media, kinetic electronic environments and act 1 on theatre The Festival, managed by John Brockman Associates and supported by the National Council on the Arts and the New York State Council on the Arts, will tour various locations in New York State during the next few months as part of the New York State Council’s program of investigations Into experimental art forms.

Fanflashtic is an environmental, air-light, kinetic sculpture, which can be viewed passively from outside or actively experienced by pushing through a pair of transparent inflated columns into the center of a ten-foot high, ten-foot diameter, transparent vinyl cylinder. Inside this cylinder a turbulent mass of objects are blown about by a group of fans under a subway grating floor, all Illuminated by the flashing of four programmed stroboscopic lamps mounted above. According to Usco, this work is part of a continuing study concerned with time/space interactions

Materials for this environmental sculpture were donated by Seymour Schweber of Schweber Electronics, Westbury, Long Island, N.Y. E.G. & G. of Boston, Mass.; Harvey Radio Company of New York City; and hot air provided by Stanley Silverstein of Nina Footwear, New York City.

Ten-Foot Fanflashtic will first be shown at a New York City preview sponsored by The Museum of Modern Art's Junior Council on March 4th and 5th. It will then be shown March 18 through 22 by the State University of New York at Buffalo, from March 23 through 28 by Nazareth College at Rochester, and from April 8 to 13 at Rockland Community College After that, it will be available for showing in various parts of the country and abroad,

Usco, a group of poets, engineers, artists, film-makers, etc., headquarters in a 100 year-old church in Garnerville, New York. They prefer to present their work anonymously or under the group name, which simply stands for "company of us Since 1962, Usco has presented Intermedia performances and kinetic environmental pieces all over the U.S.A. In Canada and Europe.

Intermedia Systems Corporation

711 Massachusetts Avenue
Cambridge. Massachusetts 02139
617 868-9880

February 28, 1972

Mr. Ken Burke
1200 San Antonio
Apartment C
Austin, Texas 78701

Dear Ken Burke:

Thanks for your letter of February 18th. Michael Callahan and I have taped so far an hour and a half, which has gotten us up to somewhere in 1964. It's slow but rewarding since, if we waited a couple of more years to do this, we probably would have forgotten some of the trenchant details. So you see, you are doing us a service as well as having a service done you. We will copy these tapes and send them on and keep recording in the next week or two and get these to you.

Stan Vanderbeek's address is: Center for Visual Studies,

Massachusetts Institute of Technology, Cambridge, Massachusetts. I am sure it will get to him there, although that will not guarantee you a reply e The problem with the entire media world and participants therein is that like the rest of our civilization, real time is squeezed down to double triple and powers of ten use these days. Callahan says real time is imaginary, but we all do our best. The important thing, if you have questions, is to make them specific because then we can research out the answers for you, I'll be intrigued to see what you do with all this massive data after you get it.

Sincerely

Gerd Stern

Gerd Stern

GS : rw

DICTATED BUT NOT READ

Windsor Station, Montrea l101,Quebec
Tel (514) 861 -6811

Canadian Pacific

January 13, 1972

File: 5100

Mr. Ken Burke,

1200 San Antonio St.,
Apartment C,
Austin, Texas 78701.

Dear Mr. Burke:

In connection with your letter of December 21, requesting background information on our film “We Are Young” which was prepared by Francis Thompson for showing at our Pavilion at Expo 67, I have attached a selection of news releases and certain photographs which I hope will be of some value to you in connection with your study of multi-media at exhibitions.

As far as we know, Mr. Francis Thompson is still located at 231 East 51 Street, New York, N.Y. 10022.

Sincerely,

D. B. Wallace

DBW/pb
Att.

Canadian Pacific-Cominco Pavilion Expo 67

NEWS

MONTREAL, October 30-Canadian Pacific and Cominco Ltd. Today turned over their $4,000,000 pavilion and contents film, projectors and exhibits to the City of Montreal for future use in Mayor Jean Drapeau's plan for a continuing exposition.

The pavilion thus became the first privately—owned structure to be officially accepted by the city,

The transfer took place at noon with Montreal Mayor Drapeau receiving the master key to the pavilion from Canadian Pacific chairman N.R. Crump and Cominco chairman W.S. Kirkpatrick.

With the pavilion, the city will also get Canadian Pacific—Cominco's popular 20-minuet film on youth "We Are Young:", produced by Academy Award—winning film makers Francis Thompson and Alexander Hammid, plus all displays and equipment which the two companies installed for Expo.

The pavilion includes a 600—seat theatre with a giant multi—panel screen in one structure and a separate display building with an audience participation exhibit based upon the five senses--taste, touch, smell, sight and hearing,

The movie, "We Are Young," won wide acclaim from the more than 2,400,000 people who visited the pavilion during Expo, while the five senses exhibit was particularly popular with children and adult persons.

-30-

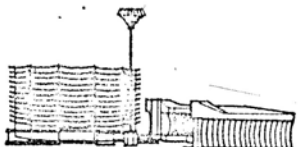
I. B. SCOTT
Manager, Public Relations

Canadian Pacific Montreal,Que

Oct. 1967 (320)

Canadian Pacific-Cominco Pavilion Expo 67

NEWS



II-Makers.

MONTREAL-Two Academy award winners, Francis Thompson and Alexander Hammid, have called upon their wealth of motion picture experience to produce the feature film for the Canadian Pacific-Cominco Pavilion at Expo 67.

The film, “We Are Young,” was shot on location in Canada, and portrays the development of youth exploring “Man and His World”.

From Vancouver Island on the west coast to Peggy’s Cove in the east, more than 500 young Canadians helped in the film making.

The production has been called e major step forward in the art of cinematography. It uses an unprecedented multi-projector technique and a unique cluster of six screens to ten its story.

“We Are Young” promises to be one of the most outstanding motion pictures at Expo.

In 1966, the two film producers received a Motion Picture Academy Award for their film "To Be Alive”, which was shown two years at the New York World’s Fair. The film was honored by the American National Council of Christians and Jews, for outstanding Contribution by a Motion Picture to the Cause of better Human Relations, and it won the New York Film critics special Citation for Creative Use, of the Motion Picture.

Francis Thompson has produced films for the New York Museum of Modern Art, the United States Atomic Energy Commission, the American Mental Health Film Board, the Ford Foundation, and others.

Alexander Hammid, with whom Thompson first teamed in 1962 for the New York's World's Fair, is a Czechoslovakian—born film director and cameramen who has been making films since 1930.

His long list of credits includes "Crisis" a feature length documentary of the Nazi infiltration of his homeland, and "forgotten Village" filmed in Mexico from a story by John Steinbeck. For some years he was with the United Nations film Unit, prior to joining with Francis Thompson.

-30-

(April, 1967)

Canadian Pacific-Cominco Pavilion Expo 67

NEWS

GENERAL RELEASE - FILM

A pair of Academy Award-winning film-makers; a worldwide transportation concern; a major producer of base metals and chemical products....

A mixed bag indeed. Yet, unlikely bedfellows that they seem, these three elements do in fact have something in common.

The men with the Oscars are producers Francis Thompson and Alexander Hammid; the two companies are Canadian Pacific and Cominco.

What brought them all together was entertainment of a rather unique kind. The meeting ground: the Canadian Pacific Cominco Pavilion at Expo 67.

The $4,000,000 pavilion built by the two companies is the largest private exhibitor’s undertaking at Expo, it is two buildings, one to house an audience participation exhibit based upon the five senses—taste, touch, smell, sight and hearing-while the second is a 600-person theatre, where the Thompson— Hammid film, “We Are Young” is screened,

The word “film,” doesn't adequately describe what Thompson and Hammid have created. True, it involves motion picture cameras, projectors and screens, but beyond that it bears little resemblance to what one would see in the neighborhood cinema.

At first sight the difference would seem only a matter of technique: multi-screen presentation, using six projectors and a cluster of six screens. The technique permits a display of broad landscape and sweeping action, or instant closing down to a single screen for concentration on significant detail.

However, for Thompson and Hammid the technique made it possible for them to “explore a whole new cinematic world,” Unlike working within the confines of one screen where several parts of the same action have to follow each other, the multiscreen technique “permits us to show the several parts of the action at once we can make the association of ideas happen very Quickly.”

Simultaneous viewing of various scenes, facets of a single scene, or complex and vivid use of synchronized or opposed movement are all possible

In the hands of a trick-happy film-maker, this complex technique could well become a gimmick technique for its own sake. Thompson and Hammid, however, are a highly-creative pair, artists in the use of film, specialists in the "cinematic experience" in which the audience has a true sense of participation.

Their credentials are impressive: an Academy Award in 1966 for their film “To Be Alive,” shown for two years at the New York World’s Fair, and honored by the American National Council of Christians and Jews for outstanding contribution by a motion picture to the cause of better human relations. “To Be Alive” also won the New York Film Critics’ Special Citation for creative use of the motion picture.

Because it is a part of a pavilion expressing the overall Expo 67 theme of “Man and His World,” the Thompson-Hammid film has no commercial content. It expresses one aspect of the Expo theme: youth jr Canada learning to come to terms with the world in which they have to live. Thompson calls it “a picture of ‘the journey’ to adulthood...a composite, in fact, of many children’s journeys”

The fi1m’s opening sequence is designed to express the popular view of teenage youths seen through the sometimes-critical adult eye. From there it makes a sudden break, starting off with the very young and developing into youth growing up, youth searching and exploring their world,

The beginning of the “journey” through life is shown with an infant on the beach exploring his immediate surroundings. It then carries on up through the various ages-six-year-olds horse-back riding on a ranch, the energetic and imaginative games of eight-and nine-year-olds, and 10- and 12-year-old boys hiking in tall forests of Douglas fir there the youthful activities of skiing, sailing, hitch—hiking, and a cross-country jalopy excursion, the latter involving the 17 to 19 age group,

Each stage is a further step in the youthful journey to adulthood, beginning with the exploration of the immediate surroundings, evolving into a slightly more adventurous exploration, the discovery of nature, and then new discovery and interest in people.

Youthful idealism, inevitably followed by disillusionment, in turn evolving into a more mature interest in life is seen through the eyes of two 20-year-old girls. Arriving in the city with high hopes, they land a job with a large company only to find it involves tiresome, repetitive work. At home, tired and disillusioned, they turn on the TV, only to catch a newsreel showing many of the miseries of the adult world to which they had so long aspired.

Plagued by the question, “what is life all about?” the girls gradually discover the answer. They see a variety of other young people, from manual workers to the most. highly skilled scientific investigator, all at work building toward the future. Each is trying to find those same answers; each is continuing the search the truly-aware adult realizes does not end at age 21.

Thompson’s message: simply, “don’t lose the exuberance of youth, don’t stop exploring, be mature, by all means but don’t lose your enthusiasm...”

None of the cast of 340 teenagers, 65 adults and 50 sub-teens are professional actors. “Untrained people have a spontaneity and simplicity that trained actors and actresses don’t often retain,” says Thompson.

How did they get their actors? “We simply asked them... hardly any refused. Most people like to be in films and are pleased to be asked.”

For Thompson and Hammid, their subject was a challenging one-the more so when one realizes that moments of youthful experience extending over some 21 years had to be presented in Just 20 minutes, or 10,800 feet of film for the total of six projectors. That’s about one—tenth of the total 100,000 feet plus shot across Canada over a 35—week period. Edit1ng ("an agonizing process") has taken a further 20 weeks.

Because the film—makers are seeking to give their audience a sense of involvement, setting the mood of the film has been of primary importance. “We feel film is primarily an emotional medium...it should stir people up, make them happy or sad.”

In evoking a mood, the timing or “pacing” of the film is important. It is for chat reason that both the script writers- internationally known Film Board director-Donald Brittain, and television writer Alex Pelletier and the composer of the music score, New Yorker David Amram have been Closely involved with the final editing-“so they will feel comfortable with the film,” says Thompson.

Because the film is primarily a visual experience, the spoken word “is never allowed to intrude,” says Brittain who is writing the English commentary in collaboration with Mrs. Pelletier on the French. As a result, the commentary is brief, serving as guide post for the audience and to maintain the continuity.

Just as the script is necessary but never obvious in itself, so too with the music. David Amram, who is presently resident composer with the New York Philharmonic; has written music for many distinguished New York productions, and for several films, including “The Manchurian Candidate.”

Amram, who looks upon the music for the film as a sort of musical narrative- “not as back Ground music,” terms the film itself "almost like music.”

What Thompson and Hammid have done, can in fact most easily be described by likening the six screens to a six-piece orchestra, with the film-maker as the conductor. A piece of music played well is remembered as a fine piece of music-not as six pieces of music put together. The listener doesn’t remember the performances of each individual musician, he remembers the orchestra.

That is what Thompson and Hammid have done on the screen to have the audience remember the film as a whole experience, not as a film shown on six screens.

The theme of youth in itself is not new, nor for that matter is the multi-screen technique. What makes the film unique is the men behind it. The tone is light without being frivolous, the photography is beautiful, and the screen cluster concept adds new dimensions without ever being obvious in itself.

They may seem pretentious terms; but when one leaves the pavilion, one will know what is meant by “visual poetry" or “cinematic symphony,”

Canadian Pacific

MONTREAL - A revolutionary film presentation and a unique display area reflecting the Expo ’67 theme “Man in His World” through the use of man’s five senses are the twin attractions of the Canadian Pacific Cominco Pavilion on Ile Notre Dame.

Designed by Demartin-Narona (Cananda) Ltd. and situated on 40,000 square feet of land, the pavilion consisted of a theatre, an exhibit building and a landscaped plaza area including Lagoons and fountains.

The overall effect, given substance by zinc-coated steel sheet fins stacked vertically on one building and horizontally on the other, is one of rhythm and expansion.

The 12-sided theatre building, 8,200 square feet in area sheathed in 264 horizontal fins which project from the surface and will be illuminated at night to provide a striking exterior effect. The dodecagon shape is symbolic of the many facets of the two sponsoring companies.

Francis Thompson Inc., international award-winning movie makers, are producing a film to be shown in the theatre. Using original filming techniques and multi-screen projection, the film will depict the “Man and his World” theme with accent on youth.

The 8,500 square foot exhibits building will complement the rhythmic and color qualities of the theatre. It will be sheathed in 164 vertical fins and will house exhibits telling a more detailed story of the two companies’ products and services. This will not be a technically-oriented display but one that will stimulate the creative instincts of the viewers as well as informing and entertaining them.

The $4million pavilion is the largest individual corporate

Expo. Located diagonally across from the U.S.S.R. Pavilion, it is close to the Cosmos bridge leading to the U.S.A. Pavilion and next to a Minirail station.

Visitors will start their tour of the pavilion in the 600 seat theatre where the 20-minute film-which has been 18 months in the making-will be shown every half hour.

The film's producers have used the multi-screen technique to contrast exhilarating scenes of sweeping action with detailed single

screen close-ups. From both technological and entertainment viewpoints, the film promises be a major milestone in the history of cinematography.

After the film, visitors will be able to relax in the plaza area where a restful atmosphere will prepare them for their next delightful experience of "Man and his World", it in the exhibits building.

Here the five senses-sight, sound, taste, smell and touch-will be brought into play in a series of unique exhibits and

combined in a grand finale that will emphasize and summarize the relationship of these "sense areas" to the activities of the two sponsoring companies.

- 30 –

S. M, FISHER
Public Relations Representative
Canadian Pacific, Montreal, Que

.

Sept 18, 1966

201

Dating your shades...

'cause what you're gonna see will strain your eyes!

It's definitely out of sight. *You* are the center, and everything is happening around *you!* If you are a "thinker" you may blow your mind. Dancing in a new dimension—surrounded by 21 giant screens—some of them movie, some of them closed circuit TV, some moving slides with visual sound, all of them popping with action, and synchronized with what's happening. The live entertainment on suspended stages is like no other shows or sounds you've *seen.* Yes we meant sounds you'll *see.* Even when you *see* it you won't believe it. Those screens will be popping with the *guys* you'll love—the *girls* you'll love—the *things* you'll love—there's room for them all—and you'll see them bigger than *life* and life will look different. Music will have a *new* meaning. You will have a *new* attitude and we defy you to maintain your cool. If you're up tight—come to where the *lights* change, the *scenes* change, the *entertainers* change —and *you'll* change—right in the middle of the most revolutionary thing that ever happened to the world of entertainment —It's a trip.

Murray the K.

Friday, Saturday and Sunday Evenings, 8 pm to Closing
(12 years old or over)
Saturday and Sunday Afternoons, 2 pm to 5:30 pm
(16 years old or over)

WHAT YOU WEAR SHOULD SAY SOMETHING. Fashion plate or out of date. Even improvise. Tails with dungarees, evening gowns with boots. *Formal, mod or casual too, but plain sloppy just won't do.*

Parking for 1000 cars
Parking Free with reserved tickets

800 Old Country Road
Garden City, Long Island
(Near Roosevelt Raceway)

Admission $2.50
Reserved tickets available
Phone: 516-PI 2-2727—or write.
Stag or Dated

GALA OPENING FRIDAY, APRIL 30, 8 PM

NATIONAL FILM BOARD
P. O, Box 6100
Montreal 101, Quebec

OFFICE NATIONAL DU FILM

January 4, 1972

Mr. Ken Burke

1200 San Antonio Street

Austin, Texas 78701

Dear Mr. Burke:

I have attached a copy of our Technical Bulletin on the Labyrinth set up and following is the address for;

Roman Kroitor
5165 Sherbrooke Street West
Room 211
Montreal* Quebec, CANADA

Sincerely,

George V. Fanning

George V. Fanning
Publicity Division

Enc. 1

STATE 0F NEW YORK
DEPARTMENT 0F COMMERCE

NEAL MOYLAN
COMM16SlONER

MKTROPOLlTAN AREA OPERATTONS
'ARK AVENlJE
NEW YORK, NEW YORK 1001 '

MlCHAEL F. WOOOS
0EPlJTY COMMlSSlONER

The information supplied is in response to your recent inquiry.

We welcome this opportunity to serve you, if we can be of further assistance, please call on us.

Sincerely,

Footnote :
Possibly an organization such as
International Assoc. of Fairs & Expositions
777 Arbor Road
Winston Salem, N. C. 27104
could refer you to sources of information.

UNITED STATES GOVERNMENT PRINTING OFFICE

PUBLIC DOCUMENTS DEPARTMENT
WASHINGTON, D.C. 20402

Thank you for your inquiry which we are returning. We cannot identify a government publication on sale by this Office containing the information you desire.

Perhaps your local librarian can help you. Librarians are professionally trained in the techniques of research and have access to Government and non—Government source material not available in this Office.

Sincerely ,

Sincerely,

ROBERT E. KLING, JR.
Superintendent of Documents

SD 257-71

1305 PINE AVENUE WEST, MONTREAL 109, QUE.
TELEPHONE 849-4495
CANADA

Cj03519/71-Vo

Montreal , December 30, 1971

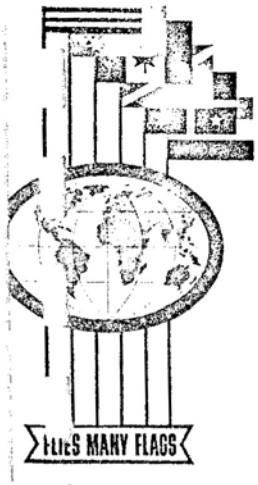
Ken Burke
1200 San Antonio St. apt. C
Austin Texas, U.S.A.

Dear Mr. Burke,

I wish to inform you that we have sent your letter, dated December 21, to our Embassy in Washington with request to reply.

Yours truly

Stanislav Novotny
Consul—General



International Association Fairs and Expositions

Dec. 29 1971

Dear Mr. Burke:

I wish I could help you. All of our members are state and county fairs. We do not count in our membership World's Fairs so I have nothing about them.

Sincerely

Frank Kingman

OFFICERS — PRESIDENT: Jack K. Clarke, Central Canada Exhibition, Ottawa, Ont. **VICE PRESIDENT**: Arthur K. Pitzer, North Carolina State Fair, Raleigh, N.C. - **SECRETARY-TREASURER**: Frank H. Kingman, 777 Arbor Road, Winston-Salem, N. C. 27104
DIRECTORS: Miss Marie McKinney, Mid America Fair, Topeka, Kan- William L. Mullaney, Erie County fair, Hamburg, N. Y — Crosby Murray, Tennessee fair, Knoxville, Tenn. — H. H. Parrish, Orlando, Fla., Federation of Fairs-Wendell W. Prater, Kiyttias county fair, Ellensburg Wash.- John D. Rennie, Pacific National Exposition, Vancouver, B.C.-Joseph B. Rucker,Jr., State Fair of Texas, Dallas, TX.-W. Ty W. Sincock, Steele County Fair, Owatonna, Minn.- Arthur G. Springer, Jr., Chattahoochee Valley Fair, Columbus, Ga.-G. W. Wynne, Eastern States Exposition, West Springfield, Mass. — James P. Young, Blue Grass Fair, Lexington, Ky

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION

National Archives and Records Service December 17,1971 *Washington, D.C. 20408*

Mr. Ken Burke
1200 San Antonio Street
Apartment C
Austin, Texas 78701

Dear Mr. Burke:

Your letter to the U.S. Information Agency has been referred to this office for a reply.

The Office of National Archives has custody of the permanently valuable records of the Federal Government. Many Government agencies have used audiovisual materials for different purposes. The records of the Committee on Public Information for World War I show how this office used still pictures, lantern slides, posters, speakers, and motion pictures to carry out its mission. The records of the Office of War information for World War II would be another key area, including a heavy emphasis on radio broadcasts.

In addition to paper records, the Archives maintains extensive collections of still pictures, motion pictures, and sound recordings, many of which would be intricately connected with your field of research. But comparatively few of these records date beyond the period of World War II, for more recent information you would have to consult each government agency itself. One example is the Expositions Office of the Department of Commerce.

In any case, one would have to do this kind of research in Washington. We would be very pleased to put our records at your disposal for this purpose.

Sincerely,

AMES W. MOORE, Director
Audiovisual Archives Division

Keep Freedom in Your Future with U.S. Savings Bonds

SEATTLE CHAMBER OF COMMERCE

Dear Mr. Burke,

Thank you for your letter. We regret the necessity of answering with a form letter, but the current volume of mail makes it impossible to answer each as personally as we would like.

We hope the information we are sending you will answer your questions. If you need any further assistance, please do not hesitate to let us know.

All the records from the Seattle World's Fair are now stored in a vault in Olympia. Perhaps you can obtain the information you need by writing there.

Sincerely,

Patricia Pomeroy
Special Services

215 Columbia Street- Seattle, Washington 98104 -Area Code 206 MA 2-506

January 17, 1972
215 Dial Street
Ft. Benning, Ga.
31905

Mr. Ken Burke
1200 San Antonio Apt. C
Austin, Texas 78701

Dear Ken :

Your letter arrived while I vas home on leave over the Christmas holidays. I'11 try next week to write you a detailed letter concerning the information that you need for your thesis project; however, in the meantime, this will just be an acknowledgment that I have received your letter and will be more than happy to assist you. Enclosed you will find an outdated booklet concerning some of the instructional media available at the Infantry School.

Just to give you a general idea of what we have available, let me list the following for you :

1. First, we have the first color television system in the Army. This consists of 8 channels of cable television supporting some 4,500 students at any one time. Our production capability includes a fully equipped studio and remote van.

2. Computer Assisted Instruction -- We have one classroom that is equipped with CAI using a Honeywell computer.

3. EDEX (Student Response Teaching System)-EDEX is a system utilizing automated audio, slide, and motion picture with a simple and immediate respond system.

4. Individual Learning Center We have recently built a 50 carrel individual learning center utilizing television, Super 8 motion picture, 35mm slides, and audio tape recorder, we are currently expanding this to 75 carrels which will include the new Sony 3/4” cassette television.

If you will either write or call me (office: 404/545-7415, home: 404/545 4925) in the near future giving me exact requirements concerning the information that you need for your thesis, I will be more than happy to supply you with the information. In addition, there are 27 other educational television stations scattered around the country, and I can provide you with their addresses and contacts at each.

Tell Bob Brooks that I said "Hi" and am sorry that I missed him over the holidays . I plan on returning home in July to catch up on old friends . Again, anything that you need, please feel free to ask. 1 ᵣ 11 be more than happy to assist you.

Sincerely,

Melvin W. Russell

Enclosure

Мос ква , февраля 1972 г .
Г-ну Кэн Бюрк ул . Сан-Антонио 1200 210 Остин, Техас 78701
С Ш А

Уважаемый г—н Бюрк,

Ваше письмо , адресованное в Министерство торговли СССР , было переда но нам , в Комитет по клнематографли. В этом письме Вы высказали желание получить сведения относителъно использованл;з в СССР специальных аудиовизуальных средств (полиэкран, кругорама л т .п.) , характеризуюац,гкся налич не :КОЛЬКИХ каналов передачи информ ации.

К сожале кию , щолжны Ва.м сообщить , что в нашей стране не существует отдельной оргз.низации, которая занимааласль бы изучением и созданием ИНШЕРЗСУЮЩЛХ Вас систем . Отдельные системы устройства, которые по сво характеру могли бы Вас заинтересовать, разраба шываются изготавлив аются разчными иорга низ ацлями, главным образх , для выставок , целой рекламы и др .

В СВЯЗИ С ЭТИМ МЫ НВ Х возможности еем СООбЩИТЬ ИНТЕресующ;ае Вас сведе ния ,

С ув аже н тльч.т

В .Нудаков
Начальник Управ ения киношех т нжи
П КИНОПООИЫШЛВУ ОСТИ иноК
теша ссор

TRANSLATION OF PREVIOUS RUSSIAN LETTER

February 1972.

Mr. Ken Burn
1200 San Antonio St.
210 Austin, TX 78701

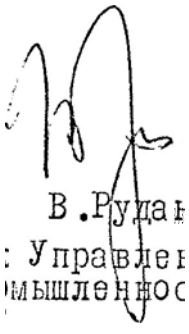
Dear Mr. Burke,

Your letter, addressed to the Ministry of Trade of the USSR, was transferred to us, to the Committee on Cinematography. In this letter you expressed a desire to receive a message regarding the use of special audiovisual means (poly screen, round-robin, etc.) in the USSR, characterized by the presence of non-SPL channels for information transmission.

Sorry, I must inform you that in our country there is no separate organization that would be engaged in the study and creation of systems of interest to you. Separate systems and devices, which in their own nature could have you, are designed and manufactured by various organizations, mainly for exhibitions, advertising purposes, etc.

In this regard, we are able to provide you with the information you are interested in.

Sincerely,



Head of The Department of
Cinematography and Cinema Commis

CULTURAL COUNCIL FOUNDATION

CREATIVE ARTISTS PUBLIC SERVICE PROGRAM

March 24, 1972

Mr. Ken Burke
1200 San Antonio, Apt . C
Austin, Texas 78701

Dear Mr. Burke :

Following are the addresses you requested

Don Snyder
348 West 23rd Street
New York, New York 10011

Aldo Tambellini 572 Atlantic Avenue
Brooklyn, New York

Robert Whitman
35 White Street
New York, New York 10013

Jackie Cassen
727 6th Avenue
New York, New York

Rudi Stern
Broome Street
New York, New York 10012

Roberts Blossom
233 West 83rd Street
New York, New York

I hope this will be of assistance to you.

Sincerely,

Madeleine S. Ferris

Madeleine S. Ferris
Program Director MSF:js

DIRECTORS
Sheldon Olionsis President
Robert G. Goelet Secretary-Treasurer
Arthur G. Altschul
August Heckscher
Oore Schary
Bethuel M. Webster

Address repiies to: Creative Artists Public Service Program
250 'West 57th Street, Room 430, New York, New York 10019. (212) 247-7701
Madeleine S. Ferris, Program Director

WED Enterprises. Inc 1401 Flower st • Glendale, Calif 91201 • 245-8951
A Subsidiary of Walt Disney Productions

April 4,1972

Mr. Ken Burke
1200 San Antonio, Apt. C
Austin, Texas 78701

Dear Mr. Burke:

Thank you for your letter of March 31, 1972 requesting information concerning Disneyland's "Rocket to the Moon" attraction.

Your correspondence has been forwarded from Disneyland to WED Enterprises. WED (the initials are those of Walt Disney) is the design and engineering division of our company responsible for developing outdoor entertainment. The "Rocket to the Moon" attraction at Disneyland was completely re-designed concurrent with the opening of the "new" Tomorrow land in 1967.

Enclosed you will find general informational material concerning this exhibit. Unfortunately, we cannot provide cost data, specifications, or photographs .

Thank you again for your interest in Disney.

Sincerely,

Robert C. White

Robert C . White
Concepts Department

RCW:mb

im•ag•i•neer'ing n. Imaginative concepts in Design, Architecture, Engineering and Entertainment..- Syn. See DISNEYLAND.

213

DISNEYLAND'S ALL NEW

Tomorrowland

© 1967 Walt Disney Production

DOUGLAS

DISNEYLAND'S MOON ADVENTURE

UTMOST IN SPACE-AGE REALISM

Disneyland, working with McDonnell Douglas Aircraft, has created a realistic and exciting "Flight to the Moon" adventure for the new multi-million-dollar Tomorrow land.

"Flight to the Moon," carries guests "out through space" where they feel the pull of gravity during blast-off and the weightless escape from earth.

Based on the latest information from the nation's space exploration projects, the new adventure will give guests the thrill of seeing the moon come closer and watching Earth become a colorful basketball in the sky. Visitors will get a good idea of the texture and roughness of the moon's surface, and see a future lunar exploration party at work.

Before their flight, space voyagers will visit Mission Control, where outer space activities are monitored on huge viewing screens throughout the center. A "control central director" will present the latest, most accurate information on space exploration to Disneyland guests

TOMORROWLAND FACTS AND FIGURES

The new Tomorrow land covers an area of over five acres (227 , 500 square feet), and stretches, from door to door of each attraction, just one-half mile.

Monsanto's Adventure thru Inner Space is a journey into the world of the molecule through a 37-foot Mighty Microscope. The attraction is housed in a 21,733 square-foot building located at the right entrance to the new “land.” Up to 3,275 guests per hour can be carried into the adventure.

Bell Telephone’s America the Beautiful presentation takes guests from the East Coast, to Hawaii and Alaska in a new 80-foot-diameter circular theatre. Up to 3000 guests can visit the 17-minute attraction per hour.

General Electric's Carousel of Progress attraction is housed in an 83,000 square foot pavilion with six auditoriums, each seating 240 guests. In these auditoriums the progress of electricity is depicted in the 1890’s, 1920’s, and 1940’s and Today, A second show for Carousel of Progress guests, Progress City, is located on

the second floor of the pavilion. Here, spread out in capsulized realism, is a 7000 square foot city of the future done on a 1/8-inch to 1-foot scale. The city is complete with 22 types of transportation systems.

Disneyland guests become “Astronauts” in the new Flight to the Moon adventure presented by McDonnell Douglas. A Disneyland space Port, complete with a Mission Control and Lunar Transports has been created especially for the new attraction. As many as 1,620 passengers per hour can orbit the moon in the fifteen-minute adventure.

A new concept in intermediate transportation makes its world debut at Disneyland this summer-the Goodyear PeopleMover. Also designed by WED Enterprises, Inc., this all-electric conveyance system travels 3,250 feet throughout Tomorrowland, passing through many of the new attractions for a “preview.” The 62 four-car PeopleMover trains never stop running, carrying as many as 4,885 passengers per hour.

An all-new Rocket Jet Adventure will mark the highest point (85 feet) in the new Tomorrow land. Nearly 600 passengers per hour can experience this adventure in 12 Rocket Jets.

Dining, Dancing and Live Entertainment in the comfortable atmosphere-of-the-future are offered in Coca-Cola’s Tomorrowland Terrace. This restaurant will feature daily entertainment and the latest in cooking, serving and bussing techniques.

And, so, new Tomorrowland is here, firmly proving that Walt Disney’s promise to grow was not limited to his own years. That the creativity, which was given new meanings and new applications by Walt, will continue.

refocus
Iowa memorial
union
The university
of Iowa
Iowa city,
Iowa 52240

refocus72

an exposure to
films, photography,
and people

NEW DIRECTIONS IN AMERICAN IMAGERY
8th Annual Film and Still Photography Festival
April 14-23

At last, the program format for Refocus 72 is drawing together. The following will serve as a temporary outline of events - films and lectures. It, of course, is subject to change. An added attraction to our original program will be the American Federation of Film Societies Regional Screening to be held April 21-23, the theme for the regional screening is “Cinema for the 70’s-The Political New Wave,” All film programmers-societies and students-interested in obtaining reservations for these screenings should contact us. Admission to all of the AFFS screenings will be a blanket $2.00 (plus tax). Most of the Refocus events will be free - several film screenings will have nominal admission charge. Applications for the National Student Photo Display and the 8 mm competition are still being accepted.

We will be presenting several programs in Video Tape - if you have tapes,(1/2” EIAJ Standard) please send them or bring them along,

Only people will make Refocus a festival - come along - it'll be an eye-high.

Lectures

Gene Youngblood – “Video sphere” “Expanded Cinema” - April 16, 17, 18
Todd Walker - Photography - April 20
Peter Bunnel - Photography curator Museum of Modern Art - April 21
Joe Kirkish - Photographer April 18
Gene Walsh - Contemporary McGraw Hill Film Distribution - April 21-23
Jon Jost - Independent Film Maker - "Mad Mountain Movies” - April 18 Fred Becker - from U of Iowa - film "Heroes"
Geoffrey Bartz - independent film editor - "Part of the Family" April 21
Rob Fisher - creator of Mem Brain - April 15-16
Charles Swedlund - Southern Ill. University - Design - April 19

National Student Photography display from over 25 schools opens April 15.
Todd Walker display in Museum of Art.
A presentation by the Chicago Art Institute will happen over a three-day period during Refocus.

Dear Mr. Burke ,

I’m delighted you want to know about my work for your thesis, and I will help as I can.

My (our) first performance was at the York Theater in 1961, April 17th. It was done one night, and though scheduled to be done the following Monday, the show was cancelled as the audience reaction was so peculiar. Sculptors and painters in the audience kept bravoing (not a claque), but advertising people, who, I understood, constituted a majority of the audience, kept hissing. I’ll try to Xerox Michael Smith’s review of it.

The evening lasted, I would guess, two hours and there were ten pieces, most of them by me.

There was a performance of works at the Living Theatre two nights, I believe, in 1963. When, I’m not sure. Stephen Tropp, Mario Jorrin and I were the composers, as at the York we used an old 16mm. movie projector (silent, though very noisy) , and two slide projectors.

That was our standard equipment in most shows, plus scrim, a tape recorder or two, and actors.

June 1, 1964: we premiered at the American Arts Project. For how long? four days? I did “A Man and His Dog,” which is a man on stage, his face covered with black checkerboard squares (the skin being the white) acting and reacting to eerie taped sounds. “The Railroad Station,” a piece with one projected glide for each scene, plus Taylor Meade and I two gay old dull blades trying discover a means of communication and finally ending up in deaf and dumb language.

My (then) wife danced as I played my fingers over the lens (without film)of our trusty projector. Remarkable how many lovely effects occurred.

A lovely piece by Steven Tropp was included, called Poem for the Theater No. 6. It consisted of a background movie shot by Mario Jorrin and directed by me, in negative, of six girls in gossamer nightgowns sleepwalking on a Greek-type rotunda. We used Bachianas Brasilieras of Villo-Lobos No.5 as the music. Very romantic. Oh, my wife, Beverly Schmidt, danced in a Chinese red dress against the ghostly background of young but aged goddesses, and we were roundly cursed by the consciousness—mining artists of the audience.

On May 2nd 1964 1 helped ray wife Beverly do a dance concert at the on 92d Street here. My piece was "America, Scene 4" (there were four written scenes of which I did only one), which consisted of myself appearing in color and sound (that is, my face, which sports blue eyes, a red beard, and white skin), and while the National Anthem is heard, modestly being flattered out of my wits by unheard compliments, Then I "watch" myself come on stage

(Still red white and blue) and embarrass my larger screen image by not finding anything to say, and stuttering, hemming and hawing. I finally do a dance, which is rather chaotic, and it makes my picture fade. Ah! I remember. As background picture fades, lights come up (border lights from below), and give me many shadows of different intensities as I dance, Different colors too.

I believe it was 1965 that "Blossoms" was done at the Second City (four nights). That is, Paul Sills "second city" was playing regularly at Square East (now no longer) on E 4th St, and we were given Monday and Tuesday nights for two weeks. The opener: two large white plaster statues, Mommy and Daddy, sat in two large wheeled chairs facing the audience. Over them played

a marvelous film (about twenty minutes long), which I had bought for $1.50 near Times Square, about an underwater circus in Florida, filmed almost entirely under water. It played over the statues and a large screen behind them, and was accompanied by sounds, over tape, murmurs of the statues' consciousness and beyond. A charming witty piece, though the only comment I got about it was from a middle—aged lawyer who told roe he couldn’t see the film for the statues.

The second piece was Taylor Mead (underground film star) doing (live) a striptease to Nusak. That is, he (again) wore red white and blue and was covered with tin cans, pinned to his blue jeans and his red shirt, and to strains of Mantovani, I believe, he “undressed” seductively a la Sally Rand.

The third piece of note wag a film of Beverly Schmidt dancing, taken by Mario Jorrin, directed by me. It was fine uncut film, using many different lenses, and angles, and a more or less Eisenstein shot relationship (that is, as much opposition between one shot and the next is possible in content and form and motion). Beverly danced four dances before this film with four different kinds of music, ranging from Bach to Mantovani again. It was visual counterpoint, and the final dance, to Vivaldi, was an actual visual counterpoint, step for step, between Beverly on stage and on screen.

A lovely experience. Saul Gottlieb nodded his head in The Voice. One projector and two slide projectors and a tape recorder were our technical equipment. I don't recall any of the other pieces, except “The Professor”, which is a standard piece I did on all the programs up to point, using a tiny bit of film and a number of slides, and myself giving a professorial lecture on birth. The slides conflicted obliquely with the monologue, giving rise, hopefully, to a bemused state

of unexpected thoughtfulness in the audience , I am afraid it merely bemused many.

What else? I did two shows at Judson Memorial Church Poets Theatre, when I cannot recall, though the latest one was about three years ago, ah! — June, 1969, In the latter I introduced “Chinese Dancer,” one of my longer and better pieces to date. I’ll send you a copy. “A Rehearsal″ was also done then, but had been done before at the Bridge Theatre, when I don’t know. I did two shows at the Bridge Theater with wife in the late sixties, and another piece introduced there and at Judson was ″La Luz,” a piece about an old man, played by me, on screen and stage, dressed in diapers and a long white beard. He keeps repeating ″Life is short,” in various languages. If 1 find a copy I′ll send it, the only people to date who have expressed delight in this piece have been ministers, though I remember getting roundly applauded for it at the Bridge (a surprise).

Nothing since, and nothing again, unless I am invited, and paid well, and given all the equipment I need, and so on. And even then— I am no longer really interested. Film stage has had its day, in my opinion, though the intent of it passed right over the consciousness of practically all who experienced it. Meaning: people weren’t ready, I didn’t do my job properly. But I did. My pieces, most of them, are artistic successes, in the same sense -that some of the best abstract paintings are. I don’t think I’m boasting. Many painters and sculptors here have understood what I was doing. If the time will come again for my work to be exhumed and viewed, I hope it will be felt that an attempt was made to coach a poetic language for eye and ear.

Shall I speak of my reasons for making those works?

I am convinced, or have been, that Americans are unduly limited in their feeling, thinking and expression. That does not go for all of them, of course, but I find an unusua1 kind of slavery abroad in this country. And that is, a slavery of language paucity. What do I mean? American is complaint mosaicked into tone. This is one of the poetic statements I've made of it. The opposite, I have come to realize, is perhaps equally true: that American is an old skin (English, rigidified) in which new wine is fermenting.

I wrote my filmstage pieces as I wrote my poems. They came to me, once I had done enough thinking, reached a state of ferment. My purpose was to broaden the language experience of the audience, to say a great deal in a short space, knowing that the eye and ear working independently can handle a great deal, it was, and still is, too unaccustomed a means of communication for people to grasp a great deal of what I’m saying. They will have to be trained. My future audiences, if any, will have to be trained to understand me. When the right machines emerge, visual phonographs, for example, my pieces will be something like Webern’s though for the eye and ear.

A new world Language is emerging, of gesture and sound. Words may be used, but with an awareness of the creativity of words, the dependency of expectation (our usual language depends on meeting usualness in the eye and ear, equaling expectation with performance. Insofar as it does this, it is no language at all, but a funeral rite for the soul. There is a language of the soul, however, which can be learned,) Peter Brook is working with actors in Paris (French and English together), trying to develop a new language called Orghast. A Polish director has done similar work in Poland. Tom O’Horgan’s work, using just actors, not film and stage, is similar. Language

expansion is the method and the goal. Old languages will fall like snakeskins by the wayside when we discover the potentialities of sound and gesture.

This has been my purpose in the theater, and my only purpose. To raise consciousness (when I could reach it) by stimulating it to new exercises, toward a poetic vision and version of things. I feel now I have been naive not to recognized the great chunk of rock American consciousness has become, not, that is, to have been a sculptor (in my medium, or a similar one), rather than an abstract watercolorist.

My influences have been an English nurse, who spoke a language, when I was a child, of such ebb and flow and nuance and feeling that never after that could I be satisfied with what I heard and saw (for gesture is part of language) around me I had to suggest to people that they are in a language bind. But nobody listened. Poor people. They think their problems are elsewhere than they are.

Other influences : dissatisfaction with the dried—upness of American speech and thought. John Keatsy, Walt Whitman, tracts on identity crises in contemporary America, juvenile delinquency, Jewish gesture, Italian speech—and—gesture, delight in living, dreaming, being alive...

I have not been influenced by John Cage, except in my most recent poetry. he, however, has been influenced by me. He and Werce did a dreadful filmstage show some years ago on Long Island, which I walked out of. An assault on the senses.

I leave you with this. I hope you have much good luck with your thesis.

Yours truly,

P.S. If you write more info

Roberts S. Blossom L Blossom

Roberts S. Blossom

233 West 83rd Street
New York City
New York

Poet: Rembrandt, Excusology of the Ocean (books: latter, Interim Press)

Six American Poets (anthology), ed. Jack Micheline Numerous magazines

Playwright: Inventor of filmstage medium. Shows at Second City, Living Theatre, Judson Poets' Theater, many others, Sorne reviews and article in Tulane Drarna Review included, short play included, printed in Chelsea Magazine

Actor: Starred in "The Physicists," appeared in other Broadway shows, and most recently featured in "Operation Sidewinder" at Lincoln Center

Recipient: Rockefeller Grant for Experimental Work in Theatre ($13, 000--1967)

Degree: B.A. in theatre, Western Reserve University. Also attended Harvard, Bard, Williams, Cleveland College.

CHINESE DANCER

by Roberts Blossom

Curtain opens. Up stage a screen. Onstage appears from within screen an elaborately dressed Chinese dancer. HE dances. Sounds : clinking of beads, autos passing, trucks,

A LECTURER appears, sets up lectern DL. HE is Chinese. HE nods to audience, smiling, arranges papers. DANCER is standing, right stage (like Indian, quietly) facing left stage , in shadow.

Lecturer

The possibilities of a Chinese civilization are maniford. We are today in the midst of a world revorution

SOLDIER, very dirty and tired and thin, appears on screen and sits on ground .

Lecturer

(during this) Everywhere sordiers congregate and express themselves

Soldier

God damn son of a bitch (perhaps about fatigue and lice, etc)

Lecturer

there is revorution there are the signs

SOLDIER lies down to sleep.

Lecturer

He dleams , perhaps, of palaces and dancing girls. Perhaps not.

DANCER begins slow dance.

Lecturer

Perhaps he dreams of an ancient stone that spouts water in the midst of drought, that spouts youth in the midst of despair

2

SOLDIER curls up slightly and turns toward audience in HIS sleep,

Lecturer

Perhaps he dreams of you sitting in these chair, making sense of what we do.

Lights out on stage . Lecturer goes off . DANCER then too, upstage .
SOLDIER gradually fades.
On stage a DANCING GIRL appears. HER music is al beads
HER voice accompanies in low husky tones (almost whisper) and slow. Murmur, and then:

Dancer Sang a s o n g a while a go

Sang a love a while a go

Lights dim out.

Chinese Voice

(in dark) Now that the revorution has begun we are going to join the fields of battle where you will observe the forces that conduct today t s rives in their grip , — and tomorrow's destinies.

SOLDIER 's ravaged thin face on screen.

Soldier

Mother fucker!

LECTURER comes back on, bringing lectern.

Lecturer

You may ask what is this word 'motherfucker 'which we do not know in China and which is part of Western philosophy along with automobiles and erect ric rights.

SOLDIER's face fading to white .

Lecturer

It is very curious word. Erect ric right change day to night or night to day, but 'motherfucker t what this change? I do not know.

During this JIMMY, a thin old bum, upright and sprightly as a bird, quiet as dust, comes on upstage in semi-light seeming confused.

Jimmy

You want to know what changes? Everything. The

The way they 're listening. (Moves fingers .) The

fluid in which I move my fingers. . . You’re talking to them, but it makes your talk and their listening a little (oscillates horizontal hand in air) irrelevant maybe . I 've known the world a long time .

It sings in the bowels of the defeated and flies like desperate birds out of the stuffy attics of our

CHINESE is getting restless.

Jimmy

Excuse me . Did I come in the wrong door? (twists around)

Chinese

I don't know what you do here. It-

Jimmy

What I do here . It

Chinese

You——inconvenient

Jimmy

(toward audience) Yes I am.

SOLDIER! s head appears on screen and watches them both, turning eyes.

Chinese

(shouting to back of auditorium) I ask the porice take this man away.

Jimmy

No, . You conjured me up . (to someone in front row) Gimme a cigarette .

Chinese

(coming toward HIM) I can lecture on no worrd revorution with you here .

Jimmy

(seated now) The worrd revorution is what I am here about.

Chinese

What party you representative of? (Smiles at audience.)

SOLDIER's face is receding.

Jimmy

I represent the world. I am the very essence of what you're seeking with you communism and your-—shall we say?---weighty past .

Chinese

How can you be? . . We are the bright sun.

jimmy

No You are one figment of truth——one sliver of the mirror. . These are another. Do you not think they sing and dance and have their dreams?

CHINESE comes over to JIMMY and whispers in HIS ear.

Jimmy

Motherfucker . Yes. Why are there people among you who say motherfucker? A deep pity is needed. to unravel the darkness of this dream.

On screen in blur much city action . (& sounds)

Gray shadows rise and sway there . After a bit as noise quitens:

Voices of Shadows

We are the dead who have died in your cities

Not alone in the cities of Man

But everywhere in the universe where beings congregate to enslave

Their fellow beings for no reason

The SWIDOWS darken slightly. The VOICES rise.

Shadows

We have been put on the lists of eternal wanderers

Men that have no destination but waiting

And moving in the landscapes of soot

Darker--louder

We are the men forgotten by you

Blacker and blacker we grow in our thinking

Louder and louder we cry

Darker and out
JIMMY gestures to CHINESE: see?
CHINESE pauses, turns embarrassed to audience .

Chine se

Ladies and gentlemen, I had not expected this film.

(Angrily, to Jimmy:) We are here to discuss "motherfucker".

Music comes on ceremonial .
Chinese DANCER and girl DANCER come on from opposite sides.
THEY dance and gray SHADOWS join them.
The music includes car sounds.

Jimmy

(as dance ends and SOLDIER comes back on, to audience, and C.)
Do you not see that it is only at the extremes of conscience and extremes of conscience those who live us

Chinese

It is not true! (smiles and nods apologetically to audience)

(to JIMMY:) I have lived in extreme of calm — in extreme — of courtesy in extreme

of consideration

Jimmy

Now he’s talkin’ (to audience)

Chinese

NO , it is not true . I am not talking. It is your Western ways talking, They say push out this way —- push out that way lose your respect, . (Weeping, Chinesely) I have lost mine .

Soldier

(to JIMMY) Hey Mac. What's eat in t him?

Jimmy

(to SOLDIER) I don't know, , . He's tryin’ to figure out what the word motherfucker means.

Soldier

Tell him it don’t mean nothin. hey he’s a gook ain't he?

What’s he talkin’ to a white audience for?

J

immy You talk to

them.

Soldier

Me? I’m over here fightin’ a war — or sittin’ on my motherfucker don’t mean nothin’. It just means I 'm angry when I say it.

Chinese But why you angry?

Soldier

You shut up. I ain′t talkin’to you. (To audience) I first heard Motherfucker when I was 15. In the Bronx. “Motherfuckin” son of a bitch, We used it to prove you was a man, somethin’ like that .

JIMMY nods rapidly, delighted

Soldier

Then when I was twenty, we didn't use it no more. We’d say ;how do you do.you wanna go. . Ya goin f some place? ' Things How do you do. Where like that . . . Polite .

CHINESE laughs at this.

Soldier

What's the gook laughin. at ? . . . We ain't no war with China but if he was over here (glares at HIM)

Chinese

You call me motherfucker.

Soldier

I,d do worse 'n that.

Chinese

Now I begin to have faint right on meaning of word. It means to confuse people Why people want to confuse each other in this land?

Soldier

Why you got a gook lecturin' to you? What kinda people are you anyway. He don't know nothin! about the word "motherfucker" .
I know about it,

Jimmy

Me too. Me too.

Soldier

Oh oh here comes one o' them sneaky bastards now. (Cocks gun and fires twice, misses. Fixes bayonet to rifle, saying:)
Motherfucker! (As HE is about to engage in combat, HE receives a bullet in HIS chest, the blood spouts, and HE falls. Screen goes out of focus and pale .)

Jimmy

So now we've had an object lesson.

Lecturer

(with hands folded, bowing to audience) Forgive me. (Clapping hands.) Dancer ! Dancer !

Chinese DANCER comes on Questioningly ,

Lecturer

Other dancer too

Other DANCER comes on. LECTURER conducts THEM, THEY dance, Western and Chinese DANCERS, till lights fade out .

END

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GLOBAL VILLAGE VIDEO RESOURCE CENTER INFORMATION SHEET

APRIL/1972

I. Global Village has been in existence since September of 1969. During this period it has pioneered In exploring the potentials of video as a cultural, educational, community, and artistic resource. It has developed new forms of communications process through a wide spectrum of activities.

II. At present two production groups consisting of approx-

{mately five full-time people each, work with the co-directors, Rudi Stern and John Reilly. on a wide spectrum o? proJect8a

III. Global Village Video Workshops and the Experimental Video Center in association with the New School for Social Research:

> Approximately fifty students are currently working with Global Village on various projects which they are Initiating and producing.

These workshops and the documentation of this process is being supported, in part, by a grant from the Rockefeller Foundation and a matching grant from the National Endowment for the Arts. (-See the New School Bulletin for a description of these courses-)

IV. Global Village Video Resource Center Is a non-profit tax-exempt, educational research and consultation service. This Center produces various video projects for an expanding spectrum of community and social action organizations. The New York State Council on the Arts has funded and continues to assist Global Village in these

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These pubic Channel cable programs which Global Village began in July of 1971 will again be expanded in the near future so that more current work can be shown.

VI. A partial list of Individuals and organizations for which Global Village has produced video programs include the following:

Soho Artists Association
Hospital Audiences, Inc.
Viet Nam Veterans Against the War
National Association for Irish Freedom
Daytop Village
Street Theatre of Ossining
Chelsea Print Project
Erickson Foundation
WBAI, Pacifica Broadcasting
Krishna Consciousness
Gay Activist Alliance
Lower Eastside Community Center
Clergy-Laymen Concerned
People's Coalition for Peace and justice
National Conference of Christens and Jews
Environmental Protection Administration, N.Y.C.
Government of Bengladesh
District 15: Drug Rehabilitation Project (Brooklyn)
Jazz Interaction
Child Research Service
City Wang
Cooper-Hewitt Museum
Gay Activists Video Collective
Theatre for the Forgotten
Gil Evans Orchestra
Mental Patients Resistance
Pacifica Foundation
Open Theatre
Natural Sound Workshop
Planned Parenthood Association
Julian Beck
Jay Milder, Member of Rhino-Horn
John Lennon and Yoko Ono
Larry Rivers
John Harriman
Center for New York City Affairs (new school)

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VII. When possible Global Village will Join with other groups to co-produce more extensive projects. For example: a co-production with Joko Productions (John Lennon and Yoko Ono) on the problems in Northern Ireland. Another example of this Is a current project with the Center for NYC Affairs of the New School for Research. Ville

VIII. Global Village has presented work on the BBC, CBC, West German Television, Netherlands Television, Italian Television as well as on National Educational Television In New York.

IX. Global Village continues to present experimental video programs and symposia at various colleges and institutions in this country and abroad.

A partial list to date includes the following:

Harvard University
UCLA
Goddard College
Pratt xcGi11 University
CCNY
Brandeis
Experimental Television Center (ORT?) Paris
American Bi-National Center, Koln, Germany

X. Global Village continues to experiment with public, regularly scheduled multi—channel and video documentary programs at Its studio: 454 Broome Street

At present these programs are offered free to the public every other Saturday evening at 9:30 PM. Notices of these programs are given in the Village Voice, and over WBAI and WPLJ.

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XI. The co—directors of Global Village are currently writing a book entitled "Global Village Video Manual" to be published by St. Mart In's Press covering all aspects of portable television and 1/2 inch video as a community and artistic resource.

FOR LISTS 0f CURRENT EDITED TAPES AND INFORMATION REGARDING DISTRIBUTION, PLEASE CONTACT GLOBAL VILLAGE VIDEO RESOURCE CENTER:

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V I D E O T A P E S B Y R U D I S T E R N

PRODUCTION GROUP: Joie Davidow
Susan Shapiro
Sal Spiezia

CURRENT DISTRIBUTION LIST

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TAPE #1 GLOBAL VILLAGE VIDEO JOURNAL: I

26 min., B/W and Color

Edited by: Joie Davidow

This videotape Journal, containing the elements listed below, Is in a magazine format. The structure and style of such a video magazine are being explored to determine feasible prototypes for college distribution networks.

CONTENTS

“Faces”: a video light composition

Dhun/Chinese New Year Celebration: a video/light composition employing laser projections by Llyod Cross and the dragon dance Inaugurating "The Year of the Pig”.

Video/Dance Composition: Alexandra Kasuba's Environment: Eanuel Ghent’s Electronic Compostition: Costumes by Evelyn Roth and Deborah Rappaport from the Museum of Contemporary Crafts Exhibition: “Costume Statements” June, 1971.

Witch—in: Central Park gathering of metropolitan witches: interview with Dr. Martello about the civil rights of witches.

Central Park Video Poem: a video composition about Sundays in New York (This tape was broadcast on WNET—TV on "Free Time” in MaY Of 1971)

Brighton Beach confronts Earth People's Park: an urban commune. A video dialogue between the Jewish mothers of Brooklyn and commune members. This sequence was shot as part of the Global Village Video Workshop during the Spring term of 1971.

Paul Silbey's Massage Lesson: the fine points of body massage in an educational spirit.

Open Theatre: exercise in sound and body movement with a true story bv Chami Chaikln concerning her visit to a friend in the hospital.

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TAPE #2 GLOBAL VILLAGE VIDEO JOURNAL: II
24 min., Black and white
Edited by: Wayne Hyde

Interview with Anthony Colombo of the Italian—American Civil Rights League: March 1971

Bowery Interview: March 1971

Christopher Street Liberation Day: Gay March and reacting by—standers: June 27, 1971

Daytop Village: a drug rehabilitation concept and facility on Staten Island: May 1971

Abbie Hoffman at the Judson Church Flag Show: shot by Jim Sheldon: November 1970

STAR: Street Transvestites Action Revolutionaries, a radical Lower EaBt Side Commune: March 1971

"City People, City Walls": an excerpt from a video documentary dealing with the reactions of people to wail paintings in their neighborhoods: August 1971

Krishna: devotees performing In Central Park on a Sunday: March 1971

TAPE #3 Christopher Street Liberation Day March:June 27,1972
22 min., Black and white
Edited by Rudi Stern/Joie Davldow

A video documentary dealing with the second anniversary of the Stonewall Riot. The march up Sixth Avenue, the gay—in at Central Park, and the reactions of by—3tanders comprise the structure of this work. The tape reflects the spirit of the gay movement in achieving self—awareness and social freedom. Onlookers: react long serve as a document of some of the existing gaps in public awareness towards the liberation movement. The tape has been shown on one of New York's public channels (Sterling/Manhattan Cable) and Is being circulated and shown by the Gay Activist

Some Of the potentials Of street telev1B10n and portable video as a Boclai and community resource are explored In this tape.

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TAPE #7 SOHO JOURNAL I: A VIDEO DOCUMENTARY BY GLOBAL VILLAGE

30 min., Black and White
Project Adviser: R.idl Stern
Edited by: Joie Davidow

This ia a video Journal about a community in the process of formation. This tape edited from approximately 13 hours of material recorded entirely by the students of two workshop groups between September and November of 1971. This video documentary deals with the emerging neighborhood Of SoHo and the Interrelationship of its many component elements.

TAPE #8 SOHO JOURNAL II: GLOBAL VILLAGE VIDEO WORKSHOP ORIENTATION to Experimental Televis10n(5750-0 in the New School Bulletin; Fall 1971)

Project Adviser: Rudi Stern

Edited by the Workshop with assistance by Joie Davidow and Wayne Hyde

Workshop Participants: Marlette Allen, Issac Cohen,Eric Hauben, Ron Kessler, Yoram Lehmann, Edward Levin, Robert Wiegand

This video documentary on SoHo contains the following elements:

1. Neighborhood meeting on solving the problem of increasing crime

2. George Noel: French artist living in SoHo

3. Night shift at a doll factory In SoHo

4. Galleries in SoHo: Aonnabend, Emmerich, Caste111,Reese Paley

5. Mr. Zelf and his secretary Chickadee explain the floor sanding process and its place in loft living.

6. Louis Gancher and his screws and bolts company

7. A rap about the architecture and history of the neighborhood by Ingrid Wiegand and Bob Wiegand(who are in the process of writing a book about the subject)

8. Various street Interviews: businessmen, store owners, a keymaker, etc.

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TAPE #4 CITY PEOPLE/CITY WALLS

A video documentary on wall pal ntlngs and neighborhood reactions . 18 min., Black and white

Edited by: Jole Davldow

A group of artists has been involved in painting huge murals on the sides of Manhattan buildings. They are on Park Avenue, the Lower East Side, Houston Street, and the West Side Drive. This tape documents the effects of these works of art on the people who live with them. The tape explores neighborhood environments as they relate to the city muralist. Bob Wiegand of City Walls, Inc. worked closely on the production of this tape.

TAPE #5 COSTUME STATEMENTS

An Exhibition at the Museum of Contemporary Crafts in June of 1971. 13 min., Black and White

Edited by: Joie Davidow

A video documentary about an unusual participation costume show and the reactions of museum visitors as they wear the designs. The concept or this show demonstrates new ways In which museum exhibitions can relate more directly with the public they serve. This tape was commissioned by Evelyn Roth, one of the participating artists in the exhibition, on behalf of Intermedia In Vancouver.

TAPE#6 ST. PETER'S FIESTA: A VIDEO DOCUMENTARY BY JOIE DAVIDOW

12 min., Black and White

Shot and Edited by: Joie Davtdow

This documentary deals with a, four-day Italian Fiesta held annually In Gloucester, Mass. to celebrate the Blessing of the Fleet. This Is one of the few communities where families still earn their living from fishing. The Fiesta is an expression of community pride in the fleet and their close relationship with the sea as a source of their livelihood.

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TAPE #8 (con't)

This tape focuses in on the relationship of artists to the pre—existing business community and how arttists are working with this sector for achieving mutual community benefits. These tapes were made with the active support of the SoHo Artists Association. They will be shown on the Public Channel Cable in Manhattan as well as at public hearings dealing with community problems.

TAPE #9 SoHo JOURNAL III: GLOBAL VILLAGE VIDEO WORKSHOP

Half—Inch video: Experimental and Street Television (5705—0 in Kew School bulletin: Fall Semester 1971)

Project Adviser: Rudi Stern

Edited by the workshop with Assistance by: Joie Davidow and Wayne Hyde

Technical Assistance: Sal Spiezia

Version #2 Edited by Sal Spiezia with the assistance of Susan Shapiro

Workshop Participants: Paula Barnak, Nicholas Dancy, Patricia Depew, Mel Diamond, Jim Hanlan, Gary Hoffman, Larry McDonald, Steve McGinn, Susan Shapiro

This video documentary contains the following elements:
1. Emanuel Ghent, electronic composer—resident Of SoHo
2. Gay Activist Alliance Street Fair on Wooster Street
3. Stella and her Thrift Shop on Spring Street
4. Italian women rapping about the state of things in Little Italy and SoHo.
5. Neighborhood meeting at St. Anthony's Church about a proposed half-way house to be built in SoHo. Various residents statements concerning this proposal.

The format of this documentary is that of a video magazine: short segments woven together to give a multi-faceted view of this developing area

GLOBAL VILLAGE

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RUDI STERN

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TAPE #10 CHINESE LOUNGE (A VIDEO DOCUMENTARY ON A COMMUNITY PROJECT OF THE LOWER EAST SIDE SERVICE CENTER)

18 min., Black and White
Edited by: Wayne Hyde
Technical Assistance: Sal Spiezia with Pat Depew, Mitch Huber, Susan Shapiro

This video documentary deals with an unusual city drug rehabilitation program. Chinese men, ranging in age from 60 to 86, are Involved In a methadone program, having gone from opium to heroin. In many cases these men were literally slaves to their habit and the victims of unbelievable extortion, having worked for Chinese commercial laundries twelve or fourteen hours a day, six days week, being paid in drugs. Conducted by social workers and volunteers who are deeply committed to their clients' needs, this program is certainly one of the most unique projects of the Social Services Administration of the City of New York. This documentary is conceived as first stage with subsequent tapes being used for street corner feedback directly involving the Chinese community and its attitudes towards an element that they generally refer to as "lepers" and "degenerates"

TAPE #11 CONCERT FOR PEACE: St. John's the Divine December6, 1971

30 min., Black and white
Edited by: Joie Davidow and Wayne Hyde
Technical Assistance: Pat Depew, Ron, Kessler, Susan Shapiro Mitch Huber, Sal Spiezia, Nicholas Dancy

This video tape, involving three cameras and a mixer, is a record of the concert in which the following performers took part:

Tennessee Williams
Norman Mailer
Edgar Winter and White Trash
Chambers Brothers
Phil Ochs

This tape will be distributed by the producers: People's Coalition for peace and justice to raise money for the anti-war cause and as a way of informing people about the efforts towards this goal

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TAPE #14 INTERVIEW WITH HON. MR. SULTAN AND HON. JUSTICE A.S. CHOUDHURY OF BENGLA DESH

45 min., Black and White

Camera: Wayne Hyde

Technical Assistance: Joie Davldow, Lorraine Rubino,Sal Spiezia

Interview Conducted by: Richard Zeif, Esq.

A timely and relevant Interview with two leaders of the new state of Bengla Desh conducted on December 19, 1971. Among other aspects of the situation, this tape deals with the role of students in the revolution, public opinion in this country, the U.S. Government's attitudes, parallels to the American Revolution, etc. This tape is the first in a series on the emerging presence and significance of Bengla Desh. (Note: since making this tape in late December of 1971, Mr. Choudhoury was named President; of the country).

TAPE #15 DOG SHIT IN FUN CITY: A VIDEOTAPE BY THE GLOBAL VILLAGE VIDEO WORKSHOP

Project Adviser: Rudi Stern

Editing Assistance: Joie Davidow and Sal Spiezia

A video documentary about the Increasing problem of dog turds, droppings and related elements New York life. The tape Includes interviews with concerned city officials, midtown pedestrians, pet store owners, and doormen. It includes an interview with a woman who has not walked her dog in the last few years.

January 1972

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TAPE #16 MORGAN LOVE: HEAD SHOP WHOLESALE: A VIDEOTAPE BY THE GLOBAL VILLAGE VIDEO WORKSHOP

15 min., Black and White

Project Adviser: Rudi Stern

Editing Assistance: Jole Davidow

A documentary about the making, selling, and marketing of hash pipes. Interviews and raps with workers, managers, competitors, and customers of this large psychedelic Wholesale operation. It provides an Interesting Insight Into canter—culture commerce and the aboveground systems it needs to developed. Mel Romanoff, owner of Morgan Love, cooperated in the production of this work.

January 1972

TAPE#17 JERSEY CAR CULTURE: A VIDEOTAPE BY THE GLOBAL VILLAGE VIDEO WORKSHOP

15 min., Black and White

Project Adviser: Rudi Stern

Editing Assistance: Wayne Hyde

A video insight into a unique subculture. Interviews with the owner, salesmen, and customers of the J. and F. Speed Shop in Saddle Brook, New Jersey are the substance of the tape. Drag racing, custom cars, cars as symbols of life—style, and the world of Gear Heads are looked into.

January 1972

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TAPE #18 THE SELLING OF THE STATUE: A VIDEOTAPE BY THE GLOBAL VILLAGE

Workshop Production Group: Erie Carpenter
Pat Ceasar,
Bwan Gordon
Rick Granoff
Ed Levine
Alice O'Donnell
Jorge Mourao
Sal SabaJ

Editing Adviser: Sal Splezla

Technical Assistance: Susan Shapiro

Project Adviser: Rudi Stern

15 Min., Black and White

A look at the Statue of Liberty. Interviews with the ferry captain, foreign visitors, park service personnel, etc. in regard to the Statue as a symbol of “liberty”. Patriotism and tourist souvenirs work hand in hand in thig national monument.

TAPE #19 CONEY ISLAND: A VIDEOTAPE BY THE GLOBAL VILLAGE VIDEO WORKSHOP

Workshop Production Group: Ken Bauer
Tom Celandine
Joe Chiara
Pat Hanson
Cynthia Kayan
Howard Marks
Marc Nitgche
Pat SarBfie1d
Bruce Taylor
Nancy Jacobson

Editing Adviser: Joie Davidow
Technical Assistance: Susan Shapiro, Sal Spiezia

Project adviser: Rudi Stern
March/1972
15 Min. Black and White

GLOBAL VILLAGE

JOHN REILLY
RUDI STERN

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A video documentary about the present plight of this once fashionable amusement park. The tape explores deserted street carnival rides amid the recorded laughter of a still functioning fun house. Interviews with shop keepers, Nathan Hot Dog customers, Joggers on the Boardwalk, police, assorted residents, some phantoms, and a poet-genius about to be fired from his sign-painting gig.

This tape presents an interesting multilevel view of one of New York's more visual neighborhoods. As a document of an area's problems, tensions, fears, memories and defense mechanisms this tape offers an insight into the potentials of portable television as a community medium.

TAPE #20 VILLENELLE OF THE WALKING FEET: A POEM BY JOHN HARRIMAN SET TO VIDEO COUNTERPOINT BY RUDI STERN

8 Min. , Black and White

Technical Assistance; Sal Spiezia Ron Kessler, Wayne Hyde

A video poem concerned with anonymous faces in the bus terminal, lots of prismatic walking feet, bodies riding Piranesi escalators, and street crossers.

TAPE #21 STREET THEATER OF OSSINING AT SING SING PRISON
12 Min., Black and White
A Tape by Rudi Stern with Wayne Hyde
Ron Kessler
Lee Osborne
Sal Spiezia

An improvisation conducted by Clay Stevenson with ten inmates of the prison. The theme of the Improvisation is a Christmas dinner attended by a group of brothers who are in the process of deciding their father’s fate. A number of the participants were in the workshop for the first time which is surprising in view of the intensity with which they Interact. This tape was planned as the first in a series with this important street theatre group.

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TAPE #22 OPERATIC EXCERTS AFTER THE PLAYS OF SHAKESPEARE
Presented by the Manhattavllie Opera workshop
Videotape by: Joie Davidow
Technical Assistance: Jesse Davis
Wayne Hyde
Larry McDonald
Part I :Black and White, 30 min.

Britten : Rape of Lucretia
Britten: Midsummer Night's Dream

Part II:Black and White, 30 min.

Verdi: Falstaff

Nicolai: Merry Wives of Windsor

Two tapes of excerpts from the plays of Shakespeare as interpreted by the masters of Opera. Performed by the Manhattanville College workshop directed by Gordon Davis.

March/ 1972

TAPE #23 JULIAN BECK

30 min. , Black and White

A tape by Rudi Stern with: Sal Spiezia
Susan Shapiro

A rap with Julian Beck about the Living Theatre in Brazil, political repression, and the state or American activism.

April/1972

JOHN REILLY
RUDI STERN

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TAPE #24 JAY MILDER-A VIDEO ART DOCUMENTARY

A videotape by Rudi Stern

Edited by: Wayne Hyde

12 min. , Black and White

A video documentary about this American figurative painter is a member of the Rhino Horn group. The tape deals with his work, life, children and the development of his art.

Appendix V
Works Listed in the Text
*indicates works designated by the author as multimedia

Performance Environments | Display Environments

Electronic Media and Actors	Environmental Theatre	Multiscreen Presentations	Environments
		1900-Cineorama	
1904-Japanese Shimpa plays			
1909 – Gertie the Dinosaur			
	1910-Don Juan		
1911-Eine Million Rund um Die Alster review	1911-The Miracle, London		
1923-The Earth in Turmoil; Enough simplicity in every wise man	1916-Dada soirees		
	1923-The Earth in Turmoil		
1925-Trotz alledum	1924-Gas Masks;		
1926-Sturmflut	The Miracle.		1924-Hanover Merzbau
1927-Hoppla, Wir Leben!	New York	1926-NAPOLEON	
1928-Good Soldier Schweyk			
1930-Christophe Colunb			1930-Woodstock Environment
1935-39-Living Newspaper			
1936-Frulings Erwachen			
	1938-Hellzapoppin	1938-Seagrams sales show	1938-Paris Surrealism show
1950-The Eleventh Commandment			

Perfomance Environments | Display Environments

Electronic Media and Actors	Environmental Theatre	Multiscreen Presentations	Environments
1958-Brussels Fair Lanterna Magika*	1959-18 Happenings in Six Parts*	1958-Brussels Fair INUGERATION OF THE PLEASURE DOME.	1958-first Kaprow Environment
1959-Their Day*	1960-The American Moon	Cinerama,Congorama Panorama, Vortex Polykran*	
1961-Filmstage	1963-Who R U and Whats's Happening?*	1959-Moscow Fair Kinopanorama Eames 7-screen	
1963-Water		1960-March of the garter Snakes*	
		1961-Multimedia Instructional Laboratory*	1961-Segal and Kieholz tableaux
	1964-Originale*	1962-Think box*	1963-"Contact is the Only Love"
	1965-Night Time Sky*	1964-Civil War history lesson Verbal American Landscape*	1964-Milan Trade Fair
1965-Intoleranza*	1965-Movie House; Map Room II; The Last Rites; "Mysteries of the Essence Chamber"*	1965-Spectra-Mach I* 1965-Black Zero	1965-Oracle
1965-"Unmarked Interchange"		1965-Move Movies;* Feedback#1* March of the Garter Snakes Spectra Mach I* Ghost Rev*	
	1966-"Exploding Plastic Inevitable"*; Simultaniety in Simultaniety*		
1967-Astarte;* The Rake's Progress	1966-Carriage Discreteness*; Grass Field; Two Holes of Water-3	1966-Hubbub* 1966-Open Score 1967-Labyrinthe; Diopolykran	1966-"Down by the Riverside" 1966-Physical Things 1967-Proliferation of the Sun*
1968-Your Own Thing	1968-Hair	1968-"The People of Texas"	1968-Feedback

Perfomance Environments | Display Environments

Electronic Media and Actors	Environmental Theatre	Multiscreen Presentations	Environments
	1968-Electric Ear; multimedia worship*		
1969-Mantra*; The Soldiers*	1969-“crosstalk”; HPSCHD*	1969-Men and Powere*	
			1970-“Imagen de Caracas”*
1971-Tommy*		1971-Global Village*	1971-Noricama*
			1972-“Womanhouse”
		1972-Keep Truckin”* Threshold	

General Multimedia Bibliography

Aaron, Chloe, "The Video Underground. Art in America, May-June 1971, pp. 74-79 .

Alden, Robert . “The New York World’s Fair: The First Year.” Britannica Book of the Year 1965. Chicago : Encyclopedia Britannica, Inc., 1965, pp. 347a-349.

Allan Kaprow. Pasadena, California: Pasadena Art Museum, 1967.

"Allan Kaprow's Eat.” Tulane Drama Review, Winter 1965, pp. 44—49.

Allen, William H. “Audio—Visua1 Communication.” Encyclopedia of Educational Research. 3rd edition. New York: McMillan Co., 1960, pp. 115-137.

_____ “Research on New Educational Media: Summary and Problems.” Audio Visual Communications Review, V11 (Spring 1959) , pp. 83-96.

Anderson, Jack. "Ferment and Controversy Dance Magazine, August 1969 , pp. 46-56.

_____ "Materials of Myth: an Ann Halprin Workshop. Dance Magazine, April 1968, pp. 58—59.

Anderson, James A. “More on the Equivalence of Statements Presented in Various Media.” Audio—Visua1 Communications Review, XVI (Spring 1968), pp. 25—32.

_____ “Single Channel and Multi—Channel Messages: A Comparison of Connotative Meaning.” Audio Visual Communications Review, XVII (Winter 1969), pp. 428-434.

“An Integrated Multimedia Teacher's Desk.” Audio—Visua1 Instruction, May 1967, pp. 495—496.

A Report on the Art and Technology Program of the Los Angeles County Museum of Art. Los Angeles: Los Angeles County Museum of Art, 1971.

Arnason, H. H. History of Modern Art. Englewood Cliffs, New Jersey: Prentice—Hall, Inc., and New York: Harry N. Abrams, Inc., 1968.

Amato, Rosario P., and Spalek, John M. Medieval Epic to the “Epic Theatre" of Brecht. Los Angeles : University of Southern California Press, 1968.

Arnheim, Rudolf. Art and Visual Perception. Berkeley: University of California Press, 1954.

_____ Film as Art. Los Angeles: University of California Press, 1957.

Arnold, Paul. "The Artaud Experiment." Tulane Drama Review, Winter 1963, pp. 15-29.

"Art and Science Proclaim Alliance in Avante—Garde Loft. The New York Times, October 11, 1967, p. 49.

Artaud, Antonin. "States of Mind : 1921-1945." Tulane Drama Review , Winter 1963, pp. 30—73.

_____ The Theatre and Its Double. trans. Mary Caroline Richards New York: Grove Press , Inc. , 1958.

"Ash Can Revisited, a New York Letter." Art International, October 25, 1960, p. 28.

Ashton, Doree "A Planned Coincidence." Art in America, September— October 1969, pp. 36—47.

"Avante—Garde Dancers" Dance Magazine, October 1968, pp. 47—62.

"Audiovisual Notes from Kodak." Kodak Periodical No. T-91-1-1, Rochester, New York: Eastman Kodak Company.

Audio Visual Instruction, April 1963, various short articles on pp. 203-213.

Auster, Donald. "Content Analysis in AV Communications Research." Audio Visual Communications Review, IV (Spring 1956) , PP. 102-108.

"A—V Takes a Giant Step." Sales Management, September 21, 1962, Part 11, pp. 33—35.

"Bad-Dream House," Time, March 20, 1972, p, 77.

Ball, John, and Byrnes, Francis, eds. Research, Principles and Practices in Visual Communication. Washington, D. C.: department of Audiovisual Instruction, National Education Association, 1960.

Barnes, Clive. "Opera: 'Mefistofe1e' as Strong Theatre." The New York Times, October 26, 1969, Section I, p. 81.

Bell, Barbara. "You Don't Have to be High." The New York Times , December 28, 1969, Section 11, p. 15. September 1967, pp. 714—715.

Bender, Marilyn. "Black Jeans to go Dancing at the Movies :It's Inevitable." The New York Times, April 11, 1966, p. 47.

Berelson, B., and Steines, G., eds. Human Behavior: An Inventory of Scientific Findings, New York: Harcourt, World, and Brace , Inc. 1964.

Berlo, D. K. The Process of Communication. New York: Holt, Rinehart, and Wilson, Inc. , 1960.

Blasdel, Gregg N "The Grass—Roots Artist." Art in America, September—October 1968, pp. 24—41.

Blau, Herbert. "A Sub text Based on Nothing." Tulane Drama Review , Winter 1963, pp. 122-132.

Blossom, Roberts. "On Filmstage." Tulane Drama Review, Fall 1966, pp. 68—73.

Bloy, Myron B . , Jr. Multi—Media Worship. New York: The Seabury Press, 1969.

Blumenthol, Ralph. "World' Transforms Old Mount Vernon Theatre". The New York Times, January 1, 1968, p. 12.

Bourdon, David. "Warhol as Filmmaker." Art in America, May—June 1971, pp. 48-53.

Brakhage, Stan. "A Moving Picture Giving and Taking Book." Film Culture, Summer 1966, pp. 39—56,

Brecht, Bertolt, "On the Experimental Theatre." Tulane Drama Review, September 1961, pp. 3—17.

Bridgewater, Thronton Howard. "History of Television." Encyclopedia Britannica, vol. 21. Chicago: William Benton, 1971, pp. 794-796.

Briggs, Leslie J., Campeau, Peggie L, ; Gagne, Robert M, ; and May, Mark A, Instructional Media: A Procedure for the Design of Multi—Media Instruction A Critical View of Research and Suggestions for Further Research. Final Report. Washington, U.S. Department of Health, Education, and Welfare, Office of Education, 1967.

Britz, Rudi. "Video Tape: A TV Revolution." Quarterly of Film, Radio, and Television, XI (Summer 1957) pp. 399—415,

Brockett, Oscar C. History of the Theatre. Boston: Alyn and Bacon, Inc., 1968.

_____. The Theatre: An Introduction. New York: Holt, Rineharrt, and Wilson, Inc. 1969

Buckland, Leslie. "Communication Not Chaos in Multi—Media."Audio—Visual Communication, November—December 1971, pp 8, 11, 17-18+.

Buley, Hilton C. "Multimedia Systems of Instruction." Audio Visual Instruction, May 1965, pp. 391—392.

Burian, Jarka. “Josef Svoboda: Theatre Artist in an Age of Science.” Educational Theatre Journal, XXII (May 1970) , pp. 123—145.

_____ "The Scenic World of Joseph Svoboda." Saturday Review, August 28, 1971, pp. 35-36, 49.

_____ The Scenography of Josef Svoboda, Middletown, Connecticut: Wesleyan University Press, 1971.

Burke, Ken. "Worship and Multimedia. unpublished paper, University of Texas at Austin, 1971.

Burt, Alexander D , “Phonograph.” Encyclopedia Britannica, vol. 17 Chicago: William Benton, 1971, pp . 901—909.

Butler, Donald Edgar . "Projected Scenery: An Annotated Bibliography” unpublished M. A. thesis, University of Washington, 1955.

Cage, John. Silence. Cambridge, Massachusetts: The M. I. T . Press, 1961.

Canady, John. "Art, Both Good and Bad, Conspicuous at Expo '70” The New York Times, March 25, 1970, p. 6.

Card, James . "Problems of Film History Hollywood Quarterly, IV (Spring 1950) , pp
. 279-288.

Carter, Huntly. The Theatre of Max Reinhardt. New York: Benjamin Blom, Inc., 1914.

Ceram, C, W. Archaeology of the Cinema. New York: Harcourt, Brace , and World, Inc. 1965.

Chapanis, Alphonse. Man-Machine Engineering Belmont, California: Wadsworth Publishing Company, Inc, , 1965.

Clasen, Wolfgang. Expositions, Exhibits, Industrial and Trade Fairs . New York: Frederick A. Praeger, 1968.

Clough, Rosa Trillo. Futurism: The Story of a Modern Art Movement; A New Appraisal. New York: Philosophical Library, 1961.

Coggeshall, Ivan S., and Campbell,Richard D. "Radio.” Encyclopedia Britannica, vol.18. Chicago: Willian Benton, 1971, pp. 1037—1051.

Cohen, Martin. “Japan's Gutai Group,” Art in America, November—December 1968. pp. 86-89.

Cohen, Milton J. “Film in Space Theatre.” Tulane Drama Review, Fall 1966 , pp. 62—67.

Cohen, Selma Jeanne. “Merce. .Mao...and more in Buffalo.” Dance Magazine May 1968, pp. 45—48.

Cole, Wendell, “The Theatre Projects of Walter Gropius” Educational Theatre Journal, XX (December 1963) , pp. 311—317.

Compton, Gardner. "Film Dance and Things to Come." Dance Magazine , January 1968, pp. 34—37.

Conway, Jerome Kenneth. "Multiple—Sensory Modality Communication and the Problem of Sign Types." Audio Visual Communications Review. XV (Winter 1967) , pp. 371-382.

Cooney, Stuart M., and Allen, William H. "Nonlinearity in Filmic Presentation:
Part I , Discussion. Audio Visual Communications Review, XII (Summer 1964) , pp. 164—176.

_____ "Nonlinearity in Filmic Presentation: Part 11, Discussion.
Audio Visual Communications Review, XII (Fall 1964) , pp. 302—325.

Coplans, John. "Serial Imagery.' Artforum, October 1968, pp. 34—43.

Corrigan, Robert W., ed. Theatre in the Twentieth Century. New York: Grove Press, Inc. , 1963.

Creedy, Jean, ed. The Social Context of Art. New York: Tavistock Publications, 1970 .

Crone, Rainer, Andy Warhol. New York: Praeger Publishers, 1970.

Crowther, Bosley "The Screen. The New York Times, February 9 , 1966, p. 32 .

Cunningham, Merce. Changes : Notes on Choreography. New York: Something Else Press, Inc., 1968.

Curtis, David. Experimental Cinema. New York: Universe Books, 1971.

Dalglish, Rev. William A. Media for Christian Formation. Dayton, Ohio : George A. Pflaum, 1969

Davis, Douglas M. ″Art and Technology—The New Combine” Art in America, January—February 1968, pp. 28—37.

_____ "The Dimensions of the Miniarts.” Art in America, November—December 1967, pp 84-91.

Day, Barry. "Beyond the Frame.” Sight and Sound, Spring 1968, pp. 80—85.

Dewey, Ken. "Selma Last Year." Film Culture, Winter 1966, p. 3.

Educational Media Council, Educational Media Index, 14 vols. New York: McGraw-Hill,
1964.

Egbert, Donald Drew. Social Radicalism and the Arts. Western Europe. New York: Alfred

A. Knopf, 1970.

Ehrenstein, David. "Room Service (The Chelsea Cir Is) . Film Culture, Fall 1966,
pp. 8-9.

Eisen, Jonathan, ed. The Age of Rock 2. New York: Random House, 1970.

Ellsworth, Ralph E ., and Wagener, Hobart D. The School Library, Facilities, for Independent Study in the Secondary School. New York: Education Facilities Laboratory, 1963.

Embler, Jeffery B. "A Historical Study of the Use of Film to Provide Additional Content to Theatrical Productions on the Legitimate Stage." unpublished Ph.D. dissertation, University of Pittsburg, 1971.

Erickson, Raymond . "Seattle Goes Psychedelic. The New York Times, May 18, 1969, Section 11, p. 19.

Erwin Piscator: Political Theatre, 1920—1966. pamphlet, published by the Arts Council of Great Britain, 1971.

Esslin, Martin. "Brecht, The Absurd, And the Future." Tulane Drama Review, Summer 1963, pp . 43-54.

_____ "The Theatre of the Absurd. Tulane Drama Review, May 1960, pp. 3—15.

"Expanded Arts Bourse. Film Culture, Winter 1966, pp. 5-10.

"Expanded Cinema: A Symposium, NY Film Festival 1966. Film Culture, Winter 1966, pp. 1—2.

Factor, Donald . "Edward Kienholz. Artforum, 11 (no. 2 , 1963) , pp.24-25

Feldman, Edward Burke. Art as Image and Idea. Englewood Cliffs , New Jersey: Prentice—Hall, Inc. , 1967.

"Festival Blending Music, Dance, Drama and Film Opens in Tokyo. The New York Times,
February 5, 1969, p. 39.

Film Culture, Winter 1966, entire issue.

Finn, James D. "Teaching Machines." National Educational Association Journal, November 1960, pp. 41—45.

"Ford Tours the Shopping Centers . Business Screen, XX (no. 5, 1959), pp. 34, 50.

Forge, Andrew, Rauschenberg. New York: Abrams, 1969.

Fresques, Mike. "Silber Asks Civilian G I Bill' . The Daily Texan , February 21, 1972, p. 1.

Fuchs, Theodore. Stage Lighting. New York: Benjamin Blom, 1929.

Fuerest, Walter R., and Hume, Samuel J. XXth Century Stage Decoration. 2 vols. London: Alfred A. Knopf, 1928.

Gamer, Carelton. "Electronic Music." Encyclopedia Britannica, vol. 8. Chicago: William Benton, 1971, pp. 244—246.

Geldzahler, Henry. "An Interview with George Segal." Art forum, November 1964, pp. 26—29.

Gerlach, Verson S., and Ely, Donald P. Teaching and Media: A Systematic Approach. Englewood Cliffs,

Getz, Gene. Audio Visuals in the Church. Chicago: Moody Press, 1959.

Gillet, John. "Coca Cola and the Golden Pavilion." Sight and Sound Summer 1970, p. 153.

Gillingham, George O. "The ABC's of Radio and Television," In Mass Media and Communication, ed. Charles S. Steinberg. New York Hastings House, 1966.

Glendening, Richard M. "Psychedelic Multimedia Happening." Scholastic Teacher (contained in Senior Scholastic), April 18, 1969 , pp. 18-19.

Glueck, Grace. "Brooklyn is Host to 'Intermedia '68" The New York Times, March 9 , 1968, p. 22.

_____ "Modules for the Millions The New York Times, June 22, 1969, Section 11, p. 32.

_____ "Multimedia: Massaging Senses for the Message. New York Times, September 16, 1967, p. 35.

Godfrey, Eleanor P, The State of Audiovisual Technology:1961-1966 Monograph No, 3. Washington, D.C. Department of Audiovisual Instruction, National Education Association, 1967.

Corelik, Mordecai. New Theatres for Old. London: Samuel French, 1940.

Gottleib, Saul. "American Atrocities in Vietnam: a Documentary Environment. The Drama Review, Spring 1968, pp. 168—178.

Gray, Ronald. Bertolt Brecht. New York: Grove Press, Inc., 1961.

Gropius, Walter, ed. The Theatre of the Bauhaus. trans. Arthur S. Wensinger. Middletown, Connecticut: Wesleyan University Press , 1961.

Gustafson, Robert. "An Evening of Beauty and Reverence." The Boston Globe, November 7, 1967, clipping with no page number.

Haleff, Maxine. "To be Alive! and the Multi—Screen Film." Film Culture, Winter 1966, p. 4.

Hartman, Frank R. "Recognition Learning under Multiple Channel Presentation. Audio Visual Communications Review, IX (January—February 1961) , pp. 24—43.

_____ "Single and Multiple Channel Communications : A Review of Research and a Proposed Model, Audio Visual Communicating Review, XT (November—December 1961), pp. 235-263.

_____"(Single and Multiple Channel Communications) Chapter II : Historical Perspectives." Audio Visual Communications Review , XI (January-February 1963) , pp. 9-17,

Hemisfair 1968 Official Souvenir Guidebook. Dallas : A. H. Belo Corporation, 1968.

Henahan, Donal . "Blinking Machine Joins Wild Bull. The New York Times, August 27, 1968, p. 37.

_____ "Cantata Warms Electric Ear." The New York Times, August 6, 1968, p. 26 .

_____ "Computer Tunes Heard at 'Circus'". The New York Times , August 20, 1968, p. 32.

_____ "Show Programmed by Mel Powel1." The New York Times , July 2, 1968, p. 32.

_____ "The Avante—Croove: We're All In It. The New York Times, July 7, 1968, Section 11, p. 11.

Hering, Doris. "Broadway.. . On and Off; Your Own Thing." Dance Magazine, April 1968, pp. 26-27.

_____ "The Engineers Had All the Fun. Dance Magazine, December 1966, pp. 36—40.

Hess, Thomas. "Collage as an Historical Method." ArtNews, November 1961, pp. 69-70.

_____ "U. S. Painting: Some Recent Directions." ArtNews Annual , 1956, pp. 75-98, 174-180, 192-199.

Hocking, Elton. "New Facilities at Purdue." Audio Visual Instruction , March 1961, pp. 96—97.

Hoffman, Matt. "Caterpiller Changes." Film Culture, Spring 1967, p. 76.

Hornbosted, Victor O. "Audio Visual Education in Urban School Systems. " Audio Visual Communications Review, 111 (Summer 1955) , pp. 206—212.

Howard, John, and Lyons, James. Modern Music. New York: Thomas Y. Cromwell Co. , 1957.

Hsia, Howr J. “On Channel Effectiveness.” Audio Visual Communications Review, XVI (Fall 1968) , pp. 245-267.

Hubbard, Richard D. “Telemation: AV Electronically Controlled” Audio Visual Instruction, November 1961, pp. 437 —439.

Hulten, K. C. Pontus. The Machine. New York: The Museum of Modern Art, 1968.

“Improbable Marriage.” Newsweek, April 20, 1970, pp. 100—101.

Inglis, Ruth. “The Social Role of the Screen,” in Mass Media and Communication, ed. Charles S . Steinberg. New York: Hastings House, 1966.

Ingram, George. “Teacher Preparation Through Multimedia Facilities.” Audio Visual Instruction, December 1967, pp. 1054—1056 .

lonesco, Eugene. "The Avante Garde Theatre.” Tulane Drama Review, December 1960 , pp. 44—53.

Isaacs, Kenneth. "Think Box." Industrial Design, November—December 1962, pp. 48—51.

Jackson, George. "Naked in its Native Beauty. Dance Magazine, April 1964, pp. 32—37.

Jacobs, Lewis "Experimental Cinema in America, Part I” Hollywood Quarterly, Ill (Winter 1947—1948) , pp. 111—124

_____ "Experimental Cinema in America, Part II." Hollywood Quarterly, 111 (Spring 1948) , pp. 278-292.

_____ ed. The Movies as Medium. New York: Farra, Straus, and Giraux, 1970.

M,Joel, Yale. "A Film Revolution to Blitz Man's Mind at Expo 67.”Life, July 14, 1967, pp. 25-28c.

Jones, Nard. "Seattle World's Fair." Britannica Book of the Year 1963. Chicago : Encyclopedia Britannica Inc., 1963, pp. 359-361.

Junker, Howard. “Mixed Bag” Newsweek, March 18, 1968, p. 112.

Kappler, Frank. “The Mixed Media. . . Communication that Puzzles, Excites, and Involves.” Life, July 14, 1967, p. 28c.

Kaprow, Allan. Assemblage, Environment and Happenings. New York: Harry N. Abrams, 1965.

Kempton, Sally . "Beatitudes at Judson Memorial Church. " Esquire, March 1966 , pp. 106-107, 137.

kernoddle, George, and Kernoddle, Portia. Invitation to the Theatre. New York: Harcourt, Brace, Jovanovich, Inc. , 1971.

Kinder, James S. “Audio Visual Research: Where to Find It” Audio Visual Communications Review, I (Fall 1953) , pp. 234—241.

Kirby, E. T., ed. Total Theatre. New York: E. P . Dutton and co. , Inc. 1969

Kirby, Michael. Happenings. New York: E.P. Dutton and Co., Inc. 1965

_____ “Marta Minujin's 'Simultaneity in Simultaneity'.” The Drama Review, Spring 1968, pp. 146—152,

_____ The Art of Time. New York: E. P . Dutton and Co., Inc., 1969.

_____ "The New Theatre." Tulane Drama Review, Winter 1965 , pp. 23—43.

_____ “The Uses of Film in the New Theatre” Tulane Drama Review, Fall 1966, pp. 49—61.

_____ and Schechner, Richard. “An Interview with John Cage.” Tulane Drama Review, Winter 1965, pp. 50—72.

Kline, Josiline. “Imagery and Illusion.” Artforum, I (no. 5, 1962),pp. 24—29.

Knight, Arthur. "Motion Pictures. History. Encyclopedia Britannica , vol. 15. Chicago: William Benton, 1971, pp. 898—904.

_____ The Liveliest Art. New York: New American Library, 1957.

Knowlton, Kenneth C. "Computer-Generated Movies, Designs and Diagrams" Design Quarterly, LXVI—LXVII, pp. 59—63.

Kolodin, Irving. "Music to my Ears. Saturday Review, September 25, 1971, pp. 74-75.

Kook, Edward F. Images in Light for the Living Theatre. published by the author, 1963.

Kostelanetz, Richard, ed. The New American Arts. New York: Horizon Press, 1965.

_____ The Theatre of Mixed Means. New York: The Dial Press, Inc. , 1968.

Kroll, Jack. "The Song of Naomi. Newsweek, February 21, 1972, pp. 98—99.

Labyrinthe. Technical Bulletin Number 8, The National Film Board of Canada, March

1968.

Lacy, Grace Nelson. “A Cross—Media Approach to Geography,” National Education Association Journal, January 1961, pp. 22—24.

Lawson, Carol. "The computer: New Tool for Artists." Scientific Research, October 27, 1969, pp. 35—37.

Lesser, Gerald S. “New Media Research in Teacher Education.” Audio Visual Communications Review, XIV (Fall 1966) , pp. 318—361.

Lester, Elenore. "Intermedia: Tune In, Turn on and Walk Out?" The New York Times Magazine, May 12, 1968, pp. 30, 66—69.

_____ "The Final Decline and Total Collapse of the American Avante—Garde. Esquire, May 1969, pp. 143—149+.

Ley—Piscator, Maria. The Piscator Experiment: The Political Theatre . New York: James H. Heineman, Inc., 1967.

Lippard, Lucy R. "James Rosenquist: Aspects of a Multiple Art.” Art—forum, December 1965, pp. 41—45.

_____ Pop Art. New York: Frederick A. Praeger, 1966.

Littell, Wallace W. "Fairs and Exhibitions. Britannica Book of the Year 1960, Chicago: Encyclopedia Britannica Inc. , 1960, pp. 244— 247.

Lush, Gerson H. "Brussels International Exposition. Britannica Book of the Year 1959, Chicago: Encyclopedia Britannica Inc., 1959. pp. 123-125.

MacGowan, Kenneth. Behind the Screen. New York; Delacorte Press, 1960.

_____ "Screen Wonders of the Past——And to Come?" Quarterly of Film, Radio, and Television, XI (Summer 1957) , pp. 381-393.

_____ “The Coming of Sound to the Screen.” Quarterly of Film, Radio, and Television X (Winter 1955), pp. 136-145

_____ “The Coming of the Camera and Projector, Part I” Quarterly of Film, Radio, and Television, IX (Fall 1954) , pp. 1-15.

_____ “The Coming of the Camera and Projector, Part II.” Quarterly of Film, Radio, and Television, IX (Winter 1954) , pp. 124—137

_____ “The Screen’s “New Look' —— Wider and Deeper.” Quarterly of Film, Radio, and Television, XI (Winter 1956) , pp. 109— 130.

_____ "The Wide Screen of Yesterday and Tomorrow." Quarterly of Film, Radio, and Television, XI (Spring 1957) , pp. 217—241.

Maguire, Jan. "A View from Paris of Poland's 2." Dance Magazine , May 1968, pp. 63, 66, 68.

Manica, Adrienne, and Van Dyke, Willard. "Four Artists as FilmMakers" Art in America, January—February 1967, pp. 65—73.

Margolies, John S. "TV-The Next Medium." Art in America, September— October 1969, pp. 48—55.

Marinetti, Tomasso; Settimelli, Emelio; and Carra, Bruno. "The Synthetic Futurist Theatre: A Manifesto. The Drama Review, Fall 1970, pp. 142—146.

Masters, Robert E. L., and Houston, Jean. Psychedelic Art. New York: Grove Press, Inc., 1968.

Matthews, J. H. An Introduction to Surrealism. University Park, Pennsylvania: The Pennsylvania State University Press, 1965.

McCann, Richard Dyer. Film: A Montage of Theories. New York: E.P. Dutton and Co., Inc. , 1966.

McCormick, Mary C. ; Travers, Robert M. W. ; VanMondfrans, Adrian P., and Williams, Frank E. Research and Theory Related to Audiovisual formation Transmission. Interm Report. Washington, D. C.: U.S. Department of Health, Education, and Welfare, Office of Education, July I, 1964.

McDougal, Russell, and Thompson, James J. "The Multimedia Classroom: Planning and Operation. Audio Visual Instruction, October 1967 pp. 827-829.

McLuhan, Marshall. Understanding Media: The Extensions of Man. New York: McGraw—Hill Book Co. , 1964.

_____ and Fiore, Quentin. The Medium is the Massage. New York: Bantam Books, 1967.

McVey, Gerald F. "Multimedia Instructional Laboratory." Audio Visual Instruction, February 1966, pp. 79—84.

_____ "Television: Some Viewer Display Considerations." Audio Visual Communications Review, (Fall 1970) , pp. 277-290.

Mekas, Jonas . "Movie Journals by Jonas Mekas. (Reprints from the Village Voice). Film Culture, Winter 1966, pp. 10—12.

_____ "USCO." Film Culture, Winter 1966, p. 3.

Mina, Delores, and Tincher, Ethel. "Multimedia can Reach and Teach." Scholastic Teacher (contained in Senior Scholastic) , March 21, 1968,pp. 16-17

Monfort, Ray A. “A Brief History of Television for the Layman.” Hollywood Quarterly, IV (Winter 1949) , pp. 197—200.

Motherwell, Robert. The Dada Painters and Poets. New York: Wittenborn Schultz, Inc., 1951.

Mussman, Toby. "Early Surrealist Expression in the Film.” Film Culture, Summer 1966, pp. 8—17

_____ "The Chelsea Girls” Film Culture, Summer 1967, pp. 41— 42

_____ "The Images of Robert Whitman.” Film Culture, Winter 1966, p. 5.

Nadeau, Maurice. The History of Surrealism, New York: The MacMillan Company, 1965.

Nagy, Elmer. "Scenery Painted with Light.” Opera, July 1965, pp. 479— 484.

Nelson, George “Art X: The Georgia Experiment.” Industrial Design, October 1954, pp. 41—51.

Newhall, Beaumont. "History of Photography. The Encyclopedia of Photography, 10. New York: Greystone Press, 1965, pp. 1737—1754.

New Spaces for Learning: designing college facilities to utilize instructional aids and media. Rensselaer Polytechnic Institute: Center for Architectural Research, School of Architecture, 1966.

Norberg, Kenneth D. "The National Defense Education Act of 1958. Audio Visual Communications Review, VI (Fall 1958) , pp. 303—306.

Oldenberg, Claes. "Fotodeath." Tulane Drama Review, Winter 1965, pp. 85— 93.

_____ "Washes” Tulane Drama Review, Winter 1965, pp. 108-118.

_____ and Williams, Emmitt. Store Days. New York: Something Else Press, Inc. 1967.

"100 Shows Without a Hitch." Sales Management, September 21, 1962, Part II, pp. 76-77

Osborn, Joseph. “Multimedia Facility Design, A Selective Survey of Source Materials.” unpublished project-in-lieu-of-thesis, University of Texas at Austin, August 1971.

Overturf, Kendall. “An Automated Briefing.” Data Processing, August 1962, pp. 42—46

Palacios, Inocente. "Imagen de Caracas.” The Drama Review, Winter 1970, pp. 130-137.

Parker, Everett C. Film Use in the Church. New York: National Council of the Churches
of Christ in the United States of America, 1955.

Payne, Robert B. "Projected Scenery: Its Design, Preparation, and Technique. unpublished M. A. thesis, San Jose College, 1958.

Perreault, John. "Oedipus, A New Work. The Drama Review, Summer 1971, pp. 141-147.

Perrin, Donald G. “A History and Analysis of Simultaneous Projected Images in Educational Communication.” unpublished Ph.D. dissertation, The University of
Southern California, 1969.

_____ Theory of Multiple Image Communication. Audio Visual Communications
Review, XVII (Winter 1969) , pp. 368—382.

Piene, Nan R. “Light Art.” Art in America, May—June 1967 , pp. 24—47.

Pike, Robert. A Critical Study of the West Coast Experimental Film. Los Angeles :
The University of California at Los Angeles, 1965.

Pittera, Frederick P. “Fairs and Shows” Britannica Book of the Year 1965. Chicago: Encyclopedia Britannica Inc. 1965 pp. 292-296

_____ “Fairs and Shows” Britannica Book of the Year 1968. Chicago: Encyclopedia
Britannica Inc. 1968 pp. 338-340

_____ “Fairs and Shows” Britannica Book of the Year 1969. Chicago: Encyclopedia
Britannica Inc. 1969 pp. 335-337

_____ “Fairs and Shows” Britannica Book of the Year 1971. Chicago: Encyclopedia
Britannica Inc. 1971 pp. 321-323

"Planetarium.” Colliers Encyclopedia, vol. 19. Riverside, New Jersey: Collier Educational Corporation, 1971, p. 99.

Planning for Schools with Television, New York: Educational Facilities Laboratories,
1960.

Polt, Harriet R. "Outside the Frame. " Film Quarterly, XIV (Spring 1961), pp. 35-37.

Renan, Sheldon. An Introduction to the American Underground Film. New York: E. P.
Dutton and Co Inc. , 1967.

"Research Abstracts.” Audio Visual Communications Review, (Summer 1965), pp.224-229.

Richter, Hans. “The Avante Garde Film Seen from Within.” Hollywood Quarterly, IV (Fall 1949) , pp. 34—41.

Rickey, George. "Kinesis Continued." Art in America, December—January 1965-1966, pp
. 45-55.

Riggsbly, Ernest D. "World's Fair—Showcases for Educational Media." Audio Visual Instruction, May 1970, p. 91.

Rischbieter, Henning. Art and the Stage in the 20th Century. Greenwich, Connecticut:
New York Graphic Society Ltd. , 1968.

Roberts, Alvin B., and Crawford, Don L. "Multi—Screen Presentations : Promise for
Educational Improvement." Audio Visual Instruction, October 1964, pp. 528-530.

Robinson, David. "Magic Lantern." Sight and Sound, Spring 1961, p. 91.

Roger, William L., and Vieth, Paul H. Visual Aids in the Church. Philadelphia: The
Christian Education Press, 1946.

Roose—Evans, James. Experimental Theatre. New York: Universe Books , 1970.

Rose, Barbara. "Dada Then and Now." Art International, January 25, 1963, PP. 23-28.

Rubin, William S. Dada, Surrealism, and Their Heritage. New York: Museum of Modern
Art, 1968.

Russell, John, and Gablik, Suzi. Pop Art Redefined. New York: Frederick A. Praeger,
1969.

Saettler, Paul. "Historical Overview of Audio-Visual Communication." Audio Visual Communications Review, II (Spring 1954) , pp. 109—117.

_____ "History of A—V Education in City School Systems."
Audio Visual Communications Review, III (Spring 1955) , pp. 109—118.

_____ "Technological Legacy of Audio-Visual Communication." Audio Visual
Communications Review, IV (Fall 1956) , pp. 279—290.

Sales Management, September 21, 1962, Part 11, entire section on multi—media in business.

Salzman, Eric. "Mu1timedia Tours South America." High Fidelity and Musical America,
August 1970, pp. 10—11, 31.

Sant 'Andrea, Jim. "Mu1ti—Media:- Methods and Myths ." Audio—Visua1 Communications,
June 1971, pp. 14—16.

Sargent, Winthrop. "Selling Something." The New Yorker, November 12, 1966, pp. 116-

128.

Sayler, Oliver M. Max Reinhardt and His Theatre. New York: Brentano's Publishers,
1926,

Schechner, Richard. "Extensions in Time and Space. The Drama Review , Spring 1968,
pp. 153—159.

_____ "Happenings. Tulane Drama Review, Winter 1965 , pp. 229-232.

_____ "6 Axioms for Environmental Theatre." The Drama Review, Spring 1968, pp. 41—64.

Schneider, Pierre. "Paris" ArtNews, February 1960, p. 44.

Scholner, Allan. "2066 And All That." Art in America, Spring 1966, pp. 40—43.

Schrader, Paul. "Poetry of Idea: The Films of Charles Eames." Film Quarterly, XXIII
(Spring 1970) , pp. 2—18

Seckler, Dorothy Gees. "The Artist Speaks: Robert Rauschenberg." Art in America, May—
June 1966, pp. 73—84 .

Seigel, Marcia B. "The Omniloquence of Alwin Nikolais." Dance Magazine, April 1966, pp. 48—51, 66—67.

Seitz, William C. The Art of Assemblage. New York: The Museum of Modern Art, 1961.

Servin, Darko. "Reflections on Happenings." The Drama Review, Summer 1970, pp. 125-
144,

Severin, Werner. "Another Look at Cue Summation." Audio Visual Communications Review,
XV (Fall 1967) , pp. 233—245.

_____ "The Effectiveness of Relevant Pictures in Multiple Channel Communi
cations. Audio Visual Communications Review, XV (Winter 1967) , pp. 386—401.

Shatnoff, Judith. "Expo 67 A Multiple Vision." Film Quarterly, XXI (Fall 1967), pp.
2-13.

Shephard, Richard F, "John Cage Holds a Jewish Happening." The New York Times, July 24, 1967, p. 21.

Sheythe, Doris. "Multimedia Miracle." Scholastic Teacher (contained in Senior Scholastic), October 18, 1968, pp. 18—19.

Sipley, Dr. Louis Walton. "Chronology of Photographic Inventions." The Encyclopedia

of Photography, vol 4. New York: Greystone Press, 1965, pp. 636—649.

"Slide System Saves Time." Sales Management, September 21, 1962, Part II, pp. 128-
130.

Slosson, Edwin E. "Edison, Thomas Alva." Encyclopedia Britannica, vol. 17. Chicago: William Benton, 1971, p. 978.

Smith, Karl V. "Audiovisumatic Teaching: A NOW Dimension in Education and Research."
Audio Visual Communications Review, VIII (May—June 1960) , pp. 85-103.

Smith, M. Daniel; Schagrin, Morton; and Poorman, L . Eugene. "Mu1ti—Media Systems: A
Review and Report of a Pilot Project." Audio Visual Communications Review, XV
(Winter 1967) , pp. 345—369.

Solomon, Alan. "Is There a New Theatre?" The New York Times, June 27 , 1965, Section
11, p. 12.

_____ Robert Rauschenberg. New York: The Jewish Museum, 1963.

Staubach, Horst W. "Czech this Show! " Modern Photography, August 1968, pp. 38—39.

Stauffacher, Frank, ed. Art in Cinema. San Francisco: San Francisco Museum of Art,
1947.

Steinberg, Charles S., ed. Mass Media and Communication, New York: Hastings House,
1966.

Strongin, Theodore. "Music and Theatre Share Same Circuit at Electric Circus." The
New York Times, July 9 , 1968, p. 30.

_____ "Noisy Crew Brings 100th—Century Life to Electric Circus. The New
York Times, August 13, 1968, p. 44.

Stuart, Earl Welby. "Tape Recording, Magnetic." Encyclopedia Britannica, vol. 21.
Chicago: William Benton, 1971, pp. 682—684.

"Stuffed Bird at 48 Sharp." Time, September 18, 1964, p. 81.

Svoboda, Josef . "Laterna Magika." Tulane Drama Review , Fall 1966, pp. 141-149.

Talbot, Daniel Film: An Anthology New York Simon and Schuster, 1959.

Terry, Walter. "World of Dance." Saturday review, June 28, 1969 , pp. 27-28.

"The Number is 581—5470; But Don't call lt. . .Let It call You." Time , July
7, 1967, p. 8.

"The People of Texas." American Cinematographer, August 1968, pp. 596-598, 604.

"The Talk of the Town." The New Yorker, December 4 , 1965, pp. 32—53.

Thomas, Bob. The Art of Animation. New York: Golden Press, inc., 1958.

Thompson, Virgil. Twentieth—Century Composers. New York : Holt, Rinehart, and Wilson,
1971.

Thwaites, John Anthony. "Dada Hits West Germany." Arts , February 1959, p . 31.

Tower, Howard E. Church Use of Audio Visuals. New York: Abingdon—Cokesbury Press,
1950,

Travers, Robert M. W. Research and Theory Related to Audiovisual Information Transmission, revised ed, U.S. Department of Health, Education, and Welfare. distributed by Western Michigan University, Kalamazoo, Michigan, 1967.

Tuchman, Maurice. "A Decade of Edward Kienholz. " Artforum, April 1966, PP. 41-45.

Tulane Drama Review, Fall 1966, entire issue.

Tulane Drama Review, Winter 1966, entire issue.

Tyler, Parker. "Allan Kaprow. " ArtNews, May 1958, p. 14.

_____ Classics of the Foreign Film. New York: The Citadel Press, 1962.

_____ Underground Film. New York: Grove Press, Inc., 1969.

VanDerBeek, Stan. " Culture : Intercom' and Expanded Cinema." Film Culture, Spring
1966, pp. 15

_____ "Notes from Stan VanDerBeek. Film Culture, Winter and Spring , 1970, pp. 38-40.

_____ "Re: Vision." American Scholar, XXXV (Spring 1966).

_____ "The Cinema Delimina: Films from the Underground. Film Quarterly,
XTV (Summer 1961), pp. 5—15.

Vento, Charles J. "Creative Experimental and Total Environmental Immersion." Audio
Visual Instruction, June—July 1970, pp. 48—49.

Versteeg, Robert. "A Multi—Media Production of Romeo and Juliet." Educational Theatre Journal, (October 1969) pp. 259—274.

Virmaux, Alain. "Artaud and Film." Tulane Drama Review, Fall 1966, pp. 154-165.

"Visual Systems Leap Forward." Sales Management, September 21, 1962 , Part 11, pp.
116-119.

Wadsworth, Raymond H. "The Practical Considerations in Designing Audio—Visual Facilities Architectural Record, July 1968, pp. 149—160.

Wallington, Jim; Hale, Pryor; and Conte, Joseph. "Mu1timage Festival. Audio Visual Instruction, June—July 1969, p. 53.

Ward, George. “Color Slide Duplicating.” The Encyclopedia of Photography vol.5. New York: Greystone Press, 1965, pp. 829—832.

Warshaw, Larence. "Intermedia Workshop.” Arts in Society, VI (no. 3, 1969) , pp. 448-451.

Weingarten, Romain. "Re—read Artaud.” Tulane Drama Review, Winter 1963, pp. 74—84.

Weiss, David W. "The New Design Problem: Multi—Media Effects.” Players, August—September 1970, pp. 264—267.

Weiss, Margaret. “Labyrinthe: Film in a Framework.” Saturday Review, July 8, 1967, pp. 51-53, 64.

Wescher, Paul. "Marcel Duchamp,” Artforum, December 1963, pp. 19—22.

White, Frederick A. "Teacher Competence in the Use of Audio—Visua1 Materials." Audio Visual Communications Review, I (Spring 1953) , pp. 91-98.

White, James. New Forms of Worship. New York: Abingdon Press, 1971.

Whitman, Robert . “The Night Time Sky.” Tulane Drama Review, Winter 1965, pp. 101-107.

Wilfred, Thomas. "The Projected Setting.” Educational Theatre Journal, VI (May 1954) , pp. 136—144,

Wilke, Hubert. "Audio—Visua1 Systems for Large Group Instruction.” Architectural Record, October 1962, pp. 172-176.

Williams, Denny, and Jorgensen, E. S. “The World of Multimage.” Audio Visual Instruction, June—July 1970, pp. 50—51.

Wilson, Earl. "It Happened Last Night.” The New York Post, April 28, 1966, clipping with no page number.

Wingler, Hans M. The Bauhaus. Cambridge, Massachusetts: The M. I. T. Press, 1969.

Wittich, Walter A. "Needed Research in Audio Visual Methods . Audio Visual Communications Review, I (Spring 1953) , pp. 99—105

Yates, Peter. Twentieth Century Music. New York: 1967.

“York Hit Kit Uses Duo Films.” Sales Management, Part 11, pp. 149-150.

Youngblood, Gene. Expanded Cinema. New York: E. Inc.1970.

"Your Own Thing.” Time, January26, 1968, p.45.PantheonBooks, September 21, 1962,P. Dutton and Co

The
Association for Multi-Image International

Carl Beckman Founder President

Roger Gordon Founder Executive Director

The Story of How AMI Began

By Carl Beckman

Forward

Carl Beckman called me a few weeks ago. He told me he was going to write the story of how he and Roger Gordon founded AMI 35 years ago. What a blast from the past! Could it have really been thirty-five years? My God, I was only 33 then! Carl drove down from the Orlando area to my home in Boynton Beach, FL and we had lunch together. Story after story was told. Nostalgia was flowing through that restaurant like a tidal wave. No doubt about it. AMI changed its members' lives and made communication history. AMI helped producers make a lot of money and created a professional social network that was astounding. It set off a revolution in the communications industry worldwide. Carl and Roger were true visionaries, but how many of you know them? But back to the lunch.

What a memory Carl has. I paid for lunch. "Albie, you paid for dinner the last time, in Boston. You took me to Schroeder's decades ago." AMI/New England members who are reading this will have already laughed. Schroeder's was one of Boston's finest restaurants, and a big client of mine. Our AMI/New England Chapter was partially subsidized by Schroeder's. And, for sure, national AMI would never have survived without Carl and Roger and Jack Daniels. I maintain that the best parties in the communications industry, by far, belonged to AMI, but I digress.

Most of us remember AMI International as exciting local Chapter meetings, many with large, yearly festivals and, of course, the week long annual AMI International festivals - extravaganzas in destinations like Phoenix, Dallas, Orlando, Philadelphia, and Los Angeles. (And let us not forget Ken Burke who remains the "Father of Judging" for those Festivals.) We had our association Magazine, *Multi-Images*, which became a slick, glossy magazine. Photographers competed to have their image grace the front cover. Need literature or AMI Focus Slides? Just call Executive Director Marilyn Kulp at our AMI International Headquarters in Tampa, FL. Want to show the cream of the crop in Multi-Image? Put your Chapter's name on the waiting list for one of the two AMI Gold Tours. It went on and on. As an AMI/New England Chapter President, and later an AMI Board of Director and then as President of AMI International, I was lucky to have discovered AMI when it was really taking off like a rocket. But that is not what Carl's story is all about. Most of the membership of AMI International probably never heard of Carl Beckman and Roger Gordon and AMI's early years.

And when Carl and Roger founded AMI, (Later the name was changed to The Association for Multi-Image International) they had no idea of what they were getting into. They started from ground zero, with nothing but the conviction that multi-image was going to be one of the great communication mediums. I knew Carl and Roger
through our first Chapter President of AMI/New England, Hans-Erik Wennberg. Hans was then the Assistant Director of the Audiovisual Department at Rhode Island College.

Hans was also one of the educators who was ahead of the curve. He served as an AMI Founding Board of Director. Hans and I have remained great friends since we met in 1981. Six out of the nine original individuals who served as AMI Founding Board of Directors were educators. And to this day, I think AMI International made a great mistake in not

making our organization more inclusive and recruiting more individuals from colleges and universities to honor and protect our educational heritage.

Roger Gordon

Roger Gordon enjoyed a wonderful teaching career at Temple University in Philadelphia. For 31 years he was Professor of Educational Technology and taught motion picture industry history. In addition to his teaching at Temple, he tours of educators throughout the world and into the Soviet Union as early as 1968, when things were quite cold in the cold war. Roger edited the classic multi-image textbook, *The Art of Multi-Image*, which promoted the multi-image industry for many years. He was AMI's non-paid first Executive Director for seven years.

Roger has many other interests. He is a Grand Sheik, a leader of a *tent*, in the Sons of the Desert. Sons of the Desert you say!? http://home.earthlink.net/~sons_secretary/ Are you getting the feeling that Roger is not your "average" Professor. Sons of the Desert is the name of the International Laurel and Hardy Society, devoted to keeping the lives and works of Stan Laurel and Oliver Hardy before the public, and to have a good time while doing it. Roger is also an Editor of the organization's magazine. He and his wife, Sharon, have traveled all over the world to Sons of the Desert conventions.

Roger, always the performer, comes to his love of comedy and film through his genes. His mother was a film actress and his father a film producer. During his 31 years at Temple Roger collected over 300 16 mm films that told the story of film history. Roger screens movies for friends and family in his home theatre, a replica of those great movie houses of the past with a black bordered screen, complete with a stage, motorized screen curtain, color lights that turned on when the film began and state of the art sound system. Roger donated a part of his collection to Cinekid, a local organization teaching young boys and girls' film production. http://www.cinekid.nl/
Roger says, "No one really retires." And after "retiring" from Temple University in 1996, he started a new career doing something he always wanted to do. Roger became a performing ventriloquist and played many venues in the east coast, as well as on cruise ships. And Roger still performs today. Wouldn't it be great to be on a cruise ship and watch Roger perform, followed by Todd Gipstein and his wife, Marcia, performing their magic act?

Roger and Carl became friends in 1972, when Carl traveled to Philadelphia to talk with Roger about holding a symposium on multi-image. At that time Roger was coordinating the multi-image festival for the Association for Education Communication and Technology (AECT).

Carl and Roger are still best buds and avid golfers. Carl will travel to Philadelphia to continue their pastime at one of the best courses in the country, at the Talamore Country Club where Roger is a member.

Carl Beckman

Carl began his career teaching art at a junior high school in Prince Georges County, Md. He then became a graphic artist in the same school system. Later he took a position as an Instructor at the University of Maryland, eventually founding and serving as the Director of the Instructional Design Center. He was also the Executive Producer of Instructional Television at the University for the School of Dentistry. Carl was the Owner/President of Beckman Associates, the Product Manager of Ringmaster Products for Bell & Howell, National Sales Manager for the Charles Bessler Company and a Vice President of Alan Sarfaty Associates where Carl was instrumental in the development of CD-ROM technology for the U.S Navy. Carl was given a lifetime achievement award by the U.S Geological Survey for his contributions to computer aided technology centered on CD-ROM.

Carl wrote two textbooks on *Sound Slide Production*, one for 3M Company and one for Bell& Howell. He held a contract with 3M for three years to put on workshops across America on *How to Produce Effective Sound Slide Shows*. He trained thousands of future in-house corporate producers, many of whom would become multi-image proponents.

Carl had tremendous industry contacts and knew what companies like Bell & Howell, Kodak, 3M, Arion, and others were contemplating. He knew what state-of-the-art was in AV, and more importantly, what people were planning for the future. He was the prophetic industry deal maker for AMI.

Two Visionaries

Carl Beckman and Roger Gordon are giants within the worldwide Communications Industry. Through them AMI developed into a true international organization enabling multi-image producers around the world to produce a one-of-kind communications message with astounding impact. For-profit and non-profit corporations tapped into billions of dollars of sales and donations. AMI producers made you laugh, made you cry (on cue, of course) motivated your sales force, explained your employee benefits, put the pizzazz into your sales meetings, launched your products, wowed your financial analysts, sold national commercials on sports networks, enhanced your Public Relations, made people vote for you, made people donate to non-profits, explained new concepts and also produced breathtaking art shows. On and on it went.

How did Carl and Roger have the vision to understand that multi-image would shortly come of age? The important point is that they saw it coming, ahead of the curve, and they ran with it. They were not afraid to plunge in. Multi-image was in a crude infancy when they founded AMI. They kept the concept of a professional organization, alive. They nurtured and grew AMI, and eventually multi-image became of age. When AMI and multi-image were strong enough, so that others could run the organization, these two educators went on their way to other things. No fanfare, no medals - pure satisfaction.

Bob Rowan, a great writer, photographer and multi-image producer sent an email to Carl a few days ago. Carl shared it with me:

" . . . And to be realistic, AMI was, in a way, a PERFECT STORM of technology and the need for good communication in education and industry, meeting a group of people who had a huge need to communicate in a very different way. It is my premise that you and Roger and an important handful of people took this PERFECT STORM and gave it a path. Once it was on that path, the medium gathered so much momentum that it ran (in many ways) on its own power for a while, with future board members, producers, clients, and manufacturers trying to contain it. When technology changed in the 90s, the storm ceased. . . . AMI was one of the best associations that ever came along for many of us. You and Roger should be on a plaque somewhere in the Communications Industry Hall of Fame for starting something that became an enigma. And I guess that is what perfect storms do. They begin small, get big, effect a lot of people, and then they go away. But unlike most perfect storms, this one left a very positive effect on the communications industry that evolved into other, smaller storms that would never have the impact that AMI did on so many people."

Ask any member of AMI International the effect AMI had on their lives. The answer always comes back, "AMI changed my life. What a wonderful medium; what a wonderful time!" Thank you Roger and Carl. Thank you Schroeder's and Jack Daniels.

Albie Walton
Past President, AMI International 1990-91
awalton@rcn.com
Boynton Beach, FL
May 12, 2009

Preface: As I look back I realize that Roger Gordon and I were to embark on a journey together into uncharted territory. It was an exciting adventure down a road filled with initial success and set backs, financial struggles and pitfalls. Along the way we were to develop a friendship that continues to this day. Over the next several years Roger and I were to meet many talented, hardworking and dedicated individuals, all of whom contributed in so many different ways to the success of a then fledgling professional society.

AMI would change the lives of many men and women, especially their career arch as well as alter the audio visual industry landscape. For some including me and Roger, AMI would be a significant part of our lives for many years. It took two men to set in motion a sequence of events that would lead to the creation of a professional society. Multi-image technology would for at least a decade dominate the audio visual industry. It would take many more men and women to insure AMI's initial success. Here is the story of how AMI began.

The Beginning

In 1973 I was the Director of the Instructional Design Center at the University of Maryland. Prior to this position I taught audio visual instruction and wrote courses of study for audio visual instruction at the Instructional Technology Center in the College of Education. During my tenure at the ITC Donald Perrin joined the faculty as Assistant Director. Don came from California State University. While at Cal State he was instrumental in the teaching of and the production of multi-image. Don had even invented a three slide projector control devise. It was a crude controller and not all that reliable. He used a box with relay switches connected to the slide projectors. Using a rotary phone dial, signals could be recorded on an audiotape recorder while using a separate track for the music. The net result was a multi-image slide show with slide projectors that would turn on and off. I like to think of these early multi-image shows as I would envision the first airplane taking flight.

While we were using this slide projector technology at the University; two companies Audio Visual Laboratories and Spindler & Sauppe' were developing a microchip programmer that would revolutionize multi-image. I should note that the state of the art technology for manufactured slide projector control at that time was the punch tape along with projector dissolve. AVL would win the race to introduce the microchip. Many more companies would of course manufacture slide projector control and dissolve products.

As I recall it was the fall of 1973 when I got the idea of conducting a symposium on the efficacy of multi-image as a communications medium. The logical venue for this symposium was the Association for Educational Communications and Technology, AECT. The membership of AECT is made up of audio visual media directors and instructors in public schools, colleges and universities. In conjunction with AECT's annual convention and tradeshow a multi-image festival was held. Colleges and universities from all over the country entered and screened their shows during the several days of the convention. I called Fred Wherlie, the program and convention coordinator of AECT and asked to be put on the program.

Fred informed me that the program was full but suggested that I contact Roger Gordon at Temple University. Roger was the Producer/Director of the AECT Mulit-Image Festival. Fred suggested that perhaps Roger could find space for me on the festival program. I called Roger and told him of my idea. He thought it was an excellent idea and invited me up to Philadelphia to meet and plan for the incorporation of the symposium in the festival. We met at the faculty club over lunch to discuss the length and content of the symposium. This initial meeting would be the beginning of a friendship that has lasted to this day. From the very beginning I knew that we would work well together. We did in fact develop a partnership that I believe was critical to the success of AMI.

In May of 1974 the AECT convention was held in Atlantic City, New Jersey. I conducted the symposium assisted by Roger. At the symposium I gave each attendee a questionnaire to fill out. I wish I had kept a copy because the details are lost to memory. After we tabulated the results of the survey we concluded that we had a huge success on our hands. One of the most important questions was, "Would you like to see the establishment of a special interest group – SIG -- within AECT?" One hundred percent said yes! Armed with the results Roger and I decided to request the establishment of a SIG from the AECT Board of Directors. The idea of forming an independent non-profit Association was not in our thinking at that time.

That summer Roger took the train from Philadelphia to Washington, D.C., head quarters for AECT. I had arranged a meeting for the both of us with Howard Hitchens, Executive Director of AECT. Hitch as he was called by his nickname informed us that the Board of Directors had decided to place a moratorium on the formation of anymore special interest groups. Hitch never informed me of this prior to our meeting. Roger and I were stunned. Roger returned to Philadelphia. After this disappointment we decided to go ahead and organize as an independent association. I believe and Roger would agree; that had Hitch allowed us to form a SIG, AMI would never have emerged as an independent association. We were both educators and AECT was our home.

The multi-image festivals would continue to be held independent of the Association for Multi-image at the AECT annual conventions until 1980.

This is speculation on my part but I believe that had AECT sanctioned a multi-image SIG AECT would have attracted the commercial producers. There was no organization or event, where commercial producers could gather and showcase their productions. Later another professional communications association would provide a venue for the commercial producers and I will get to that later in this story.

The Sugar Loaf Meeting: A small step forward

Once back in Philadelphia Roger and I exchanged phone calls over several weeks. We decided that we should move forward with the founding of AMI. Roger suggested that we contact several of our associates and meet at the Temple University Sugar Loaf Conference Center in Germantown. Part of the conference center was a large 19th century mansion willed to the university by a wealthy industrialist. We met for three days organizing the association. The founding Board of Directors was:

Carl Beckman
University of Maryland
Charter President (retired)

Bob Wiseman
Eastern Illinois University
Charter Vice President

Roger Gordon
Temple University
Charter Executive Director, Acting Secretary/Treasurer (retired)

Hans Wennberg
Rhode Island University
Now teaching at Elizabeth Town College

Norm Sauppe
Spindler & Sauppe
Los Angeles, California (retired)

Ron Slawson
Santa Fe Community College
Gainesville, Florida (retired)

Don Perrin
University of California later taught at the University of Maryland (retired)

Victor Edmonds
Last known working for AT&T

Carol Crew
Last known working at the Philadelphia Detention Center

Roger may disagree with me but I believe had we known how much time of ours it would take, including the tremendous effort and workload we would never have moved forward with the founding of AMI. I do know that Roger will agree with me that it was an exciting undertaking and yes, a lot of fun. The initial membership makeup of AMI was educators. Later at the multi-image festival in New Orleans commercial producers would join the association and take it to another level.

Prior to our initial meeting Roger sought out a firm that would help him process memberships. By default he was the ex-officio membership chairman of a non existent association! We were not officially incorporated until 1976. It was a leap of faith for many people to send Roger their membership dues. He found Bill Evans listed in the yellow Pages in Abington Pennsylvania; just down the road from his house. Bill owned and operated a company – Abington Association Management. He managed several small non- profit associations. Bill's services included maintaining membership records and dues. He provided an answering service, wrote correspondence, published newsletters, coordinated promotions as well as conference and tradeshow management. Bill provided all these services on a pro-rata basis. This business arrangement allowed us to operate on a shoestring budget for two years. It was touch and go financially and we almost did not make it. Bill attended our first organizational meeting at the Sugar Loaf and was instrumental in helping us write our Constitution and Bylaws.

At this point there needs to be some clarification of the role of Carl Beckman and Roger Gordon in the organization of AMI. The original board voted me as the President.
It was decided by their vote that I would serve as President for five years. The rationale was that the Association would need a continuity of leadership for at least that amount of time. Roger was appointed Secretary- Treasurer Later he would serve as the Executive Director – at that time a non paid position – He would serve as a non paid Executive Director of AMI for eight years.

The NAVA Multi-Image Festival: A big step forward

As I noted we struggled financially for two years. In 1975 I exchanged phone calls with Harry McGee, Executive Director of the National Audio Visual Association, (NAVA) now known as the International Communications Industries Association, (ICIA). Eventually I met with Harry to discuss the possibility of holding a multi-image festival in conjunction with NAVA's annual audio visual dealer conference and tradeshow. I went to this meeting with Harry hat in hand. I informed him that we did not have a lot money (actually we did not have any money). Harry was way ahead of me. He told me NAVA would provide the festival space rent free. NAVA would also underwrite the cost of promotional literature. All I had to do was get the staging hardware and projection equipment. In addition I had to provide the staging personnel and the projection grid. The success of the festival would decide the fate of AMI.

I called Norm Sauppe' and told him of my plans for the festival in New Orleans. Norm assured me that he would, at his expense, provide the projector controllers and dissolve equipment. Harry put me in touch with Irv Stapsy who owned Buhl Optical in Pittsburgh. Irv provided the lenses and the projectors. Bauer Audio Video provided the projector stands, screens and staging equipment.

Pete Mather, Coordinator of Media Development at Los Angles City College, brought five students along with their productions to New Orleans. I brought three of my graduate assistants and two shows that I had produced. Palmer Dyer from Ithaca College lectured on the 10 major strengths of multi-image. I have not kept records of all the shows that were screened nor did I keep copies of the two shows that I produced and I wish I had.

The festival space was allocated, was based on the predicted attendance for the two days that the festival would run. We planned on 50 for the Saturday show and 100 for the Sunday show. One hundred people attended the Saturday show and 300 people came to the Sunday show. It was standing room only. We had to pull back the curtains that enclosed the show to accommodate everyone. I did not anticipate the independent commercial producers of multi-image would be all that interested. It was a huge underestimation on my part. Word of the Saturday show got around the convention floor and the Sunday show as I noted was jam packed, including a large contingent of independent producers. We handed out the very first issue of the *AMI Multi-Image* Journal. Roger was the Editor. Our problem was that we did not bring enough copies and ran out at the Saturday show.

Two outspoken producers chided me for not including commercial producers in the festival; hey I was an educator, I lived and worked in the academia world. Two results of this show would change the direction of AMI and establish AMI as a force in the audio visual industry. Our net profit was $60,000! That does not seem like a lot of money today but keep in mind this was 1976. I assured the independent producers that AMI would make room for them and everyone would receive an issue of the Journal. The success of the Journal was critical to the success of AMI as was the income derived from the festival.

Bob Rowan's first cover as Journal Editor

I cannot understate how important the Journal was to the association. It Journal was to become the source of information as to what was going on in the multi-image industry. The

Journal became the place for manufacturers to advertise their products and was an excellent income producer for the association. Roger started the Journal and served as Editor. However his duties would increase as he took on more and more of a workload. Later Bob Rowan from the University of South Carolina took over as Editor/Art Director of the Journal. This was of course much to the relief of an overworked Roger Gordon. Bob would take the Journal to a new level of professionalism. Roger now had a tiger by the tail. Back home he had to process well over 200 new memberships, a daunting task.

Membership Growth

Over the next several years membership would continue to grow under the leadership of Hugh Gardner. Hugh was asked to "join" the Board of Directors by Roger. At that point in time board members were appointed not elected. Hugh was then a Professor at the University of Georgia and an active member of the AECT. He crafted a membership program that would eventually grow our membership to over 5,000 worldwide.

We continued to hold the festival in conjunction with NAVA for two more years. Harry had the vision and the business acumen to understand the importance of the relationship with AMI. That early and brief association would fuel the NAVA membership and multi-image manufacturers would commit to exhibit at the NAVA tradeshow. You may or may not know just how important trade shows are to a non-profit association. Tradeshows are the single biggest income producer. Tradeshows are vital to the financial health of an association. Working with Harry McGee was really "Association Management 101" for me. Roger and I discussed the need to stage and produce our own convention/ tradeshow. Our very first convention was held in Chicago at The O'Hare Airport Ramada Inn. Roger the showman would produce a spectacular conference and tradeshow; but I am getting ahead of myself.

Our First Convention: An even bigger step forward

Putting together a tradeshow and a conference is no easy thing even for a well established and well staffed organization; there are a thousand details to attend to as well as an enormous promotion effort. Roger was the detail man and I was the promotion man.
Prior to the AMI convention taking place, I had conversations with Clyde Harris, the Mincom Division Marketing Manager at 3M Company. Mincom manufactured slide control and dissolve control products under an OEM agreement with the Arion Company in Minneapolis. Clyde and I had met at the New Orleans festival. At that meeting in New Orleans, he expressed his interest in AMI and wanted to become a part of it. He offered to use 3M resources to support and promote AMI. Needless to say I was overjoyed. He had the AV industry prestige and the contacts. Later he would be influential in my decision to start my own business. I don't think I am alone in saying that AMI changed my career arch. It was a major decision and a scary one. Academia is a completely different world than the business and I was learning managerial and business skills. I mention all of this because the success of AMI was really the consequence of interpersonal relationships; not just mine or Roger's but many, many more AMI volunteers.

Clyde offered to chair the AMI tradeshow committee and the very first person he contacted was Dick Schievo at Eastman Kodak. Dick was the Audio Visual Marketing Manager at Kodak; talk about a heavy hitter! He would assemble his committee and the planning for the tradeshow would move forward. The stature of 3M and Eastman Kodak in the audio visual industry was such that their participation would insure many more exhibitors would participate in our tradeshow. Armed with the financial wherewithal from the NAVA festivals, Roger began the planning of the conference itself. Roger and I recruited a number of volunteers. Roger flew to Chicago with Clyde and they decided to hold the conference/tradeshow at the Ramada Inn at O'Hare Airport. Clyde a savvy guy, decided on the Ramada because of the Chicago unions. These unions were notorious for their unreasonable demands. One union in the early negotiations for a downtown location insisted that we have one man for every projector! We would have had twenty five bent nosed guys standing around for all the shows. With his industry influence Clyde sold out the exhibit space.

Roger -- ever the showman -- planned and produced a terrific conference. The early days of multi-image screening were fraught with failure. A show would start then stop. A frantic effort was made to rewind and re-cycle all the projectors. The show would once again stop and the re-start procedure would begin yet again. This could happen several times. Another problem was the length of time it took to set up the next show for screening. Roger had a brilliant solution to these two problems; violins and champagne.
He hired a trio of violinists dressed in tuxedoes to walk the festival floor between shows and to jump into action when a show failed and fail they did. Fortunately the audience was comprised of fellow producers who were for the most part sympathetic.

Now here is the brilliant part of his showmanship. During a pause in the screening or if a show failed and it took too much time to restart, the waiters would serve more champagne and the violinists would play. The festival was a major hit and the tradeshow was also successful to the degree that in the following year many more manufacturers would exhibit. As for me, I was excited, exhilarated and relieved. We had pulled off a major undertaking and at a huge financial risk. The bottom line was that the commercial producers found a home and the manufacturers another venue to promote their products.

The Last Big Step: and several more to follow:

Abington Associations: later original AMI headquarters

AMI was officially incorporated as a non-profit professional society in 1976.
Back at AMI headquarters now housed in Bill Evans' offices the workload on Bill's staff increased. At that point he decided to retire and we took over the building's lease and staff payroll. We now had an official headquarters address. Bill Evans died in 1978.
I want to stop right here in this story and write a little about Bill Evans. It has been said that "you can judge a man by the number of people attending his funeral." At Bill's funeral, it was standing room only. He had a lot of outstanding qualities; integrity and ethics were two of them. Both Roger and I came to rely heavily on his counsel. Before making any decisions I always ran the issue by him. In the very early days Bill believed in AMI while Roger and I had our doubts. There were times when we could not pay for his services and he carried us. Bill and Roger were to develop a close working relationship; but more critical to our success was his belief in Roger and me.

Roger, with Marilyn's assistance ran our association. He was a natural for this position. In short the association staff loved working for Roger. His demeanor and enthusiasm was infectious. I used to love to go to Abington for staff meetings because the staff was a joy to work with. The staff would take on any task and work hard.

Earlier Roger had begun work on editing the AMI textbook, The Art of Multi-Image. Bob Rowan designed the cover. I should note that Bill Evans advanced Roger the money to print the textbook. Several people contributed chapters to the book. One significant chapter was written by Ken Burke. This particular chapter was titled "Criticizing the Presentation". Later Ken would develop the criteria for judging the annual AMI awards.

As I said in the preface it took two men to found an association but many, many more men and women to make it work.

Local Chapter Growth:

At some point during my administration we began the formation of local chapters. Producers wanted to meet on a regular basis and the chapters provided that venue.
Local chapters would hold their own award festivals and conduct production workshops.
I cannot go into much detail here because chapter growth took place after my last stint on the Board of Directors.

The AMI Festival Award:

Photo by Todd Gipstein

Prior to holding our first award festival I worked with Norm Sauppe to design the award itself. Norm found a local crystal class- cutter in Los Angles. He shipped the prototype to me for approval. Roger liked it as did the Executive committee and we ordered several for the festival. The festival was to become a major event in AMI. If a producer could win an award he or she could use that achievement to solicit business. In fact many producers took their clients and prospective clients to the national festivals.

Earlier I noted that Ken Burke had contributed several chapters to the Art of Multi-Image.
Ken had begun the development of judging criteria for evaluating shows.
As an outgrowth of this early effort he would develop the criteria for the AMI awards. This was another significant contribution to AMI's stature in the audio visual industry. I am at some risk here in failing to mention some other individuals who contributed to the growth of AMI and for that I apologize.

Special Mention:

Ron Slawson

Ron taught audio visual instruction at Santa Fe Community College in Gainesville. He was an avid and passionate promoter and producer of multi-image. Aside from his participation at the AECT festivals; Ron held his own annual festival at SFCC. This particular festival would gain huge success in the entire state of Florida. Ron would then direct the Florida Association Media Educators annual multi-image festival. He was an inspiration to all the media educators' nation wide.

Hugh Gardner

Hugh taught at the University of Georgia. Hugh and Roger had worked together at the AECT multi-image festivals and Roger asked Hugh to join the AMI Board of Directors.
He took on the task of building membership and under his leadership AMI would grow to more than 5,000 member's world wide.

Bob Jones

Bob worked for Bob Rowan at the University of South Carolina. Bob volunteered to work on the stage crew and fell in love with staging. He would continue to manage the AMI festival staging for several years. As a result he went to work for Staging Techniques and open the Atlanta, Georgia office where Bob still works to this day.

Retirement

In 1979 I concluded my term of office as President and Pete Mather would assume the Presidency. I continued to serve on the board for two more years. After my term of office as President I turned my attention to my career. From 1981 on I had very little involvement in AMI as my career took me in another direction. Roger retired as Executive Director in 1981 at the AMI Board meeting in Minneapolis. A search was made for Roger's replacement. Several candidates were interviewed and Joe Codde was selected. However Joe's tenure with AMI was short and we would begin a new search for an Executive Director.

Our story ends here because Roger and I went back to our respective careers. Roger would retire as full Professor of Education at Temple University and I would close out my career with a sixteen year stint as an audio visual manufacturer's representative.

The torch is passed

Marilyn Kulp, Office manager of AMI was appointed interim Executive Director. She was a natural for the position due to her involvement in AMI from its inception. Aside from her managerial skills, she understood, and was comfortable with the AMI culture. Later the board would decide that Marilyn should be the permanent Executive Director. Under her leadership the annual awards festival became an international hit. The Gold Tour would continue to add stature to the association. Independent producers would vie to achieve an award and to be included in the Tour. Marilyn went on to guide and direct the association for another 15 years before AMI closed its doors in 1998.

In preparation for writing this story I have been corresponding with Ken Burke and Bob Rowan. Both Bob and Ken have been kind enough to encourage me in the process. Bob believes that AMI was the perfect storm. Bob believes that AMI had a major impact on the audiovisual industry and perhaps it did.

Before I conclude with this story I want to thank Marilyn Kulp who has been invaluable with the facts, the chronology and the time lines. I also thank her for encouraging me to write this story; I don't think I would have done it without her. I hope that one of you will be motivated to pick up the story of AMI. If you do I suggest you call it The Glory Years.

As I have been in the process of writing this story the memories have been flooding back. Roger and I had so many wonderful times together, memorable and unforgettable to say the very least. Our travels together across the United States, South America and Eastern Europe as a vivid to me as the days when they took place. It was so much fun that I would love to do it all over again and not change a thing.

The End (of the beginning)

A special thank you to Wally Harper, for editing and proofing this story. Wally was President of AMI 1986-87

Exhibits:

Group picture original Board of Directors 1974

AMI newsletter 1974

AMI Festival Pictures by Del Brown

Carl Beckman graybeard38@cfl.rr.com
Roger Gordon rogie2230@aol.com

multi-images

(No. 1, 2)

Journal of the Association for Multi-Image Volume I, No. 2 - Fall 1974

MULTI-IMAGE ASSOCIATION BEGINS

AECT OFFICIALLY RECOGNIZES AMI AS AN AFFILIATE

On Sunday, May 26, 1975 at 1:00 p.m., the Association for Multi-Image constitution was ratified by its new Board of Directors and at that moment, after a momentous weekend conference, the organization officially came into being.

The Association for Multi-Image - as it will be known - is a professional organization dedicated to the improvement of education through promotion of the art of multi-image as a medium for education and communications.

The conference, led by new President Carl Beckman (University of Maryland), was held at the Sugarloaf Conference Center at Temple University, Philadelphia, Pa., on May 24, 25, and 26, 1974. Present were the new officers of the association and its Board of Directors. The officers of the organization are:

President - CARL BECKMAN
University of Maryland

Vice President - ROBERT WISEMAN
Eastern Illinois University

Secretary - ROBERT L. GORDON
Treasurer Temple University

Board members are: VIC EDMONDS (Cleveland State University), DONALD PERRIN (University of Maryland), RONALD SLAWSON (Santa Fe Community College), HANS WENNBERG (Rhode Island College), NORMAN SAUPPE (Spindler & Sauppe, Inc.), and CAROLE CREW (Philadelphia Detention Center).

(l to r) C. Beckman, R. Gordon, V. Edmonds, D. Perrin, R. Wiseman, R. Slawson, H. Wenberg, N. Sauppe.

This picture was taken at the Temple University, Sugarloaf Conference Center

The AMI board at work

(l to r) C. Beckman, R. Gordon, R. Wiseman, D. Perrin, H. Wenberg, R. Pandolfi, V. Edmonds, R. Slawson, C. Crew.

AMI NEWSLETTER

Roger L. Gordon, Editor
MULTI-IMAGES JOURNAL
Ritter Hall Addition
Temple University
Philadelphia, Pa. 19122

The picture above was taken at the Temple University Sugarloaf Conference Center

Two weeks following the conference, the new constitution was presented to the Board of Directors of the Association for Educational Communications and Technology in Washington, D.C., and AMI officially became an affiliate of that organization.

Among other things accomplished at the conference was the planning of events for the 1975 AECT Convention in Dallas, Texas; election of officers named above, and planning of directions and goals for the organization - immediately and in the future; and the presentation of multi-image productions by Ron Slawson.

THE SKY's THE LIMIT!

[An Editorial] Things have begun to happen with the birth of AMI. The association is not six months in existence, but already we are planning participation in two large conventions, answering a large amount of correspondence, and putting out a number of publications.

Every day sees new letters from persons desiring membership in AMI. Others simply ask questions of us about the art of multi-image. A logical query at this time is 'why a large surge of interest in multi-image'?

Probably the interest has been there all along. As media presentations have become so sophisticated in step with modern technology, it is logical that the multi-image presentation mode would have emerged. What people are realizing is that it is not how many projectors or screens that you use, but rather how the presentation is produced in line with the objectives you wish to accomplish. Multi-image seems to have opened a new world of presentation possibilities, not only in education but in business and industry. This is all pointed out so graphically in Wilson Brydon's presentation titled "THIS THING CALLED MULTI-IMAGE" which has been shown at a number of conventions and meetings.

But, where do we go from here? How can our new professional association serve the needs of all who are interested in multi-image? We need to answer this question. It's one thing to initiate such an association, and quite another to keep it responsive to the needs of its membership. This is more of a challenge than might have been initially realized.

Interest in the multi-image festivals at the AECT Conventions within the past few years has been nothing short of unbelievable. It is safe to say that the multi-image festival is one of the big drawing attractions of the Convention. From all of this, and other efforts, has come AMI.

The sky's the limit for AMI. But it is a big sky. Only you can give us a compass setting and head us in the right direction.

NEW DEFINITIONS FOR THE FIELD

MULTI-IMAGE --- the use of simultaneous projected images to increase the effectiveness of slide and mixed-media presentations.

PRODUCER --- a person who designs and prepares the materials, sequences and synchronizes the media components.

AMI COMMENT

Dear Sirs - I have just heard about your new association. I would like to join, but I'm a member of so many other organizations that one more may just break me. Why can't you people pool your membership with some - or one other - organization and give us a break in the pocketbook.
Sincerely, ROBERT HARRIS (Denver)

Have you checked our joint membership with AECT?

Dear Dr. Gordon - I thoroughly enjoyed the last multi-image festival at the AECT Convention. Congratulations on putting together an exciting and interesting program. I'd be glad to subscribe to your newsletter, I am interested in any information.
Sincerely, EVERETT BABCOCK (Atlanta)

Thanks for the good words. All members of AMI automatically receive the newsletter.

Dear Roger - Does the new organization have a multi-image program explaining its activities in a nutshell? Also, do you send representatives to various parts of the country to make presentations?
My best, DICK BALDWIN (East Meadow,N.Y.)

AMI is planning just such a multi-image program which will initially be presented at the AECT Convention in Dallas, Texas in April 1975. As yet, we do not send out reps for presentations on multi-image, but we're planning to do so in the future.

°°SEND ALL FUTURE CORRESPONDENCE TO
AMI COMMENT: Roger L. Gordon, Editor
Multi-Images Journal
Ritter Hall Addition
Temple University
Philadelphia, Pa. 19122

IN THE IMAGE

°°°°°President Carl Beckman represented the Association for Multi-Image at the Denver, Colorado AECT Division and National Affiliate Presidents' Meeting, in September. The major purpose of the visit was to establish the Dallas Convention program, which will feature an AMI workshop and multi-image festival.

°°°°°The first annual AMI membership drive gets underway this fall. More on the plans in the next newsletter.

°°°°°President Carl Beckman recently met with Harry McGee, President of the National Audio Visual Association and his staff to discuss affiliation with this organization.

°°°°°The Multi-Image Festival at the AECT Convention in Dallas - April 1975 - is to be chaired this year by Roger L. Gordon of Temple University and Robert C. Wiseman of Eastern Illinois University. Roger will handle the special "Best of Multi-Image" portion of the program and Bob will handle the regular participation section.

°°°°°Norman Sauppe, AMI Board member,and President of Spindler and Sauppe' has volunteered to produce an AMI multi-image presentation for the AECT Dallas Convention. It will promote AMI, and be used at the multi-image festival.

°°°°°In answer to a request by AECT President Gerald Torkelson, President Carl Beckman composed a letter in August concerning the most immediate concerns of AMI:

1. building the membership,
2. establishing the Multi-Image Festival as a showcase,
3. offering a Multi-Image Workshop at the AECT Convention,
4. promoting professionalism throughout AMI membership in the production of multi-image, and
5. publication of the AMI Newsletter.

°°°A PRONOUNCIATION FOR MULTI-IMAGE°°°

Be it hereby resolved that the Association for Multi-Image recommends the pronounciation of the term multi-image in the Anglecized version. The French pronounciation is discouraged.

MULTI-IMAGE WORKSHOP PROPOSED FOR
1974 AECT NATIONAL CONVENTION -
DALLAS, TEXAS

The Association for Multi-Image, a National Affiliate of the AECT, is exploring the feasibility of offering a multi-image workshop course during the 1975 AECT Convention. Tentative plans are for a total length of fifteen (15) hours - spread over a two-day period (Sunday and Monday). The proposed audience would be instructors and media specialists who have had limited experience in media production. All participants will go through the basic steps and essential techniques for creating a multi-image production, including such things as:

°IDEA FORMATION °USE OF THE PLANNING BOARD °SOUND TRACKS, IMAGES, SLIDES, AND/OR FILM

°TIMING ON THE LIGHT TABLE °OPERATION OF THE MEDIA FOR THE PRESENTATION

The intent is for participants to produce a presentation for screening at the end of the workshop. Ronald Slawson, nationally recognized multi-image producer from Santa Fe Community College, has agreed to serve as coordinator and instructor for this activity. Plans call for a number of consultants from other educational institutions and commercial producers to join Mr. Slawson in working with small groups of workshop participants. Participants would be requested to bring the following materials:

°Four 80-slide-capacity Kodak Carousel slide trays.
°An idea for a short presentation (approx. 3-5 minutes), including a script already written, if possible.
°35mm or 2x2 slides that will be used for the production.
°An Exacto knife.

A limited number of slides - consisting of scenery, people, buildings, etc., will be available for those unable to bring their own. One reel of audiodisc tape will be provided to each participant.

Suggestions for changes and/or additions should be returned - along with the response form below - to:

RONALD SLAWSON
MULTI-MEDIA COMMUNICATIONS
SANTA FE COMMUNITY COLLEGE
3000 NW 83rd STREET
GAINESVILLE, FLORIDA 32601

A decision will be made, based on your response, in late November as to whether or not to proceed with the plans outlined above.

MULTI-IMAGE WORKSHOP

NAME _____

TITLE _____

ADDRESS _____

_____

[ ] I'm interested; send more information!

Scenes From AMI by Del Brown

Presidents of the Association for Multi-Image
(later known as the Association for Multi-Image International
then the Association for Multimedia International)

Founder: Carl Beckman 1974-79

Founder: Roger Gordon Executive Director 1974-81

Executive Director: Marilyn Kulp 1981-98

Presidents:

Pete Mather 1979-81

John Stokes 1981-82

Peter Zajichek 1982-83

John Slack 1983-84

Victor Lawrence 1984-85

Richard Sorgel 1985-86

Wally Harper 1986-87

James Lund 1987-88

Peter Ryan 1988-89

Ken Burke 1989-90

Albie Walton 1990-91

Mark Asteris 1991-92

Bengt Nygren 1992-93

Denny Ducharme 1993-94

Jim Combs June-December 1996*

*Combs was elected president in June 1996, but AMI ceased operations in December of that year.

An Anthology of Multi-Image

Edited by Ken Burke, PhD

Includes:

A theory of Multi-Image Communication | Donald Perrin | 112

Masquage: An Extrapolation of Einstein … to Multi-Image | Robert Siegler | 134

Multi-Image and The Presentation of Space and Time | Ed Wachtel | 147

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Multi-Image Technique for *The Boston Strangler*| Fleischer & Klein | 305

Communication Not Chaos in Multimedia | Leslie Buckland | 321

Budgeting Professional Multi-Media Productions | Donald Pasquella | 332

Appendix A | Chronology of …Multi-Media & Related Works | Ken Burke | 349

Appendix B | Multi-Media Programmers and Dissolves | Drukker & Steigman | 407

Note from Ken Burke

I have looked through [the pdf of the manuscript] to verify that it is all there, even the funkiness of some unneeded blank pages or a couple of additions (I guess) put in after the Tampa office [of the Association for Multi-Image] sent the “finished" product to me (almost all of it was retyped from originals I sent there so I didn't have a lot of control over how it looked; I was just thankful it existed at all).

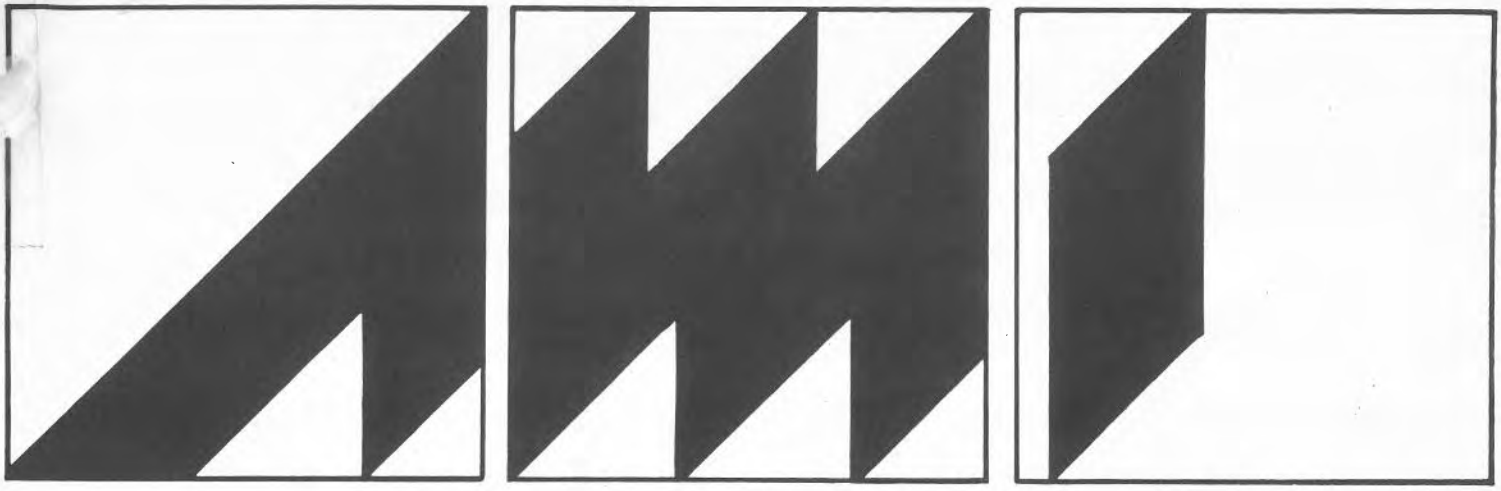
The opening text (p. 244) of the Don Pasquella "Designing Multi-Image Presentations" (title on p. 243) is blank in my print copy so I don't know what happened there, but you can generally make sense of what he probably said based on the rest of the article.

Now that I skim through this, I remember that when I went to Boston in 1973 to meet with Gerd Stern in person, he told me he had a book contract to publish something about multimedia so he wanted me to work with him on that.

The plan was to use my history material, the study of the psychology of perception as related to multi-image by Bruce Goldstein (I've completely forgotten how he came into this, maybe Gerd knew him), the educational stuff about multimedia use at the U. of Wisconsin by Gerry McVey (I brought him into it), and then whatever Gerd wanted to contribute.

Well, the other 3 of us got our stuff together, but years passed by with nothing from Gerd so Bruce finally submitted his material to an academic journal, and I talked the AMI Board into letting me put an anthology together based on those 3 inclusions plus other stuff I'd accumulated over time along with a couple of new things I wrote for the book.

The final result is a funky publication as the "binding" is actually 3 long metal screws (hence the 3 holes on the left side of any page if they should show up) and no one thought to put page numbers on the Table of Contents so I just recently wrote those in.



The Association for Multi-Image presents

an anthology of multi-image

edited by dr. ken burke

AN ANTHOLOGY OF MULTI-IMAGE

Edited by Dr. Ken Burke

Broadcast-Film Arts

Southern Methodist University

Association for Multi-Image, Abington, PA. 1980

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ACKNOWLEDGEMENTS

The following people and organizations are due a special word of thanks for their support and aid in the publication of this book: Roger Gordon, the Directors of the Association of Multi-Image, United Business Publications, Inc., Ziff-Davis Publishing Co., the Association for Educational Communication and Technology, the Regents of the University of California, Leslie Buckland, Herb Lightman, the Directors Guild of America, and Don Pasquella. Personal debts of gratitude for helping me through the academic process necessary to achieve much of this book go to Richard Byrne, Jamie Burke, Robert Brooks, Stanley Donner, and Laurie Miller. Maybe they aren't too surprised, but at times I still am.

I. AN OVERVIEW OF MULTI-IMAGE

By Ken Burke

To my knowledge, this anthology is the first of its kind, a collection of diverse writings about multi-imagery. In some other ways it is also unique: much of this material is being published for the first time here; the topics emphasized in this volume are the more obscure ones of history, theory, and research; and the editor has had the audacity to devote about half the book to his (my) own writings. Such is the wonder of multi-image that these marvelous things could come about. Actually, the contents were chosen largely by necessity from the existing writings--many of which are topics that seem to have me as an authority (?). This confirms a solid academic principle: write about something that no one else has bothered with and you immediately become one of the world's leading experts.

Seriously, though, I have long felt that multi-imagery needed more substantial writings which would help explain and justify its existence and continuity. Just as film in the early years of this century needed apologists and theoreticians to defend its newly-claimed place among the arts, so does multi-imagery need to reach out beyond the confines of exposition descriptions and production manuals. These documents and teaching devices are vital to the growth and stability of the field, but ultimately they limit its development if they are the only kinds of writings available. Just sharing trade secrets confines the medium to a hunt-and-peck existence. What is needed is a full-scale assault on what we do not yet fully know: (1) how we can best design multi-image presentations, and (2) what considerations need to be analyzed in properly directing each multi-image program to its intended audience.

Just like film, television, print, and other forms of communication, multi-imagery is a multi-purpose way of presenting the entire range of messages:

informational, instructive, persuasive, entertaining, and enriching.[1] For this reason, the multi-image approach to message design has been equally well received in schools, training centers, expositions, convention programs, film festivals, art galleries, theatres, churches, and avant-garde performance spaces. Unfortunately, this wide diffusion has led to cross-purposes, professional jealousies, and misunderstandings as each group of practitioners has accused the other of being too slick, too sloppy, too commercialized, too obscure, or whatever. Corporate producers want to sell products and images, and they often look down on educators for being too unprofessional and redundant; educators are concerned with imparting specific ideas, and they often look down on the corporate world as "sound and fury signifying nothing" except flashy winkie-blinkies; finally, Intermedia artists often accuse everybody else of being crass, mundane, obvious, boring, and totally lacking in aesthetic sensitivity. Even trying to write this book six years ago as an equal collaboration between social scientists, artists, and educators proved to be a fiasco as agreements and deadlines just could not be reached.

Thus, I have gone out on a limb and made many decisions for all in the vast field of multi-imagery. Without first gaining true consensus, I have offered definitions, constructed a pattern of historical development, drawn conclusions from the existing research, and made arbitrary decisions on a representative group of articles to cover this many-faceted topic At best, these decisions will be accepted and further dialogue will continue on refining and expanding these ideas At worst, this collection will be rejected by all camps as being self-serving and inadequate, thereby leaving us a group of divergent antagonists who take delight in criticizing each other (notice how I smoothly stack the deck in my favor there?). Hopefully, though, these ideas will at least be read and discussed by teachers, students, equipment manufacturers, photographers, art

directors, audio engineers, independent producers, media specialists, stage designers, film directors, artists, clergy, and whoever else is interested. From these discussions could come agreements, objections, insights, incredulous laughter, and whatever else it takes to keep progress alive in this new field of inquiry.

Another hope is that this will be the last book on multi-imagery that must make tenuous statements, exort participation in the process of development, and refer to multi-imagery as a new idea. If we can all at least learn what has been done, theorized, and studied, then we can all go on from there, sharing concepts and dynamic innovative uses of the medium. Just as film plowed haphazardly through the discoveries of closeups, narrative editing, subjective camera placement, emotional montage editing, and the orchestration of sound, so has multi-imagery taken its slow but steady course of proving that certain panoramas, juxtapositions, presentation rates, and environmental alterations are unique contributions to an electronic language. Multimedia/multi-image programs have been an accomplished fact since 1939, and a continually growing means of expression since 1960. It is time to acknowledge in detail what has been done, and then move on in a more calculated way to planned future discoveries.

Since 1974 the Association for Multi-Image (AMI) has provided a forum for idea and information exchange, as well as an opportunity for learning, displaying, and publishing. Because of this organization there are now two annual national multi-image festivals (at the AECT and AMI conventions): several workshops held in various parts of the country; professional seminars at the annual NAVA and Visual Communications Congress meetings; a quarterly journal--Multi-Images--devoted to the field; an Archives and Clearinghouse for collection and distribution of dissertations, articles, bibliographies, etc.; and national publications such as this book and the highly acclaimed AMI production textbook,

The Art of Multi-Image. Other activities of AMI which have benefited practitioners of multi-imagery are the work of the Standards Committee in achieving common presentation technology and configurations, the work of the Awards Committee to establish recognition for significant contributions to the field, and the work of the Board of Directors in bringing together viewpoints and members from various disciplines: educators, manufacturers, artists, media specialists, and corporate producers.

In presenting this book, which AMI hopes will speak to an even wider spectrum of readers, we think that we have served a need for more precise knowledge about this fascinating form of communication. With this background, multi-image producers can learn more about their common heritage in mixed media with other creators: playwrights and production designers in theatre; producers, directors, and art directors in commercial cinema and World's Fair exhibitions; contemporary artists working in video and Intermedia combinations; and historians, social scientists, and critics studying all of these fields. With this background of understanding and appreciation, it may be more possible for the educators, corporate producers, and in-house specialists now dominating the making of multi-image programs to respect and work with each other as well.

As this begins to happen, AMI stands ready to be the vehicle which will facilitate the needed growth. Establishment of local chapters, conducting of local workshops and festivals, initiation of research projects and seminars, and publications in the AMI journal are all ways of spreading the awareness and maturity of multi-image. Any contribution that this book can make to that future development will be the greatest reward that any author could hope for. So, don't break an old man's heart (well, 31's not so old, but it's an effective literary device); respect each other, talk to each other, work together, write your own books, do whatever you can to bring us all forward. When you have

something to contribute or want more information, contact AMI at 947 Old York Road in Abington, PA 19001. In the meantime, though, read on and see what's been happening in multi-imagery and related areas. You'll find a lot of achievement, a lot of need for improvement, and a whole gang of crazies with courage, determination, and a never-say-die attitude.[2] Take notes and prepare to join the next generation of innovators; there's still space on the program if you act now.

FOOTNOTES

[1]Ken Burke, "A Pragmatic Approach to Criticism of Multimedia," Journal of Educational Technology Systems 6 (1977-78): 57-76.

[2]Phrase attributed to Jeannie Monahan, who has nothing to do with multi-imagery, but knows a lot about life.

II. DEFINITIONS AND HISTORY

Multi-image combinations are as ancient as prehistoric cave paintings and as current as the latest demonstration presentation of a sophisticated microprocessor programmer. There is no way to define multi-imagery so as to separate the slide/tape/film programs popular in business and education from the centuries-old heritage of paintings, carvings, and decorations in the visual arts. As has been detailed in AMI's textbook, The Art of Multi-Image, our current electronic marvels are related in both form and spirit to a vast array of temple and church ornamentations, palace embellishments, altarpieces, sarcophagi, paintings, sculptures, and mixed media combinations. Just as "multi-imagery" leads to a complete survey of the visual arts, so does "multimedia" lead us to the history of mixed means of communication--dance, theatre, opera, film, television, and avante-garde blends of all these disciplines. The problem is: how are we even to discuss what are known as "multimedia shows" or "multi-image programs" without bringing in the entire scope of the arts and communication, including such diverse activities as classroom instruction and magazine photojournalism?

The only way to limit this topic to the slide/tape/film combinations generally recognized as "multi-image" or "multimedia" in the trade and popular periodicals is to be very semantically precise. As an adjective, "multimedia" simply means using or combining several media. Thus, it is analagous to "mixed-media" and includes everything from collages to sound films to circuses. Some of these multimedia combinations will be quite recognizable in terms of length, format, and content. Thus, we have a tradition of product in areas such as ballet, theatre, film, television, and opera which leads us to expect certain technical specifications and conventions in form and content. Nevertheless,

these are all multimedia forms of expression which can be contrasted to classical forms of non-mixed media--painting, poetry, prose, rhetoric, photography, etc.

As any of these non-mixed forms become experimental and break from their traditional formats and materials, they also can enter the realm of multimedia communication. However, such experimental works will be hard to define and categorize because they blend previously separate elements of expression. Among these new multimedia combinations is the union of slide, film, and audio tape (along with related technologies) which has so captivated the instructional and corporate worlds. Such a multimedia combination is recognizable as a distinct entity--a medium in its own right--but it has no boundaries as to form or content. With slide/tape/film programs there are no specifications as to number of image areas, image configuration, presence of audio, presence of film, or extent of related devices--filmstrips, overheads, strobes, or whatever. Still, we know that these multimedia combinations are based on the slide/tape juxtaposition and have more in common with each other than with commercial cinema, so we can discuss them as having distinct history, theory, systems of production, and methods of evaluation.

What would also be nice would be a distinct name--a means of identifying these multimedia combinations and separating them from the vast body of electronic experiments in the arts. Unfortunately, the name which has caught on in the education, corporate, and popular press is "multimedia" itself, so I simply suggest that "multimedia program" be taken to mean the slide/tape/film combinations which are detailed in the following pages. "Multi-image program" might be useful as a term, but will not do because it is but a subset of the larger category of multimedia programs, which contain single as well as multiple image slide/tape (whatever) configurations. In the future there may even be specific

kinds of multi-image programs that recognize conventional formats and technologies for uniform display situations--such as at national AMI Multi-Image Festivals. As any type of multimedia program achieves such stability, it will join the more conventional multimedia formats of film, television, theatre, and the like. So, we have a three-layered set of definitions: multimedia as an adjective referring to all combinations of communication technologies, multimedia program as a noun referring to all slide/tape-based multimedia mixtures, and multi-image program as a noun identifying multimedia programs which use two or more simultaneous image areas. As a final distinction here, it should be clear that I do not regard single image-area programs as multi-image, no matter how many layers of imagery are superimposed in the same frame. To me this is still a composite, single image which can easily be a slide/tape multimedia program but not a multi-image program. I would prefer that multi-imagery be defined and explored for what it can do beyond the single-frame conventions of commercial cinema and video.

With these definitions in mind it is easier to know what we are talking about, but it is also limiting. Merely to confine ourselves to multi-image programs or even multimedia programs would leave out a vast history of related influences from multi-screen cinema and experimental theatre, including the radical combinations known as Happenings or Intermedia. Further, the principles of multi-image programs were established so well by the first few--the Waller 1939 Kodak exhibit, the Eames-Nelson 1953 lecture, the 1960s Telemation installations--that a specific history of the innovations here would grow short or quite redundant. Finally, the ephemeral nature of these programs has made them hard to document or differentiate, except in terms of increasing programmer sophistication. For these reasons, I have chosen to offer a broad history which notes the few documented achievements in multimedia programs and multi-image

programs, but which also provides the larger context of related achievements in multi-screen cinema, Intermedia theatre, and art gallery Environments. Practitioners in these fields are normally not producers of multimedia programs and multi-image programs, but all these artists and producers share a common heritage and evolution. By better understanding the shared development of their fields, possibly creators in all these areas will have a basis for future cooperation, study, and cross-pollination.

The following article is substantially as it was written in 1975, including an introduction which also addresses the topic of definitions. My organization of the historical development of multimedia/multi-image programs is based on the accomplishments of Intermedia and multi-screen cinema; these activities provide a consistent, documented framework into which we can place specific multimedia programs and multi-image programs. In that a history should emphasize achievements and influences, more detail is given to earlier works even though we are currently swamped with multi-image programs. For this reason also, redundant continuations of past achievements--for example Expo 74--have been relegated to Appendix A. Technology and design continue to improve, but the format and purposes of these forms of communication have long been understood and practiced. If we would concentrate on the great flowering of multi-imagery in the 1950s and 1960s (along with the requisite precursors) we will see that our present surplus is well grounded in past accomplishments. A more universal understanding of this history will hopefully allow all types of producers to reach out for more quality and innovation.

Events Relevant to Electronic Multi-Imagery

By Ken Burke

A. Varieties of Intermedia

> multimedia adj.: using, involving, or encompassing several media.
>
> Webster's Seventh New Collegiate Dictionary (1969), p. 556.

> ...a cross-fertilization of all the traditional arts--music, dance, theatre, painting, sculpture, poetry--with film and other technological by-products....Its goal is to involve audiences or participants in an experience on a direct, even visceral level.
>
> Eleanor Lestor, "Intermedia: Tune In, Turn On--And Walk Out?" The New York Times Magazine, May 12, 1968, p. 30.

> Multi-media: a composition using two or more media (one of which is electric) exciting two or more senses, utilized as a unified instrument of communication.
>
> Cyril Griffin (former head of the New York State Council on the Arts' C.A.P.S. program, multi-media section), 1971.

> multimedia n.: a presentation or display in which two or more electronically-powered communications media are juxtaposed--possibly with other media as well--to produce a total effect that transcends the sum of the components.
>
> Ken Burke, "A History of Multimedia," M.A. thesis, The University of Texas at Austin, 1972.

All of the above are attempts to delineate and clarify a recent American phenomenon, which gained substantial press coverage in the 1960's and was known internationally by the end of that decade. "Multimedia" was the descriptive name applied to a variety of college lectures, public school units of instruc-

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Paper, 1975, AMI Archives and Clearinghouse No. CE 75b. Reprinted by permission of the author. Copies available from AMI; consult current ACH catalogue for price and ordering information.

tion, World's Fair displays, slide/tape presentations used for information and entertainment, art gallery shows, psychedelic discotheques, and samples of all the performing arts. The term "Intermedia" was used as well, most often referring to contemporary explorations in the performing arts and some art gallery exhibitions. Additionally, both terms were occasionally replaced by such words as mixed media, cross media, Expanded Cinema, Expanded Theatre, Total Theatre, the Theatre of Mixed Means, Happenings, and Theatre Pieces. Clearly we are not dealing with a unified concept with accepted manifestos and allied practitioners. Indeed, artists and educators have proposed such different purposes for these activities as to make it impossible to use "multimedia" and "Intermedia" as synonymous terms describing a general endeavor.

Those concerned with "multimedia"--usually educators, popular entertainment producers, and cinema and/or video producers--often see their cinema-derived multiple-screen products as separate from the performing arts. Theatre and gallery artists, on the other hand, often see "Intermedia" as the larger, more significant category with multi-screen shows and discotheques as commercialized, minor subsets of "Intermedia." Even the words themselves reflect a division of usage, with "multimedia" coming from educational and popular magazines and "Intermedia" used in avant-garde film and drama journals. "Multimedia" as a word appears to have gained popularity at the University of Wisconsin's Multimedia Instructional Laboratory when a lab employee suggested a change from Telemation, a trademark of the installing company. Conflicts make it unclear if this name change occurred in 1961 or 1962, but definitely by the latter year at least 2 educational magazines had used "multimedia" as if the term were understood but not widely known. The May issue of Educational Screen and AV Guide (pp. 262-263) indicated that "multimedia" was the use of several materials to fully cover a topic--the teacher/book/poster/record/filmstrip idea which sells

so many kits to public schools. Audio Visual Instruction in October used "multimedia" twice (p. 545 and p. 560), both times referring to automated slide/tape lectures. So began the educational dichotomy of "multimedia" which continues in the literature and methods of that field. Popular culture latched onto the slide/tape type of "multimedia"--the product rather than the style--and used this term extensively in the late 1960's to refer to exhibits, performances, displays, slide shows, and multiple-screen films.

"Intermedia" was supposedly coined by Dick Higgins in the mid-1960's to refer to new theatre works previously called Happenings. Many of the suggested substitutes for Intermedia were also applied to these theatre works, as many artists wanted to single out the individuality of their creations. Rather than attempt some sort of semantic virtuoso solution, I would like to offer a clarification compromise based on these accepted usages.

Multimedia in its most general adjective sense does indeed cover anything from slide shows to Theatre Pieces, plus classroom instruction and collages as well. If we would accept this name for the total field of mixtures, we would find that it could easily be interchanged with such traditional terms as mixed media if so desired. Then, within the total field of multimedia we would discover various related but distinct activities, such as Intermedia, multimedia programs (slide/tape/film), illustrated lectures, Rauschenberg's combines, and even circuses. Surely these diverse things can be considered equal in worth, with each having its own specific functions to fill. At least all semantic problems would be resolved because multimedia as an adjective would properly refer to both educational and theatrical activities, while clear distinctions could be noted between the products of Intermedia performance fusions and self-contained slide/tape multimedia programs. This solution would also allow me to move away from the very rigid definition I offered in 1972, in an attempt to differentiate

accepted multimedia activities from other audiovisual mixes such as sound films and video tapes. In comparing these contained media to a synchronized slide/tape presentation, I just could not see basing a definition on the simple distinction of separate machinery. If such were the case, it seemed to me that a silent film accompanied by a piano player or surely the early sound films with voices on phonograph records would have to be called multimedia. Wishing to avoid writing a history of the total field of multimedia combinations, but failing to see how I could single out only Intermedia and multimedia programs I proposed what is actually a close description of Intermedia. Now I am clear that I am offering a history of Intermedia--allowing multiscreen environments and display environments as well as performer/projection mixtures, as does Youngblood in Expanded Cinema--plus significant achievements in multiscreen films and multimedia programs as well.

For my purposes in dealing with this history, I will concentrate on producers, dates, places, intents, contents, and importance of the creations. Major examples from 1900 through 1973 will be covered, with slightly more detail on the early works since later ones were often replicas and revisions. For the reader's convenience, the accompanying chart of multimedia events orders all works cited in the text and footnotes. These presentations usually combine images and sounds in ways that could not be done with more conventional media, ways that incorporate the best advantages of all the contributing ingredients. Whether the end product is something to look at, to think about, to learn from, to enjoy, to be disturbed by, to be liberated by, to be fulfilled with, we should see it as something new and distinct. This is the essence of contemporary multimedia combinations: a new realization synthesized from our past experiences. The component machines are only means to be manipulated in accordance with our

needs and visions. We are the most important medium; we are the awareness that transmits, receives, understands, and grows.

B. Events Listed in the Text

Precursors of Intermedia

Performing Arts		Cinema	Environments
Stage Theatre	Environmental Theatre		
		1900-Cinéorama	
1904-Japanese Shimpa plays			
1909-Gertie the Dinosaur			
	1910-Don Juan Futurist Serate		
1911-Eine Million Rund um die Alstar review	1911-The Miracle, London		
	1916-Dada Soirees		
1922-Clavilux			
1923-Enough Simplicity in Every Wise Man	1923-The Earth in Turmoil		
1924-Fahnen	1924-The Miracle, NYC		1924-Hanover Merzbau
Give Us Europe	Relâche and Entr'acte		
1925-Trotz Alledem			
1926-Strumflut		1926-Napoléon	
1927-Hoppla, Wir Leben!			
Rasputin			
1928-Good Soldier Schweyk			
1930-Christophe Columb			1930-Woodstock Environment
1935-Living Newspaper			
1936-Fruhlings Erwachen			
	1938-Hellzapoppin	1938-Vitarama	1938-Paris Surrealism show
		1947-Picturama	
		1948-Seagrams Vitarama	

Intermedia and Related Multimedia Works

Theatrical Intermedia		Cinematic Intermedia	Intermedia Environments
Stage Theatre	Environmental Theatre		
	1952-Cage lecture	1952-Cinerama 1953-"Sample Lesson" 1955-Circarama "Rocket to the Moon"	
1957-Christophe Columb 1958-Laterna Magikia		1957-Vortex 1958-Brussels Fair Polyekran La Poème élèc- tronique	1958-first Kaprow Environment
1959-Their Day	1959-18 Happenings in Six Parts	1959-Moscow Fair Kinopanorama Glimpses of the USA	1959-Broadcast
1961-Filmstage	1960-The American Moon	1960-Telemation 1961-Wisconsin M.I.L. 1962-Finn-Hall D.A.V.I. lecture Seattle Fair "House of Science" Journey to the Stars	
	1963-Who Are You and What's Happening?		1963-"Contact is the Only Love"
	1964-Originale	1964-V.A.L. New York Fair Think To Be Alive	1964-Milan Trade Fair
1965-Intoleranza Variations V "Unmarked Inter- change"	1965-First Theatre Rally Night Time Sky	1965-Black Zero Psychedelic Theatre	1965-Oracle
New Cinema Festival I			
1965-Body Works Prune Flat Pastorale: et al Filmstage Sames	1965-Moviehouse Map Room II The Last Rites Rites of the Dream- Weapon	1965-Move Movies Feedback #1 March of the Garter Snakes Ghost Rev	

Stage Theatre	Environmental Theatre	Cinematic Intermedia	Intermedia Environments
	1966-The World "Exploding Plastic Inevitable" Simultaniety in Simultaneity	1966-Hubbub	1966-"Down by the Riverside"
Nine Evenings of Theatre and Engineering			
1966-Open Score Grass Field Carriage Discreteness	1966-Two Holes of Water-3		
1967-Astarte The Rake's Progress Somniloquy	1967-American Atrocites in Vietnam Cage's Sabboth Service Kinoautomat The Electric Circus Victims of Duty	1967-Expo '67 Labyrinthe Diapolyekran	1967-Proliferation of the Sun
1968-KQED experiments	1968-Hair Electric Ear series	1968-Hemisfair Confluence Theatre "The People of Texas"	1968-WGBH experiments Ten-Foot Fanflashtic
1969-The Soldiers	1969-"Crosstalk" HPSCHD	1969-Man and Power	
		1970-Global Village San Francisco Experience Expo '70 "Astrorama"	1970-"Imagen de Caracas"
	1973-Energy Changes	1972-Experiment Theatre 1973-New York Experience 1974-Expo '74	

C. A History of Intermedia and Related Multimedia Works

"Multimedia" implies both a method and a product. As a method--such as a multimedia classroom lesson where a sequence of various materials is used to substantiate an idea--multimedia combinations are as ancient as the very ideas of education or the arts. As a product, multimedia programs and Intermedia art works became unique, organized disciplines only a decade or so ago. Thus the history of Intermedia and multimedia slide/tape/film programs as distinct art/communication forms is relatively brief; yet, it abounds with energy and intriguing experiments. Our focus will be Intermedia's heyday, the 1960's, but our study will necessarily lead us back through a matrix of 20th century cinema and theatre achievements. Certainly multiple imagery and simultaniety have their own long histories in the visual and performing arts, but works truly akin to our present multimedia usage must have some base in electronics or environmental alteration. For this reason, we will trace our history only from 1900, when an amusement at a major exposition launched a grand new use for the miracle known as "the movies."

Cinematic Developments, 1900-1962

Currently, the most popular multimedia mixtures involve images on multiple screens or multiple images on one wide screen.[1] However, the first recorded example of a multiple-screen experience was the Cinéorama display at the 1900 Paris Exposition. Cinéorama (sometimes referred to in Russian literature as Cinecosmorama) was a total 360° environment of 10 screens. Its creator was Raoul Grimoin-Samson, whose patent for the process was granted by the French government on November 25, 1897. Previously a patent had been given in England on October 6, 1894, to Joseph Train for a similar process; however, the details of Train's invention remain a mystery.

Cinéorama was huge in scale--a ratio of eleven to one in screen size--with the viewing area being 30' high and 333' around in a circular building. 200 spectators at a time could stand in the basket of a huge mock-up gas balloon, with the balloon spreading high above them. Below the basket the enclosed projection booth contained ten 70mm projectors. The film was made from a balloon which had ten 70mm cameras set around the circumference of the balloon basket. Thus, the wrap-around film that the spectators saw was the real landscape of Europe as they "ascended," "traveled," and "descended" in Paris, Brussels, England, the Riviera, Spain, Tunis, the Sahara, and Paris again. Since the film was in color (hand-painted), the reality of the experience was even further enhanced. This spectacular event was quite short-lived though; the police closed the exhibition after 3 days due to the fire hazard caused by the extreme heat in the projection booth. Grimoin-Samson then went on to other interests, and 360° cinema did not return for public exhibition until 1955.

One obvious reason for the lack of multiple-screen cinema was the financial advantage for filmmakers in standardizing the 1-screen 35mm theatre. Not until 1926, when Abel Gance made his magnificent 3-screen film, Napoléon, was this tradition challenged. Napoléon premiered at the Paris Opera House in April, 1927; the 3 horizontal screens formed a triptych 50' x 12½' on which 3 equally-sized 35mm images from 3 projectors were shown. David Curtis claims there was a previous multiple-screen Gance film, La Rue (1923),[2] but most other authors regard Napoléon as the first (and only?) example of Gance's Polyvision. Even Napoléon did not use triple imagery continually; most of the film was presented only on the center screen. When used, the triptych effects had 1 or 3 functions: (1) to present a continuous panorama, (2) to flank a dominant center image with related side images (such as Napoleon's face in the center and marching armies on the sides), and (3) to mirror the central image with the side screens, much

as Pop Art multiples would do 40 years later. All these variations constitute an extension of the narrative film rather than a true Intermedia performance, but Napoléon must certainly be given the honor of being the first commercial multiple-screen film.[3]

Gance experienced technical successes and logistical failures with Napoléon. Andre Debrie's triple camera was used for dramatic visual effects--such scenes as the landscape viewed from a runaway horse or a snowball hitting the lens--and the concept of multiple-screen cinema was to be remembered long after the Gance film. Still, the cost of production and difficulty of projection (plus an ungainly 6-hour running time) made Napoléon a financial fiasco. Complete synchronization of the 3 projectors was not possible at that time, so the results were always a little tenuous. Such problems led Gance to recut the film to a 1-screen version in 1935, adding the first stereo soundtrack for a commercial movie.

Claude Autant-Lara was Gance's only disciple, and even he never made true multiple-screen films. Rather, he used Henri Chretien's 1927 anamorphic lens, a device referred to as "Hypergonar," to show his wide-screen version of Construire Un Feu (begun in 1924 and released in 1929). Some triple imagery was used, aided by the extra width of the 45mm film stock.

Multiple-screen cinema's next big step was Cinerama, developed by Fred Waller. Originally, Waller's Vitarama--11 screens of 16mm film in a semi-circular format--was made in 1938 in conjunction with architech Ralph Walker for the oil industries' pavilion at the 1939 New York World's Fair. Waller's interests in the effects of peripheral vision led him into the project, which would have used five 35mm projectors in its final version. The oil men lost interest, however, and Waller's contribution to the Fair was an exhibit of "rapidly changing color photographs" for the Eastman Kodak Pavilion.

The Kodak "Cavalcade of Color" returned to the original Vitarama format of 11 projectors trained on a semi-circular screen 22' high and 187' long. Each projector utilized a 2500 watt lamp, 2 lenses, and 2 precision-ring gears each of which held 96 color slides. Presumably this advance in projection engineering allowed dissolve rather than cut transitions between slides. Control of the slide changes was accomplished by a synchronized sound film which also provided the narration and music for the slides. Because each slide image was 17' wide we must assume that the slide images were either verticals or masked to be squares and that the sound film was a control track/soundtrack only, since there would have been no room for a twelfth image on the screen. Thus, we have an 11-screen slide/soundtrack automated multimedia program, the first of its type. Ironically, the intent of Vitarama was to explore the panorama possibilities of multi-screen film, but its initial triumph was to perfect what we now call multimedia programs in education, business, industry, government, medicine, religion, the arts, and other fields. "Cavalcade of Color" used over 2000 slides in each 12-minute cycle.

With the advent of World War II, Waller and Walker formed the Vitarama Corporation which built seventy-six 5-screen cruciform gunnery training devices for the military. Four men at a time could train, each sitting behind a replica of a .50 calibre machine gun, with the instructor seated above them at a console. Five Century 16mm projectors with Kodachrome shots of enemy planes were the source of "target" material. There was a scoring film for "hits" and an electronic "bull's eye" sound device for each "gunner," while the instructor was equipped with a scoring panel, a microphone, stop-motion switches for the projectors, and a special monitor on each gun that allowed the instructor to see where the student aimed. Gunners trained with this machine were better able to respond to "blind" attacks, and an estimated 350,000 casualties were prevented because of the effectiveness of the Vitarama training.

In 1947 Life magazine revived Vitarama for public showings by commissioning a traveling exhibit on a new and greater post-war America. Entitled "Picturama," the Life Vitarama show was based on photographs from the extensive files of the magazine's photojournalists. Information on this program is sketchy, but it appears to have consisted of five screens of slides with no soundtrack. Presumably it used the 1939 tactic of synchronization from a film, thus making it a multimedia program whether it used audio on the film or not. The following year, in the fall, the Seagrams Corp. arranged for Leslie Roush Productions to make a Vitarama program for a series of eleven sales meetings. Again 5 image areas of slides were used on the 15' high, 40' wide screen, and both a soundtrack and synchronization were provided by a film. Just as in the 1939 original, all of these Vitarama presentations mixed panoramas with multi-image juxtapositions of slides, thus giving us the multimedia program as we now know and use it (with the substitution of audio tape for film). Although this use of Vitarama apparently disappeared after 1948, it was replaced in the early 1960s by Telemation and others, and, of course, has blossomed into the multitude of multimedia programs that now saturate the educational and corporate worlds.

After the War, Waller again tried to interest film producers in the viability of Vitarama, but no money was forthcoming. Financing finally came from Mike Todd and Lowell Thomas, although in the process Waller had to sell them the assets of his Vitarama Corporation, which then became Cinerama Incorporated. This is Cinerama, their first production, opened in New York on September 30, 1952, and proved to be the film industry's proper counterattack to the emerging competition from television. Cinerama demanded the construction of special theatres designed to handle the 3 separate 35mm images which ran at 26 fps in a screen ratio of 2.6: 1 on a 146° surface of 3 joined horizontal screens. "Buzz" Reeves designed the stereophonic sound system of 5 speakers behind the screen

and 2 more in the auditorium. In format, Cinerama was similar to Gance's Polyvision with 2 major exceptions: (1) for Cinerama the 3 lengths of 35mm film were shot on 1 complex camera with 3 interlocked 27mm lenses placed at 48° angles to each other, then projected on 3 interlocked projectors; Gance did not have the necessary equipment to possibly achieve such technical perfection, (2) Cinerama was sufficiently promoted in the mass communication industry to become commercially profitable, so Cinerama theatres could be built; Polyvision was a financial disaster which could not be aided by radio and television network publicity. Obviously, Gance's idea was just a bit ahead of its time.

Established cinema theatres could not bear the cost of renovation for Cinerama projection, so they retaliated with simpler wide-screen processes which eventually stole most of Cinerama's thunder. By the mid-1960's, even Cinerama had converted to a single-camera, single-projector 70mm system, thus losing its existence as a unique filmic mode. Unfortunately, Cinerama was destined to lose credence as a significant cinema form because the producers constantly underdeveloped the potential. Virtually all Cinerama films were pure panorama, although This is Cinerama did use some brief multiples of water skiers. This wide landscape approach was easily appropriated by Cinemascope-like processes, rendering the complexity and expense of triple projection unnecessary. Further, the content of early Cinerama was simple travelogue while the later narratives, like How The West Was Won (1963), had no justification for the complex means of wide panorama. Cinerama opened the door for the current use and acceptance of wide-screen cinema--an important prerequisite for multimedia programs--but even more substantial results might have occurred if Cinerama could have worked some multiple-screen dramatic narrative and abstract explorations into its diet of scenic panoramas. If such experiments had met with success at a time when the

triple-screen theatres were economically sound we might now be blessed with a limited number of showplaces for serious explorations into multiscreen film.

A more progressive use of multiple screens than the Cinerama panoramas was the lecture on "Communications" designed by Charles Eames and George Nelson for the Fine Arts Department of the University of Georgia in 1952. Lamar Dodd, Chairman of the Department, sought Nelson's help in restructuring the teaching policies; Nelson brought Eames into the project in the fall of 1952, and they recommended the occasional use of large lecture situations to convey generally-accepted artistic principles. The policy then used was for each basic studio class to learn design and theory principles by re-discovery in the form of time-consuming projects. For these foundation units, Eames and Nelson proposed well-constructed lectures--aided by electronic media--to be attended by all sections of students in a given course. The faculty were not enthusiastic, so Eames, Nelson, and Alexander Girard agreed to produce a sample lecture for a hypothetical course, "Art X."

"A Rough Sketch for a Sample Lesson for a Hypothetical Course" was the protective title given to the final product, with films by Eames, slides by Nelson, and a lobby display by Girard. Nelson hoped that such lectures could be packaged and sent to many schools; thus, the design of the presentation called for all material to be delivered by the electronic media with no interruption or immediate interpretation by a lecturer. A 16mm projector, 3 slide projectors, 3 portable screens, several tape decks, and canned odors of incense were used to present this 1-hour special. Eight segments comprised the show: (1) a 10-minute film of a communication model, (2) 10 minutes of 3-screen slide configurations and taped music to explore visual communication, (3) a 10-minute film on transmitter-receiver relationships, (4) 8 minutes of slides and tape concerning the broad category of abstraction, (5) a 4-minute black-and-white French film

about the origins of lettering and caligraphy, (6) 3 minutes of a UPA color film about the animation of sound waves, (7) a 10-minute 16mm color film by Ray Garner on ancient Egypt as a dead civilization still transmitting "live" messages, (8) a 10-minute color film about the processes of communication. Nelson's detailed account of this lecture[4] does not indicate if all the films were spliced together on 1 projector, but it is difficult to imagine all this activity taking place in an hour's time if there was any rewinding or loading of films.

Of course, the films were a series of separate statements presented sequentially, but the slide fixes were able to use multiple imagery to enhance and enlarge the presentation of a concept. In the section on "abstraction," for example, there was a progression of images through Picasso paintings, maps, and views of the Notre Dame Cathedral in Paris showing them all to have abstract patterns which conveyed real meanings. The movement up into the cathedral was intensified by opening up from 1 to 3 screens of slides, while taped organ music built to a crescendo and odors of incense were released into the room. Such effects marked the true dawn of an Intermedia approach to both cognitive transfer and affective stimulation. The entire lecture is surely a sample of the multimedia teaching <u>style</u>; the slide/tape/odor sequences are examples of the <u>product</u> of Intermedia--a combining of separate elements into a whole with intensified meaning. Nelson's article indicates that this landmark lecture was first done in early 1953 in Georgia, then repeated at U.C.L.A. later that same year.

Eames' and Nelson's lecture was significant in developing both the multimedia style and process within and beyond the educational world, but it was a slow development that did not gain momentum and unity until the early 1960's. Similarly, a couple of amusements in Disneyland's Tomorrowland section, which opened in 1955, foreshadowed activities which would not build widespread popularity until the mid-1960's. Circarama, a joint project of Walt Disney Produc-

tions and American Motors, was a 360° panorama travelogue film, the first such commercial venture since 1900. Crowds of 350 at a time looked above their heads to a screen 8' high and 130' around, broken by 6" strips into 11 screens; one 16mm projector behind each strip provided the images, which were shot with 11 interlocked Kodak cameras using 15mm lenses that covered an angle of 32.7° apiece. Circarama's content was the American landscape, while its neighbor exhibition, McDonnel-Douglas Aircraft's "Rocket to the Moon" dealt with an imaginery outer space voyage. Visitors sat around a circular floor screen and watched the earth recede while a circular ceiling screen brought the moon closer. Lighting and vibration effects added to the total simulation of a space ride. A decade later World's Fairs would abound with 360° cinema and multimedia Environments would be found in art galleries and psychedelic discotheques; in 1955, a true "tomorrow-land" was not nearly as far away as it seemed.

One of the most progressive uses of multiscreen projection in the 1950's was the series of Vortex concerts conducted by Henry Jacobs and Jordan Belson at Morrison Planetarium in San Francisco's Golden Gate Park. Belson installed interference-pattern projectors, strobes, and kaleidoscope projectors to add to the effects from the star machines, environmental color controls, and other existing planetarium devices. All of these light machines were used in conjunction with abstract films by Belson and James Whitney. Jacobs had control of the sound, which came from almost 50 speakers spread around the surface of the 60' dome. He installed a master control board that allowed him to direct sound to any speaker or cluster of speakers that he wished; the ability to rotate sound rapidly around the dome inspired the name Vortex.

Vortex was Intermedia's first blockbuster, and the quality of this magnificent series of concerts has rarely been equalled, even in the most sophisticated discotheque Environments of the 1960's.[5] Such achievements as Belson's ability

to "float" non-frame-lined film images in a many-hued atmosphere and Jacob's public forum for avante-garde electronic tape music were highly significant for all the arts. Vortex's celestial career ran from 1957 to 1960.

Multiscreen usage in the 1950's was best promoted by the Brussels World's Fair of 1958, the first known public gathering with several examples of true Intermedia. In addition to the Vortex concerts, there were the debuts of Polyekran and Laterna Magika, both designed by Josef Svoboda, and a splendid multimedia presentation at the LeCorbusier Pavilion. These events will be described shortly; however, it is important to note that the Brussels Universal and International Exposition (which occupied 1,500 acres of Heysel Park from April 17 to October 19) drew over 41 million visitors and attracted a great deal of mass media coverage. Enormous crowds such as these were able to reap the first real fruits of modern entertainment technology. Not only were there enthralling exhibits which were not physically feasible before this time, but there were also faster and more convenient means of international travel to Belgium, as well as a world-wide system of print and broadcast reporting services. Television viewers and magazine readers felt the impact of the Fair and its lavish exhibits, even if they never saw the original works. The sense of international immediacy which is a hallmark of the atomic age was an integral factor in the rapid spread of multimedia in the 1960's; after the Brussels Fair there was rarely time to look back.

Intermedia was given a fine introduction to the global public by some European grand masters. Vasere played his tape, La Poème élèctronique, which came through 425 speakers in conjunction with slides, lights, and a LeCorbusier film, even though there was no rehearsed coordination between the tape and the visuals. A more controlled spectacular was Svoboda's Polyekran. For this event, 7 film projectors and 8 slide projectors were programmed and synchronized

to audio tape to present a 10-minute, 8-screen show concerning the Prague Spring Music Festival. Rather than a multiscreen equivalent of a multi-image film, Polyekran incorporated direct interplay between the natures of still and moving images. One scene from this show featured a filmed dancing ballerina jumping from screen to screen; suddenly, she was "frozen" as a still slide on 1 of the screens, while other actions continued on other screens.

Polyekran was intended as a collage of separate images interacting, rather than a simple multi-image narrative.[6] Of course, its content was quite light, but the technical innovations set a standard which is widely copied and rarely equalled even today. Like the Eames-Nelson lecture of 1953, Polyekran used only electronic media with no help from a narrator. The performance area was a small stage lined with black velvet; 2 of the trapezoidal screens hung tilted from the ceiling, 2 were tilted up from the floor, and the others were arranged at eye level for the combination of color and black and white images. Spectators watched Polyekran from low stools.

Outnumbering the actual Intermedia works were the following multiscreen extravaganzas: (1) Cinerama, in the Attractions Pavilion, (2) Disneyland's Circarama in the American Pavilion, with an 18-minute film on American culture which ran 26 times daily in a 550-person theatre, (3) Kinopanorama, Russia's 360° theatre, which ran a 13-minute film 5 times daily to average audiences of 200, (4) Aviorama, designed by Milan engineer Luige Maretti, which showed vertical panoramas on 3 screens--1 tilted down from above and 1 tilted up from below a normal screen, (5) Albert Ducrocq's Congorama, which featured computer-controlled side wing screens, lighting effects, sound effects, and sliding walls, (6) Kenneth Anger's film, Inauguration of the Pleasure Dome, which was a 3-screen exploration of costume, ritual, and consciousness alteration; this film was not done again as multiscreen after the Fair, possibly because the 3 projectors were

in proper synchronization only once in all rehearsals and showings of the film. Taken together, these works planted an awareness of multiscreen/multimedia combinations which would blossom in a very short time.

In 1959, following up on the international excitement generated by the Brussels Fair, the USA and the USSR exchanged national exhibitions. Kinopanorama (shown at Brussels) was featured at the Russian exhibit, held in the New York City Coliseum from June 30th to August 10th, 1959. About 1 million Americans saw this super revival of Cinéorama, while in Moscow's Sokolniki Park from July 25th to September 4th, the American exhibit was packing visitors into a 78'-high geodesic dome. Included in the 30,000 feet of display space in the Moscow dome were large displays of American culture (including the site of the famous "kitchen debate" between Richard Nixon and Nikita Krushchev), a separate, movable dome to house the ever-present Circarama, and a 7-screen presentation by Charles Eames and John Whitney. Close to 3 million Russians toured this American pavilion.

Eames' show, Glimpses of the USA, was shown on 7 TV-shaped screens, each one 20' x 30', stacked in a configuration of 4 above and 3 below. 2,200 slides, hundreds of them taken directly from popular American magazines, were used to give an honest picture of American culture. Glimpses' final version used 7 films of the still images, accompanied by a simple narrative. Only once was the same image used on all screens; in a fitting prototype to Pop Art multiples Eames chose Marilyn Monroe as the subject of his multi-repeat.

A version of Kinopanorama was shown in Moscow, in conjunction with the American pavilion, in addition to the one that was displayed in New York City. 22 screens, in rings of 11 each, surrounded up to 300 spectators at a time; the lower screens were 12' high and 130' in total circumference, while the upper ones rose 12' above the lower level and were tipped forward at a 59° angle. Unlike

Circarama, the Soviet version was housed in a permanent theatre where the government film agency could advance the study of this style of cinema. However, there is little evidence to show significant results from this advantage. A response to this author from the Soviet Department of Commerce in 1972 indicated there is currently no Russian agency using or experimenting with multiscreen or multimedia productions.

Films for Kinopanorama were shot on 35mm stock with Konvas-Automatic cameras, each with a 35mm lens that saw 32.7° of the total area filmed. Xenon lamps of 1 kilowatt per projector aided in showing the 22 film strips which comprised the total image. Slits between the screens were 6" wide, and the top ring of screens was trapezoidal (16'x12'x14'), which combined with their angle, gave a slightly domed effect. Animation began and ended the film; typical scenes included rockets, a train trip through Russia, and a plane trip over Moscow, Leningrad, and Red Square on May Day. All accounts of this display indicate it used panoramic images rather than multiple images juxtaposed.

About the same time that Americans and Russians were exchanging multiscreen displays for public consumption, the TelePrompTer Corporation was designing and installing multiscreen conference rooms for U.S. government and military purposes. Telemation was the name coined for these facilities, which usually consisted of a large central image flanked on both sides by 2 smaller, stacked horizontal images. Slides, film, and audio tapes were all used in carefully-planned programs that could be run manually or by a punch-paper-tape sequencer. Telemation was quite popular and extensively used in government, business, and industry for 3 main reasons: (1) since all the images were rear-projected the room lights could be kept bright enough for note-taking, (2) since the equipment was hidden the effect of the presentation could be very dynamic and professional,

(3) programming the talks could allow for greater clarity and control, still leaving the lecturer in charge to make comments or add explanations to the material presented.

All of the above advantages to Telemation made it an attractive system for education; in 1961, the University of Wisconsin at Madison became the first permanent outlet for this new approach to learning.[7] Professor John Guy Fawlkes, former Dean of Wisconsin's School of Education, traveled to New Delhi in 1960 to see the World Agricultural Fair. One display that impressed him greatly was a 5-screen Telemation exhibit for the U.S. Departments of State, Agriculture, and Commerce. At Fawlkes' urging, TelePrompTer was commissioned to install a sophisticated rear-screen audio-visual system at his university. Although it was a Telemation system, the facility was quickly renamed the Multimedia Instructional Laboratory by one of its employees, who desired a catchier name for his operation. "Multimedia" as a word gained popularity at this Wisconsin lab, even though the word apparently originated in other circumstances.[8]

January 30, 1961, was the public beginning of the M.I.L., when Dr. Michael B. Petrovich gave the introductory lecture of his Russian History course. No longer limited to talk, chalk, and an occasional film, faculty who taught in the converted 150-seat auditorium had a dazzling array of equipment available to enhance the delivery of their lectures. Replacing the blackboard was a 7½'x14½' rear-projection screen which could take images from the following sources: (1) a 16mm Bell and Howell JAN sound projector with Xenon light, (2) two 99-slide capacity DuKane 2"x2" slide projectors, (3) one 59-slide capacity TelePro 6000 3¼"x4" lantern slide projector with a 3,000 watt lamp, (4) a Kalart-Victor Telebeam video projector, (5) an opaque projector. The two 2"x2" slide projectors were used for stacked horizontal images on the right half of the screen, while the left half alternated among the lantern slide projector, the 16mm projector,

and the video projector. A very narrow projection room required the use of a mirror to enlarge the 16mm and video images, while a short railroad track was employed to wheel the lantern projector out of the way when film or video was to be shown. Audio sources included a turntable, a stereo audio tape system, and a lecturn microphone. In addition to all these resources, an instructor could use an overhead projector with its own separate screen.

All of this gear could be controlled by the instructor from his lecturn; he also had rheostats for the lights, a height control for the lecturn, closed circuit telephone communication with the backstage engineer, and a private water fountain. If the teacher was not interested in massive button-pushing (as was usually the case), lectures could be semi-automated by punching holes in paper tape and advancing this programmed information through a sequencer one step at a time, or a lecture could be automated by means of electronic cues on an audio tape which would advance the punch-paper-tape commands at the proper time. This last option would allow a teacher to record a lecture, put the cues for audio-visual support at the proper places on the tape, then sit back and watch with the rest of the class. Of course the loss of instant questioning and human contact made prolonged use of the automated technique unpopular with students, but it proved very effective in such areas as maintaining class continuity on days when the instructor could foresee his absence.

Very thorough articles have been written about the operations and successes of the Wisconsin M.I.L.,[9] so we will only mention here that a full-time staff was employed to design and produce lectures for a variety of disciplines. An average multimedia lecture took 120 hours of preparation by all participants, excluding initial research and conceptualization by the teacher, so it is clear that the M.I.L. was a serious business, operated by serious educators. The success of this experiment led to a 6-classroom multimedia complex at Wisconsin's

new education building in 1973, probably incorporating the most advanced classroom design and technology to be found anywhere. Even more important is the fact that Wisconsin's achievements encouraged investments in the multimedia style and process in colleges and public schools all over the country. New installations and applications, along with increased interest in multimedia-related research, paralleled the maturization of multimedia entertainment in the 1960's. Technology, art, entertainment, and education intersected often as multimedia communication grew and improved.

Besides the inspiration from the Wisconsin M.I.L., educational multimedia use in the 1960's got a big boost on March 28, 1962, at the annual D.A.V.I. (Division of Audio Visual Instruction of the National Education Association) convention in Kansas City. From 9 to 10:30 a.m. Drs. James Finn and Robert Hall delivered a lecture on new directions in audio-visual technology, while their comments were visualized by 3 screens of slides and film (176 slides and 4 film clips) coordinated by Donald Perrin and engineered by Kodak's Ade Terlouw. This style of presentation was a new and exciting experience for many of the educators present, and data was added to affective impact by the section of the lecture on "Multiple Projection and Programmed Systems." Finn further advanced the cause of educational multimedia combinations the following year at his home campus of U.S.C. by instituting a graduate Education class in the design and production of multimedia lectures. Such courses now exist from Hawaii to Boston.

Theatrical Innovations, 1910-1960

Much of what is currently seen as multimedia programs derived from the multiple screen film and are presented in a single, horizontal plane analagous to a cinema theatre. As has been suggested before, these cinematic types of multimedia programs are mostly used where one would normally find a film--classrooms,

meetings, displays, and cinema programs. In addition to this basic line of development is the equally strong branch of multimedia mixtures which have evolved from the dramatic theatre. In the 1960's, theatrical multimedia experiments were first explored in the context of Happenings, and were soon given a variety of names--Filmstage, Total Theatre, and the Theatre of Mixed Means among others--but the most common term for theatrically-oriented multimedia combinations was Intermedia. In this section we will briefly trace the 20th century theatrical breakthroughs which encouraged the refinement and proliferation of Intermedia.

Like the visual arts, contemporary performing arts have been radically transformed in this century by a variety of schools and national eccentricities. Italy, Japan, Germany, Russia, and Czechoslovakia all contributed theatrical innovators who had influences on what we now know as Intermedia. Usually these artists were connected with a broad style such as Futurism or Expressionism. Further, there were influences from such diverse philosophies as European Dada and American burlesque. The most significant predecessor of Intermedia was Erwin Piscator, who brought everything imaginable onto his Epic Theatre stage. Still, by the late 1920's Piscator had much to build on from earlier experiments with both projections and environmental alteration.

Film seems to have debuted on the dramatic stage in Japan as early as 1904. Following the introduction of film into Japan in December 1896, its popularity soared beyond expectation. Producers of the traditional Shimpa plays began showing film clips of their plays at the cinema theatres in an attempt to win back former customers. Then film was used in some of the actual Shimpa plays, mostly as scene-transitions of outdoor activity. Occasionally actors even stood behind the screen and spoke dialogue in a form of crude "lip-sync." This film use outgrew itself, because indoor scenes were also shot and joined to the out-

door takes as full-length features. Other countries also found uses for the combination of film and actors; in the USA the idea was developed as comedy, in Germany it led to strong dramatic effects.

In 1909 Windsor McCay designed a stage act for himself and an animated cartoon partner named "Gertie the Dinosaur." "Gertie"--a huge brontosaurus--reacted to McCay's comments, followed some commands, and appeared to catch pumpkins thrown to her by McCay. In a more serious vein, film was used in Germany to enhance the live actions. Berr and Guillemand's Eine Million was presented during December 1911 in the Staat-theater in Posen, Germany; film was used as a transition as one scene ended with the actor climbing out of a window, then the projector started and the filmed actor continued on beyond the window. Also in Germany in 1911, at the Hamburg Operettentheatre's opening of the Rund um die Alstar review, film was used to show the principal actors running through the streets of the city. For a climax, the filmed actors ran into the theatre entrance, the curtain rose, and the same actors that had been in the film took a running leap into the audience.

Filmed titles or captions were used in the early 1920's in Europe in such plays as Vsevelod Meyerhold's The Earth in Turmoil (1923) and Give Us Europe (written by Mikhail Podgaetsky) beginning June 15, 1924, in Moscow, and Erwin Piscator's production of Alfons Paquet's Fahnen (Flags), beginning May 26, 1924, in Berlin's Volksbuhne. In March 1923, Sergei Eisenstein had even used a short comic film as part of a play, Ostrovsky's Enough Simplicity in Every Wise Man. This film showed the protagonist, Glumov, changing into such things as a donkey and a machine gun; in style, the film was a parody of the Russian newsreel Kino-Pravada. All of these examples are not what we would now call a form of Intermedia. They shared a common example of film as an experimental element, but in all cases film was subservient to the action of the stage play. Meyer-

hold's captions were used as alternatives to traditional scene changes, while Eisenstein's play came to a halt while his film was shown.

Before dealing with Piscator's more dynamic use of stage film, let us consider the subject of environmental alteration within the dramatic theatre. It can be shown that there were both disciplined and anarchic attempts to break down the barrier between players and audience in the early 20th century. Meyerhold represents a bit of both approaches. His version of Moliere's Don Juan, which opened on November 9, 1910, to a receptive audience in St. Petersburg's Alexandrinsky Theatre, had a number of unusual elements: (1) no front curtain or footlights, (2) forestage extended into the audience, (3) houselights on during the performance, (4) costumed stage hands changing props in full view of the audience, (5) the actors' movements were in time to a constant score by Jean-Baptist Lully (the founder of French Opera, c. 1660-1670). Actually, the forestage and lack of curtain were suggested by conditions in Moliere's Renaissance Theatre, while the "proscenium servants" were suggested by Moliere's Japanese contemporaries, who used black-clothed "kurogo" ("assistants") on stage. Meyerhold chose to keep the lights up to encourage a festive occasion, while the rhythmic movements were based on his concept of the steady flow of motion on-stage.[10]

Carrying his idea of stage/audience cohesion a bit further, Meyerhold staged Zembya Dybom on February 23, 1923, to mark the Red Army's fifth anniversary. This play, adapted by Sergei Tretyakov from Marcel Martinet's The Night, was the same version of The Earth in Turmoil in which Meyerhold used his first filmed captions. For the public performance, which began in Moscow on March 4, the audience began by participating in organized marching; then, during the play (about the Russian Civil War) soldiers used actual weapons--including small cannons--on the stage. Cars, trucks, motorcycles, and bicycles were driven

through the auditorium onto the stage as searchlights lit the theatre. At the finale, the army arrived and everyone rose to sing the Internationale. Such tricks would be eagerly used by Piscator shortly.

Certainly The Earth in Turmoil was the masterpiece of early Environmental Theatre, but another important work had been done earlier in London. In fact, the movement which we now call Environmental Theatre may well have begun on December 23, 1911, with the opening of Max Reinhardt's production of Das Miracle (The Miracle), a wordless play by Karl Vollmoller with score by Englebert Humperdink. This play concerned the legend of Sister Beatrice, whose place in the convent was taken by the Virgin Mary while Beatrice was lured away by the pleasures of the world. Reinhardt, with the aid of Herman Dernberg, Rudolph Dworsky and Ernst Stern, transformed the Olympia Exhibition Hall (440' long, 250' wide, 100' high) into a facsimile of a Gothic cathedral. Real stained glass windows, wooden doors, and stone columns added to the semblance of reality. To further fill the space, Reinhardt added a cast of 1,000, a chorus of 500 and a 200-piece orchestra, bringing his costs for an 8-week run to about £40,000. After a smashing success in London, The Miracle toured Germany from 1912 through 1914. Reinhardt later brought his extravaganza to the USA (opening on January 15, 1924, at New York City's Century Theatre) where he introduced Environmental Theatre to this country with the help of designer Norman Bel Geddes.[11]

Definitely Piscator's stage was set by the preceding achievements in the early 20th century performing arts, but advances were made outside of the legitimate theatre as well. In early 1910 the Futurists began their spirited--and often violent--evenings (serate) of readings and audience confrontation. Serate were conducted in Milan and other Italian urban centers, featuring loud, belligerant, obnoxious poetry spiced with noises and musical sounds. The audiences usually responded with produce and/or physical attacks on the Futurists,

who continued their madness until at least 1925. In 1913, Futurist manifestos--one by Luigi Russolo on the "Art of Noise" calling for common sounds and invented noises to be considered music and another by Filippo Tomasso Marinetti on "The Variety Theatre" praising alogical performances, simultaneity, and new media in the theatre--gave a theoretical foundation to the serate antics. Later, on March 29 and April 4, 1914, the first Futurist "evenings of dynamic and synoptic declaration" were held in Rome's Sprovieri Gallery. These tamer evenings had poetry accompanied by piano and tools, with samples from the major Futurist painters hung in the recital room; further, the room was encased in paper and lit with red lights.

Zaniness and wild actions in the context of public performance were carried through France, Switzerland, and Germany from 1916 to the early 1920's by the Dadaists. One of their many outlandish soirées was Noir Cacadou, in which Richard Huelsenbeck and Tristan Tzara jumped around in a sack with their heads in a pipe, Jean Arp read his poems from inside a large hat, George Ribemont-Dessaigner danced in a large funnel, and Huelsenbeck screamed his poems while Tzara beat time on a packing crate. Their often-described Relâche, directed by Francis Picabia and performed by the Swedish Ballet at Paris' Theatre des Champes-Elysees in 1924, was a classic of crazy actions;[12] however, the intermission film, Rene Clair's Entr'acte, was important in the development of Intermedia in that it was the first film incorporated into a ballet.

Building on the Dada concept of "anything goes," Piscator was able to blend wild and fast actions, direct political commentary, and electronic media into a new form of stage art. While Marinetti and Kurt Schwitters had encouraged performed works unhampered by logic or tradition, and such designers as Walter Gropius and Laslo Maholy-Nagy had proposed "Total Theatres" incorporating film and multiple acting areas, Erwin Piscator seems to be the only theatre giant of

the early 20th century who was able to bring forth a radical approach to an electronic theatre and support his innovations with a consistent series of strong plays. But were they plays, or were they Intermedia?

Piscator was as responsible for the creation of Epic Theatre as was Bertolt Brecht, although the latter is usually remembered first by historians. Like most movements in the theatre, Epic Theatre was a distinct style because it offered a unique type of script and a definable method of presentation. Clearly, in the case of Epic, Brecht was more concerned with writing and Piscator was the master designer/director. It has been said of Brecht that he "never concerned himself with problems of technical fluidity and never looked for a stage design that provided more than environment."[13] On the other hand, Brecht remarked of Piscator's theatre that "It was the stage's ambition to supply images, statistics, slogans which would enable its parliament, the audience, to reach political decisions."[14]

That Piscator was concerned with political propaganda on the stage is a well-known fact. He founded the Proletarian Theatre in Berlin in 1920, worked in the Central Theatre in 1923 and 1924, and then directed in the Volksbuhne from 1924 to 1927. While at the Volksbuhne, he aroused heated controversy since his strong Socialist leanings were obvious in the plays he aimed at the German proletariat audience. In order to preserve his artistic integrity under fire, he opened the Piscator-Buhne on the Nollendorfplatz, Berlin, in the fall of 1927. This rented theatre was used since his Total Theatre, designed by Walter Gropius, was never built due to government interference and lack of money. At the Piscator Theatre he staged several productions that featured excellent integrations of actors and projected images; however, his use of film on stage began in 1924 (with captions for Fahnen) and expanded quickly.

In the 1925 production of Felix Gasbarra's Trotz Alledem (In Spite of Everything), which opened on July 12 at Grosses Schauspielhaus in Berlin, Piscator used newsreel films of war and its results. He later remarked:

> These takes showed with brutality the horror of war: attacks by flame throwers, piles of slashed bodies, cities on fire. The 'mode' of war films had not yet become established and these photos served to shake and awaken the proletarian masses, more than would have been achieved by hundreds of statements.[15]

Another memorable production by Piscator was his version of Alfon Paquet's Sturmflut (Stormtide), which opened on February 26, 1926, at the Volksbuhne. This time rear-projected film (from 45' behind the screen) was used to increase the depth of the stage. Two examples from this production are: (1) film of a warship firing toward a "port," which was indicated by cutouts of the port's buildings around and in front of the screen; (2) a filmed scene of a crowd behind a real crowd on stage. Sturmflut also had 4 slide projectors positioned 38' behind the screen, but nothing more is reported of their use. Other Piscator landmarks, all done at his Piscator-Buhne, include Hoppla, Wir Leben! (Hurray, We Live!), Rasputin, and Die Abenteuer des braven Soldaten Schweyk (The Adventures of the Good Soldier Schweyk).

Ernst Toller's Hoppla was the first production in the Piscator Theatre, opening on September 3, 1927; a 36' wide, 26' high screen area was divided into 7 units, the largest being a tall vertical one in the center. A large scrim was also placed in front of the actors, so at times they were enveloped by both front-projected images from 1 film projector and 7 slide projectors and rear-projected images from a film projector 45' behind the screen. One use of the scrim and screen together was to give the effect of Thomas, the protagonist, in prison. To achieve this, a filmed sentry marched above him while the warden strolled about on another screen. The 7-unit screen was used for large complete

images, triple vertical panoramas, and multiple-image configurations. The major film in the play was a 7-minute newsreel of events of 1917-1927 that occurred while Thomas was confined to an asylum. Unlike the environmental film of Sturmflut, the newsreel of Hoppla was treated as an actual film viewed simultaneously by the actor and the audience.[16]

Tolstoy's Rasputin, adapted by Piscator, Felix Gasbarra, Leo Lania, and Brecht, opened on November 10, 1927. A hemispherical scaffolding was constructed on a revolving stage, so that each scene was wheeled around in front of the audience. Projection material was stretched upon the 52' diameter, 26' high acting area so that each of the 15 sets had its own screen; further, there was a balloon-like screen above the acting area which received the prologue film--a collage history of Czarism and Nicholas II made from the Russian newsreel The End Of The House Of Romanov (1927) and 17 European and American feature films. Jaroslav Hasek's Good Soldier Schweyk, which opened on Jan. 23, 1928, concerned the exploits of a stupid but lovable and loyal soldier. George Grosz contributed the first animated cartoons (of officers, clergy, and doctors) to be used on the legitimate stage.[17] In addition to film, this most popular work of Piscator's had conveyor belts, cantilevered bridges, moving scenery, searchlights beamed on the audience, sound effects, and motorcycles ridden on stage. Our previous discussion has noted the origins of many of these devices in the theatre work of Meyerhold and the Dadaists.

Now that we have described some of Piscator's major work, we return to our previous question: did Piscator achieve enough synthesis of human and electronic elements on his stage to earn the honor of initiating Intermedia? My answer is "no, not quite," for it must be remembered that his plays were vehicles chosen for message content, and all the projection elements were intended to support that central message. In other words, the mechanical trappings of his stage

were enhancements of the action, not unique elements really separate from the players' situations and dialogues. He even admitted that one of his chief reasons for using film was to enhance "the reality of people's environments."[18] This is not to say that Piscator was not a master of stage design; certainly his achievements were the cornerstone for the true Intermedia theatre developed in the 1950's by Josef Svoboda. Rather, we see Piscator's progress in theatrical mixed media as the culmination of the events previously described. Such a vibrant, dynamic theatre would not be seen again in Europe until after World War II, and America's only equivalent (excepting Piscator's productions at New York City's New School for Social Research from 1939 to 1951) were the few "Living Newspaper" plays done by the Federal Theatre Project. Hallie Flanagan's troupes did over 1,000 plays between 1935 and 1939, with a few done as "Living Newspapers" utilizing newsreels, newspaper dialogue, and other Epic Theatre-type tricks.[19]

A more subdued approach to theatrical mixing of human and electronic media was attempted on June 30, 1930, at Berlin's Staatsoper Unter der Linden (State Opera House), when Franz Ludwig Hoerth staged Paul Claudel's Christophe Columb. Claudel had been impressed by Noh Theatre when he was the French Ambassador to Japan in the early 1920's, then in New York in 1924 he was further impressed by Reinhardt's environmental staging of The Miracle. At Reinhardt's request, Claudel wrote Christophe Columb in 1926 as an attempt at merging music, dance, drama, song, and cinema. Certainly this was an Intermedia concept, but it is unclear what the actual 1930 production, with music by Darius Milhaud, was like. The themes were ritual (New World discovered by the Old Religion) and simultaneity (2 characters of Columbus--one sails to the New World, the other is an old man looking back on his youth). Claudel suggested film to show the psychological workings of the minds of the characters, such as the boy Columbus

conjuring up images of Marco Polo's travels, but sketchy accounts of the performance make it sound more like an opera than a true realization of all of Claudel's visions. Certainly the work is a brilliant concept, but it appears to have not been done fully in its intended form until the 1950's, by which time Intermedia had been established by John Cage.

Perhaps a more valid example as the true originator of Intermedia theater than either Piscator or Claudel would be Emil Burian, who worked with designer Miroslav Kouril toward a total integration and orchestration of all theatrical elements. Unlike Piscator's grand effects, Burian's films and slides were thrown onto scrims and screens in front of and behind the performers to give a visual blend of images and actors. His stage was small (20' wide, 15' deep), so the 6-meter by 4-meter front scrim completely partitioned the players from the audience. For an example of what went on behind this scrim, let us examine Burian's production of Frank Wedekind's Fruhlings Erwachen (Spring's Awakening). This was staged in 1936 in Burian's home base, the Prague Theatre.

Two color slide images and black and white 16mm film could be shown on the front scrim, while another slide image could be directed to another screen upstage left from the actors. Curved sheets of black material surrounded the rear of the stage to delineate the actors' environment. Among the effects used were projected images of off-stage characters who were discussed by the characters on stage; at other times, the stage was devoid of actors but the play continued with projections and off-stage amplified dialogue. Such techniques have been contrasted with Piscator, who used projections for documentary instruction, dramatic intensification, and editorial commentary rather than the unified dramatic environment of people and projections chosen by Burian.[20] As one author put it:

> In viewing Rasputin on the Nollendorfplatz stage the spectator never forgets that he is watching a play enriched by the addition of film sequences. In contrast, Burian uses film in such a way that it not only enriches the performance, but more significantly, becomes intrinsically a part of it.[21]

By the above description, it would appear that Burian had achieved what we have previously defined as the theatrical multimedia mixture known as Intermedia. If so, this achievement would be based on style and intent, not merely on equipment, for Piscator had also occasionally combined his elements into a complete stage environment, as in Hoppla, Wir Leben! Actually, Burian shared the same shortcomings as Piscator where Intermedia is concerned:

> The action on stage (Burian's) was complete and coherent in itself, however; the projections were supplemental, and no true interaction occurred between stage and screen.[22]

> What (Burian) failed to do, however, was to transform what three-dimensional scenic pieces he did use into a kinetic energy commensurate with the movement of film.[23]

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Cage's 1952 presentation took the form of a 45-minute lecture on Meister Eckhart. The combination of elements used in the lecture were carefully considered and orchestrated, but the point of entry of each element was determined by chance. Individually, the parts do not explain each other, yet taken together they form a total entity of juxtaposed pieces. All of the viewers sat in chairs arranged in 4 large triangles facing the center of the room. After Cage began to talk, other activities occurred at their proper intervals, even though Cage continued his delivery. M. C. Richards recited from a ladder, Charles Olsen and other "planted" performers in the audience stood and recited, David Tudor played the piano, Robert Rauschenberg played old records on a hand-cranked Victrola, and Merce Cunningham (accompanied by an unscheduled dog) danced around the audience. There was even a film--of the school cook and a

sunset--which was projected first on the ceiling, then on the wall. Cage has also mentioned the existence of slides and radios, but gives no description of their use. Above all this activity hung Rauschenberg's White Paintings. Seven Panels. (1951) about which Cage has remarked they "were airports for the lights, shadows and particles."[25]

Concerning the entire 1952 event, Cage explained "It was the making of theatre--to bring all these things together that people could see and hear."[26] From what we have seen so far, it should be clear that Cage had taken theatre farther than any of his forerunners. Now it was no longer necessary to structure radical dramatic elements around a narrative play; components could be used for their own values, just as long as the totality brought the desired result. To quote Cage from the end of his performance: "A piece of string, a sunset, each acts."[27] As we noted earlier, soon after Cage's breakthrough Charles Eames and George Nelson were able to achieve a multimedia lecture based on a cinematic format reviving the Waller Vitarama achievements of years earlier. Thus, the two main thrusts of Intermedia, stage and cinema, had produced seminal works by 1953, with Svoboda polishing cinematic Intermedia by the 1958 Brussels Fair. To round out our picture so far, we must now return to the Brussels Fair to examine Svoboda's contribution to theatrical multimedia combinations.

Laterna Magika was the smoothest blend then made of performers and electronic media. Not only were there interchanges between the actors and projections, but the screens were as mobile as the actors. Eight screens occupied the 50'x24'x20' stage while 3 film projectors and 2 slide projectors threw images to all parts of the performance area, including the rear wall which also served as a wide screen for rear projection. The 8 smaller screens could move, change size, or fold up completely, depending on what effect was called for in the script. Multispeaker stereo sound accompanied this presentation which was

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After acknowledging the fine accomplishments of Meyerhold, Reinhardt, Piscator, Claudel, and Burian, but still rejecting any of their works as true Intermedia, we turn finally to the originator of our subject. John Cage has been recognized as the first creator of Happenings for a performance he did at Black Mountain College, North Carolina, in the summer of 1952. Based on the intent and content of that performance, we can call it the first Intermedia performance as well. Cage's impact on all 20th century art forms is enormous; he influenced music and dance (with the aid of Merce Cunningham) directly, theatre indirectly (Allan Kaprow was Cage's student when the former gained publicity for Happenings), and even the visual arts indirectly (Robert Rauschenberg was a Cage student at the time of the 1952 performance, Stan VanDerBeek was residing at Black Mountain College at that time also, and Gerd Stern met Cage at Black Mountain during this period). Of his own work, Cage has said:

> I found through Oriental philosophy, my work with Suzuki, that what we are doing is living, and that we are not moving toward a goal, but are, so to speak, at the goal constantly and changing with it, and that art, if it is going to do anything useful, should open our eyes to this fact.[24]

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devised by Alfred Radok and staged by Svoboda. Laterna Magika consisted of 24 separate units, totaling about 2 hours performance time. One act had a man dancing in front of a film of Czechoslovakian mountains; then a filmed ballerina was superimposed over the mountains and the male dancer "carried" his partner for the rest of the dance on a large white tray held under her feet.

While Laterna Magika certainly qualifies as Intermedia both in form and intent, it still carries an aesthetic problem which was never resolved: the magnificent technique of the show was used to carry scenes of only very frivolous content. Basically, Laterna Magika was a collection of vaudeville skits which were so entertaining as to inhibit any change of format, especially since the final decisions for the use of this vehicle were made by the Czech government. The old rule of "never tamper with success" certainly worked against the growth of Laterna Magika as an evolving form of popular entertainment. Fortunately, though, Svoboda was able to transfer the operational principles of Laterna Magika onto the legitimate stage in several of his serious efforts.[28]

Since 1958 multimedia mixtures on the dramatic stage have been greatly influenced by the work of Svoboda, and he can rightly be called the master of this form. The Environmental Theatre type of multimedia performance originated by Cage matured through the early Happenings and emerged as what we now usually know as Intermedia. What Happenings are done now--and most of those done in the 1960's--concentrate more on human activity while de-emphasizing the use of electronic media. In the late 1950's, however, Happenings and Intermedia were often one and the same. Many of the early Happeners were students of Cage's, so it is correct to cite the direct evolution from the Black Mountain piece of 1952 to the work of Allan Kaprow and his contemporaries. Even though they were not his invention, Happenings take their name from Kaprow's first public performance, 18 Happenings in Six Parts, done first at 8:30 p.m., October 4, 1959, at the Rueben Gallery, New York City.[29]

Three "rooms" were constructed in the gallery from plywood and translucent plastic sheets; lighting was provided by clusters of 25-watt bulbs, and some action painting-collage (akin to Kaprow's paintings) was included on the walls of room 1. Spectators--all of whom came by invitation--sat in folding metal chairs arranged in the 3 rooms and changed positions as indicated by the instruction sheets handed them upon entering. The action took place in 6 units with 3 Happenings occurring in each unit. Since the Happenings occurred simultaneously in different rooms, the spectators had to compare observations to find out what had gone on in all parts of the setting. Michael Kirby's Happenings (1965) contains a complete script and account of the event, so here we will just note that 4 audio tape decks with separate soundtracks, phonograph records, and slides (nudes, Kaprow's paintings, children's art, collages) were used separately and simultaneously during the evening. At this early stage of Happenings, Kaprow rehearsed for 2 weeks prior to the opening, then gave the presentation 6 times--October 4th and 6th-10th), instead of the present practice of one-shot, virtually spontaneous activities.

One of the early Happenings that made particularly good use of film as a non-objective element was Robert Whitman's The American Moon presented during November and December 1960 at the Rueben Gallery (also described fully in Happenings). Whitman sat his spectators in 6 small, plastic-lined "tunnels" all facing a central performing space. At various times during the piece, screens of clear plastic and typing paper were lowered to cut off the tunnels from the central space. An 8mm projector in each tunnel showed a film on the makeshift screen; when the lights were turned off in the central area, the viewers in each tunnel could see the film on the screen of the tunnel directly across the central performing area. Other Happenings of this period made some use of slides and/or film, while several others incorporated audio tape.

Environments

In addition to the major branches of theatrical and cinematic Intermedia, there is another form which developed from the area of visual arts. Environments are unique spaces in which the entire area is considered and modulated to produce a new experience. Paintings, collages, hangings, and other 2-D displays usually cover the walls while the floor space is given over to sculptures, objects, or simply piles of debris. Touch can be incorporated by the textures of objects, real or canned aromas can be released, and audio tape is frequently employed for narration, sound effects, or even "white noise." Environments began as extensions of the art gallery room, but they can now also be found as display areas for various business, government, or industrial agencies; the Smithsonian buildings in Washington, D.C., are good examples of Environments turned into practical purposes.

Current Environments often utilize electronic media in such a way that they can be considered multimedia spaces. Allan Kaprow is credited with originating Environments, beginning with one in an abandoned barn near his New Jersey home in 1957. This untitled work was transported to New York City's Hansa Gallery for display, March 11-29, 1958. Included in the space were hanging sheets of plastic, colored cloth, cellophane, Scotch tape, and painted surfaces of various sorts. Taped electronic sounds from 5 separate audio decks played for 15 minutes every hour as people wandered through. Such combinations by Kaprow were logical extensions of the collage work he had done earlier. When Kaprow and others moved into Happenings the performance spaces were originally constructed Environments rather than found spaces. Robert Rauschenberg has been frequently applauded for his combine paintings which incorporated objects extending out into the environment of the viewer. Such popularity and status as he achieved served as a further stimulus to Environmental considerations. In terms of

multimedia gallery art, the closest combine was Broadcast (1959) in which 3 radios were put behind the surface of the canvas so that the knobs projected out, allowing viewers to change stations at will.

While Intermedia Environments reached their greatest level of complexity in the 1960's, they certainly had an interesting heritage stretching back through the 20th century. While none of the Environments before Kaprow's of 1958 are considered to be Intermedia by this author, it was only for lack of electronics not imagination. It is even conceivable to consider the Cineorama exhibit of 1900 as an Environment since the display space was altered into a completely new reality by the projected images. Certainly Cineorama was the forerunner of the types of Environments which are now used for entertainment and informational purposes. The artistic Environments christened by Kaprow really began in Germany with the Dadaist Kurt Schwitters, however.

Working out from collage, as Kaprow would do 30 years later, he began his first Merzbau in his Hanover home in 1924. Merz was the word used by Schwitters to describe the everyday realia nature of all his works, so Merzbau was his collage house of diverse objects. Lights, constructions, sliding panels, and other paraphernalia overran the Hanover house and a second one in Lysaker, Norway. Unfortunately, the first was destroyed by bombs in 1943 and the second burned in 1951. The only remaining example of a true Merzbau Environment is the partially completed one in Amberside, England, begun in 1945. Habitation Environments appear to have come to the USA in 1930 when Clarence Schmidt began transforming his Woodstock, New York home. While Schwitters seemed confined to the interiors of existing houses, Schmidt dug out the hillside and added rooms as an earthworm adds segments. Forty years' accumulation of objects, photos, Christmas lights, stuffed creatures, toys, etc. grace the interior rooms, while

the outside is a huge grotto of trees, rocks, machines, tires, rowboats, mirrors, and plastic statues.

As for public Environments preceeding Kaprow's, the most significant one was the design for the Exposition Internationale du Surrealisme, held in the Paris Galerie Beaux-Arts during January and February of 1938. Andre Breton and Paul Eluard gathered the Surrealist art works, and Marcel Duchamp organized the display setting. Leaves and moss covered the floor, 1200 sacks of coal hung from the ceiling, and a pond and a bed were among the things installed amidst the flora. For the opening festivities, roasting coffee permeated the air, German marching songs were blasted over the public address system, and Helen Vinel--a dancer--added to the occasion by improvising "The Unconsummated Act" around the pond and bed. With such a zany heritage to build on, Kaprow's contribution to Environments can be seen as more developmental than original, but he did begin the integration of electronics into the gallery Environment.

Multimedia Developments In The 1960's

As has been noted in the preceding sections, Intermedia had diverse origins with different innovators in the fields of cinematic performances (Fred Waller, Charles Eames and George Nelson), Environmental Theatre (John Cage), stage theatre (Josef Svoboda), and Environments (Allan Kaprow). With the exception of Cage and Kaprow, there is little evidence of interaction among these men, so it should be clear that I am not promulgating a theory of unified multimedia development. Rather, it was more a case of the individual achievements being publicized by the end of the 1950's and the total of their work (plus the heritage of Gance, Piscator, Meyerhold, et al.) being synthesized by the multimedia artists of the 1960's. Foremost among those artists would be the distinguished creators mentioned above, but others of formidable talent would also emerge. Certainly the 1960's were the perfect years for such a movement.

As all the media of mass communication had jelled into their accepted, influential places in daily American life by the early 1960's, it is easy to understand how any movement could gain instant popularity in this period in a manner hardly possible before. Certainly mass media coverage was important in popular knowledge of the work of Cage, Kaprow, and Svoboda, even if the latter was the only one to achieve any real amount of popular approval. Another art movement of this same period which received massive publicity was Pop, again widely-known by the masses but only popular with the critical elite. Among the more notable and durable characteristics of the major Pop artists were enormous scale (as with James Rosenquist's billboard-type fragments combined on one large canvas in a multi-image fashion) and serial imagery, most notably the endless silkscreen subjects of Andy Warhol. Warhol's overriding fame led to a general association of Pop Art with multiples, and this would prove to be important for multiscreen styles of multimedia programs.

By the late 1960's multiple images were a pervasive component of American visual culture, seeming almost as prolific as the Xerox copies they emulated. Repeated figures adorned posters and walls, split-screen effects and rapid-cutting sequences (to give the feeling of being barraged with multiple images) were commonplace in films and television programs, multiscreen lectures were known in classrooms and board meetings all over the country, magazines followed the example of Life in photo essays and multi-picture displays, and Warhol silk-screens were in every chic living room and gallery. Multi-image mirrored the active pace of the 1960's, and multimedia mixtures appeared as a sign of the times.

One of the first multiple-screen films to attract public attention in the 1960's was a 6-screen, 15-minute presentation by Charles Eames at the "House of Science" at the 1962 Seattle World's Fair. Officially known as Century 21,

the Fair garnered 10 million visitors to its 74-acre site between April 21 and October 21. Following in the spectacular tradition of the 1958 Brussels Fair and the 1959 Soviet-American cultural exchange, the Seattle Fair featured such exhibits as the Eames film and a "space ride" called Journey to the Stars. Housed in a 57'-high, 19'-wide dome called the Spacearium, Journey allowed 700 people at a time to see a 12-minute, 70mm film with 6-channel sound. For this show, the film flooded a 7,858 square-foot viewing area on a circular screen. Clearly this presentation shows how the technology of such events as the Vortex concerts and the Disneyland Rocket to the Moon could be transformed into a combination with large-scale capabilities and popular appeal. While either of the originals cited might be superior to Journey, it is important to see what devices could be adapted to the needs of a very large audience. Such planetarium-like projection would return to the other major fairs of the decade. These blunt effects were no match for the subtlety of Vortex, though.

By the time of the 1964 New York World's Fair--"Man's Achievements in an Expanding Universe"--multiple imagery had been standardized by Pop Art, and showed its Janus-faces in several cinematic wonders. One of the most spectacular was Think, designed by Charles Eames for the IBM Pavilion. 500 viewers at a time could sit in a "people wall" of tiered seats which was hydraulically lifted 60' up to the elliptical theatre. The show itself was a razzle-dazzle blend of a live announcer and multiple screens of slides and film, 16 being the number most frequently cited. Descriptions of this work run from quite favorable to almost derogatory, but it certainly can be called a sophisticated attempt to use and expand the multimedia type of exhibit begun by Svoboda at Brussels. Think sounds like a Intermedia approach to the mixing of images and live narration, with interaction even occurring among the screens. However, some writers have made it sound like an accelerated slide lecture, so I will reserve judgment

on this one. At any rate, it was a splendid technical marvel. Other exhibits at the 1964 Fair were not as original as they seemed.

Surely the best of the multi-screen films was To Be Alive, a 3-screen documentary for Johnsons Wax, directed by Francis Thompson and Alexander Hammid, edited by Theo Kamecke and Richard Adams, with music by Gene Forrell. Mixing adventures of children from several countries, To Be Alive received the Oscar in 1965 for the best short documentary, a distinction yet unmatched by a multiple-screen film. Other exhibits included the following: Laterna Magika; "Wonderful World of Chemistry," a DuPont version of Laterna Magika in which Michael Brown directed 3 movable screens and live actors in a slick but empty presentation; Journey to the Moon, the 10-minute, 70mm KLM planetarium film; the New York State Pavilion which featured an 8-screen, 100'-diameter replay of Cinéorama; Environmental Cinema, a 15-minute ride through 130 screens of American history images. While all of these displays, as well as several others, were technically smooth and popularly accepted, few were really advances of the results we have seen from years earlier. Still, the 51 million visitors to this 646-acre site were treated to the most spectacular gathering of technological possibilities assembled up to that time. Since the Fair ran from April 22, 1964, to October 17, 1965, there was ample opportunity to visit and revisit the exhibits, which is just what several electronic media artists and even more mass media reporters did. By the end of 1965, the multiple-image style of multimedia program was a known and accepted quantity on both the East and West coasts. Soon we will see how discotheques commercialized and standardized this concept, allowing it to spread nationwide.

Most of the multimedia and multiscreen events of the 1960's which we will discuss occurred in the USA; however, some notable achievements were made in other nations, including the XIIIth Triennale held in Milan during 1964. Among the exhibits at this industrial fair was an Environment called "Introductory

Section--Leisure Time" executed by Vittorio Gregotti, Lodovico Meneghetti, and Giotto Stoppino, all of Milan. Visitors first toured a chamber full of leisure paraphernalia--toys, sports gear, etc.--then entered a huge, stark room of gleaming metal stairways and walkway tubes. After finding that the stairways led nowhere, the visitors would pass through the tubes to the dark "Corridor of Instruction" where they sat to see slides of advertising slogans. Mirror images of dummies mounted on the ceiling provided a rude shock when the visitors first sat down in the corridor. The final chamber, "Caledioscope," was an octagonal room 34' high and 79' long; all the surfaces were highly reflective, so when two 9-minute films were shown, the viewers were emersed in color and movement. Taken as a whole, this exhibit could be considered Intermedia just as was the case with the Eames and Nelson lecture of 1953. All the various elements are designed and arranged so that their individual existences will sum up in the viewer's mind, giving him a diverse look at the subject.[30]

Probably the most spectacular Intermedia Environment to be organized in this country was the "Down by the Riverside" exhibition which occupied the Riverside Museum in New York City from May 8 - June 19, 1966. This show was the public highlight of the artists' commune known as USCO (or "Us Company") who had been actively involved in various multimedia barrages, gallery exhibitions, and consciousness-expanding activities since the early 1960's. More of their early work will be covered in the next section, but in retrospect it is clear that they were likely the most progressive and diverse group of multimedia artists ever to assemble in the USA. Their work and influence was felt and seen on college campuses, executive board meetings, avante-garde theatres, and galleries devoted to graphics, paintings, and kinetic sculptures. All of these streams of activity flowed together in the 1966 show, originally called a "be-in" (the first use of that word) but later renamed after the title of the film made

by Jud Yalkut about the exhibition. Large crowds came daily to explore and meditate in 4 rooms of paintings, sculptures, kinetic machines, continuously-chanting tape loops, tie-die hangings, flashing lights, and film. While this display relied less on projections than their usual projects, it allowed the other fine aspects of their involvement with the visual arts to come forth. The entrance room, with its tape loops, large sand box, and rotating column of lights (illustrated, along with other rooms from the show, in the October 3, 1966, Life in the article "Psychedelic Art") later served as the basis for the USCO Tabernacle at their church/commune at Garnerville, NY.

Not only did the USCO group deliver an outstanding multimedia gallery Environment in 1966, they also lent their talents to another type of electronic environment that year; The World discotheque. The World, which opened on April 1 and remained in business until November 1966, was a joint production of John Brockman and Michael Meyerberg with an initial promotional association with disc jockey Murray the K. Surrounding the dancers above the huge central area (actually the interior of an old airplane hangar) were 20 large screens onto which could be projected the slides programmed by USCO. In addition, a 20'-wide screen could take projected video images mixed from a 3-camera closed circuit coverage of the dancers. Originally the intention was to have programmed slide modules for each of the week's Top 20 single records to accompany these recorded songs which were played while the live bands were on intermission breaks. Time and budget limitations soon reduced the slide modules to more generalized patterns, and the operating and union costs of 6 television technicians made the projected video a special--rather than a weekly--event. Still, The World was the first permanent psychedelic discotheque, and it continued a high level of visual excitement during its existence. After hassels with the land owners caused the closing of The World at its original Long Island location, Meyerberg

opened another World in Miami late in 1966, with the installation of electronic media support supervised by Michael Callahan of USCO.

Originally Andy Warhol had been involved with plans for The World in late 1965, but his association never materialized. Instead he entered into an affiliation with the Velvet Underground, a rock group interested in such taboo subjects as heroin, transvestites, and sado-masochism. Early in 1966 Warhol began his "Uptight" series which featured 2-screen Warhol films followed by music by the Underground with films projected around them. These performances could be considered Intermedia since the 2-screen films were separate images projected simultaneously and the projections shown with the live music were not at all redundant statements. By early April (just after the opening of The World), Warhol's show had come to be known as the "Exploding Plastic Inevitable" although officially that title referred only to the dynamic 3-screen film by Ronald Nameth. Besides the film, this show featured music by the Velvet Underground and the singer Nico, "whip" dances by Gerald Malanga and partners, flashing colors, and strobe lights. After a month's stay at the Dom nightclub (23 St. Mark's Plact) in Greenwich Village, the entire troupe went on a well-publicized tour of Los Angeles, San Francisco, Cincinnati, Minneapolis, and London, meanwhile leaving a permanent light show discotheque at the Dom. By the end of the month New York City also had The Cheetah and San Francisco featured Bill Graham's original Fillmore.

Multimedia usage was strengthened by diverse forces as it rose to a position of stable existence in the late 1960's, but none were more important than the publicity and public visability accorded the psychedelic discotheques. While such things as developmental centers (modeled on the Wisconsin M.I.L.), mass media coverage of spectacular events (such as the IBM Pavilion at the 1964 World's Fair), and good attendance at aesthetic milestones (such as the USCO "Down by the

"Riverside" show) all were essential to the endurance of multimedia communication, none of these other factors quite plugged into the youth-occupied culture of the 1960's the way the discotheques did. Care should be taken, though, to differentiate the psychedelic palaces of the later part of the decade from the Twist-oriented nightclubs for adults of the early 1960's. While both built on current rock music, the older places like the Peppermint Lounge were just energetic places to dance. Many of the psychedelic halls were only dance floors sprinkled with Day-Glo paint and random slide projections, but the best of them, including the ones already mentioned, were new entertainment experiments in combining live music, dancers, lights, and projections into an integrated, environmental experience. Even though not all were of equal quality, at least they were spread nationally carrying the lure of multimedia experiments to all who would approach. Of all the psychedelic discotheques, probably the finest of all was the Electric Circus which occupied the space above the Dom where Warhol's group first gained notice in 1966.

Opening in June of 1967 at 23 St. Mark's Place, the Electric Circus soon proved to be a great financial success; by March of 1968 the Circus was averaging 7,000 paid admissions a week at $4.50 apiece. Conceived by Stan Freeman (then manager of the group who became Steppenwolf) and Jerry Brandt, the Circus was intended as the best contemporary blend of performers and electronics. "The Ultimate Legal Experience" was the slogan on its posters, and it delivered its promise with a totally modulated interior going from fluorescent black lights at the ticket window up a back-lit, continuously-changing hued staircase into the wonder of the main area. True to its name, the Circus employed mimes and jugglers as well as musicians, sound engineers, and lighting engineers. Up to 1,000 people could fit in the 3-story high ballroom, the walls of which were lined with mirrors and tent-like projection material originally. In Jan-

uary of 1968 a 3-month remodeling program was begun at the New York Circus as an even bigger and more lavish Circus opened in Toronto. After renovation, the New York Circus featured walls at odd angles to the floor, projected colored lights to give the sensation of floating, and even more intensified sound.

Jeff Feinberg, Technical Director of the Electric Circus from 1968 to its closing in 1971, supplies the following figures on available equipment. A programmer activated by audio cues on the third channel of a 3-channel stereo cartridge could control 4 strobe lights, 16 Kodak AV300 Ektagraphic projectors (modified for 1,000 watt lamps) in a "Matrix" configuration, 8 more of the same type Ektagraphics in a "wild" position, 4 Travelgraph-Resolute 1000 overhead projectors, and 4 Kalart-Victor 16mm projectors modified for Xenon lamps. As well as advancing images, the still projectors could also be controlled for fade rates, focus condition, and special color wheels which rotated in front of the lenses. While programmed images were often coordinated to specific pieces of music (frequently by the 10-member Pablo Lights group), all the projectors could also be run manually by the light show coordinator. The light man also had control of 32 Fresnel and Leco spotlights which illuminated the entire stage and ballroom area. By means of a predetermined audio level activator and the random operation of a 10-position shift register, the lights and slide projectors (with all their various functions) could be activated in an infinite number of combinations simply by the volume and frequency of the audio. In addition to the stereo tape cartridge players (2) already mentioned, there was a stereo turntable and a 10-channel stereo sound console to accept, mix, and amplify the live sound from the stage musicians. Two speaker systems--one for the stage and one for the taped music--used 49 speakers to give proper stereo separation in almost any part of the room. In modes of manual projection, 3 operators were needed: 1 sound man, 1 light show coordinator, and 1 Light Gallery technician. With programmed cartridges, only 1 operator was usually needed.

1,000 amps of current fed the projection booth, known as the Light Gallery. From this booth, each projector faced a screen surface properly angled for its trajectory. Directly opposite the booth was the screen for the Matrix, a combination of 16 slide projectors. There were 4 stacks of 4 projectors, each stack set side-by-side. Each group of 4 was assigned to ¼ of the total screen area, so it was possible for 4 horizontal images to make one wide panorama. More often though the 4 sections were used for multiple images, each one of which could receive 4 layers of superimposition. Since rapid fades could be used instead of dissolves, the speed, complexity, and interrelationship of images was nearly endless. Such effects were sometimes used in other discotheques as well, but only at the Circus was the programming elaborate and creative enough to match the high standards set for light shows by the old Vortex concerts. Dwindling crowds caused by inflation, increasingly dangerous neighborhoods, the presence of alcoholics and drug addicts, and a general disenchantment with the psychedelic euphoria of the 1960's led to the closing of both Electric Circuses in 1971, with most other discotheques long since deceased. For many, multimedia consciousness was best embodied by the original spirit and quality of the Electric Circus.

The other finest hour for multimedia projects on public display in the 1960's was the grand master of World's Fairs, Expo '67 in Montreal. There were over 100 films of diverse sorts shown at Expo '67, and since many of these were multi-screen presentations in elaborate pavilion settings, the 50 million visitors to the 1000-acre site from April 28 - October 29 were treated to the most lavish sanctioning yet of multiple imagery and multisensory stimulation. Intermedia events included: (1) Laterna Magika, (2) Svoboda's Polyvision, this time in the context of a 9½-minute industrial show using 28 slide projectors, 11 film projectors, audio tape, mirrors, moving cubes, and prisms in a total presenta-

tion Environment, (3) Carolee Schneeman's Intermedia piece, Night Crawlers, which features Ms. Schneeman and her partner cavorting on a foam-rubber-filled Volkswagen while Vietnam films were shown behind them, and (4) the National Film Board of Canada's theme pavilion, Labyrinthe. This last work deserves a detailed accounting.

Roman Kroiter directed the Labyrinthe project which was designed by Colin Low, coordinated by Hugh O'Conner, and constructed by the Montreal architectural firm of Bland, Lemoyne, Shine in cooperation with the engineering firms of N. J. Pappas and Associates and R. R. Nicolet and Associates. The building was 5 stories of poured concrete, hollowed out by 3 audience chambers and partitioned passageways that gave good directional movement, even though a feeling of confusion was created. Kroiter pointed out that the metaphor of the exhibit could be explained thusly: the building structure is the world and a visitor's path through it is his thread of life. Experiences of living are represented by the images viewed in the theatres, and the Minotaur to be encountered in the final chamber is actually the individual limited nature of each viewer.[31] Visitors may not have been completely aware of the complex allegory which they were immersed in, but the visual and aural stimulation was nevertheless overpowering.

Visitors (over a million) often stood in line outside for hours before moving through the 3 chambers of Labyrinthe. Automated control of the entire production allowed 30 shows a day for 6 months, with no more than 3 hours of show time lost during the entire operation. Chamber I was a tear-shaped room with 4 balconies on either side of a 30'x20' screen lain on the floor. At the large end of the room, another screen of identical size rose perpendicular to the floor screen, thus creating a vertical viewing area. Sound came from 5 large speakers behind the screens and 288 other speakers spread throughout the balconies. The projectors (one of which was suspended from the ceiling, the

other lain on its side) were Century JJ-3's, with Hughes 5kw Xenon lamp housings and Panavision-Steinheil 95mm lenses for showing the 70mm, 20-minute Imax dual film. In this first section, the hero (youth) grew strong--with rock bands, surfing, and motorcycles--but then was confronted with the "monsters" of the world--freeways, riots, drunkenness, gambling. The screens alternated between contrasting images and panoramic extensions of the same scene. Size and angle of the screens often gave a feeling of enormous depth.

Chamber II was an M-shaped maze of prisms and thousands of tiny, colored, carefully-programmed lights. Five channels of various sounds also bombarded the chamber, while the 6th channel of the master audio track carried the information for controlling the lights. Chamber III was as equally impressive as the first 2, with 5 large screens arranged in a cruciform pattern. The 5 screens of 35mm film were shot with a special yoke of 5 Arriflex cameras mounted and synchronized with a National Film Board-designed DC interlock. Small film magazines (200') were used for the location shooting, so that the lenses could be placed 9½" apart. Century WMDA 35mm projectors with Hughes 2.5kw Xenon light and Kollmorgen 2" and 2¼" f1.9 lenses were used for projection of the final film. The lenses were also equipped with water-cooling devices to permit 10-second still framing, at which time the total effect closely approached the effect of using film and slides together. Despite this technical wizardry, Chamber III did have one flaw in its importance to multiple-screen development: the producers admit that the 5-screen format was finally chosen because of the technical and economic difficulties that prevented them from using a single 70mm print.[32] In his article on the 1953 lecture, George Nelson also admitted to using multiple screens of slides because of the cost limitation of a wide-screen film. It is a bit disappointing to know that some of the best achievements in multiple-screen development were sparked by necessity rather than desire, but the results remain just as valid and inspiring.

In Chamber III of Labyrinthe, viewers saw the meeting and conquest of the "Minotaur" in the form of a crocodile killed by Ethiopian hunters. Further progress of the film contrasted various situations--old and young, primitive and technological cultures--and then showed a universal unity of man through his rituals of birth, life, and death. Transitions from one scene to the next usually came through just 1 or 2 screens introducing the images while the old scene continued on the other screens. The cruciform was used in most of its possible combinations--single-screen shots, vertical and horizontal panoramas, 5-screen coverage of one scene, different images on some or all screens. Other multiple-screen highlights of Expo '67 were often bigger but not often better than the Chamber III allegory of Labyrinthe. Among these other film exhibits were: (1) Francis Thompson's 6-screen film, We Are Young, done for the Canadian Pacific-Cominco Pavilion, (2) Art Kane's 3-screen film, A Time To Play, for the USA Pavilion, (3) Walt Disney's Circle Vision for the Telephone Pavilion, featuring a 360° presentation on 9 screens--23'x273' total--and 12 speakers of sound for 1500 spectators at a time, (4) Christopher Chapman's A Place To Stand, which was given at the Ontario Pavilion and featured multiple images on one 70mm frame of film, (5) Man: The Polar Regions, a theme pavilion where the multiple screens of film rotated around the audience, (6) Cine-Carousel in the Canadian Pavilion, where the audience rotated around 10 screens of Canadian history, (7) Canadian-Kodak's show which projected 8 minutes of slides on 3 water jets, (8) the Soviet Pavilion's Space Ride--a 40-minute, 5-screen planetarium show, and (9) John Whitney Jr.'s untitled, 17-minute, 3-screen computer film that used intricate symmetrical patterns.

Far surpassing any of these other multiple-screen works--and resembling a mammoth slide show--was the Intermedia combination of Svoboda's 3rd entry in Expo '67, Diapolyekran. Literally the name of the exhibit meant "transparency

multiple screen," which describes quite well the show entitled The Creation of the World. Within a total screen area of 22'x32' were 112 two-foot square cubes, arranged in 14 vertical and 8 horizontal rows. Inside each cube were 2 Carousel S-AV projectors (made by Kodak AG of Germany) mounted one above the other. Special shutters on the projectors allowed instant fade from one machine to the other, so that no cube screen was ever blank for a second except by design. This 15-minute show used over 12,000 slides, with 14 new images appearing every second on the average. Even the cubes could move up to 2' out from the wall to increase the depth of the display.

Control of the exhibit was almost too astounding to believe. All signals originated on a 35mm film frame with 840 opaque and transparent dots on each frame. Light passed through the proper dots and struck 2 parallel banks of 840 photoresistors. Two banks of these were employed to insure against interference from stray light. Of these 1,680 photoresistors, 1,568 were needed to control the show and the rest operated the control system itself. Light striking a cell decreased its resistance, which triggered the proper function switch of a possible 1,008. The switch, in turn, activated the necessary parts of the 240 miles of circuitry which changed slides and moved the cubes. Diapolyekran's master film ran at 25fps and issued up to 19,600 commands a second; the entire 15-minute show (mostly mosaics of several scenes, but occasionally one full-screen image) took 5,300,000 commands to run properly. The effect of this display was simply overwhelming to the audience. Later, stage audiences would be treated to this technique in a couple of Svoboda's dramatic works.

One other feature of Expo '67 which is of interest to us was the theatrical experiment done by the Czechoslovakian director Raduz Cincera. Kinoautomat combined the concepts of cinema and Environmental Theatre, resulting in a film structured by audience vote. Five times during the film, One Man And His World,

the action was halted--each time at a crucial point in the absurd melodrama--and a live emcee asked the audience to vote on which course the plot should follow. Buttons at each seat and a blinking tally board made the process easy and entertaining. With all twists of direction possible, 32 different outcomes could result from the same basic film, so the mood of each audience had a direct bearing on the development and outcome of the movie. Cincera remarked about his production:

> What we are doing here really is making a sociological and psychological study about group behavior....We are learning that people decide not on a moral code but on what they like to see.[33]

Turning now to a different use of multimedia mixtures than either education, art, or entertainment (but utilizing some of all three), we can note that multimedia communication found its way into religious worship services in the latter part of the 1960's.[34] While slides and films had been used in both religious services and religion classes since the early part of this century, their purpose had been confined strictly to education. With the coming of a multimedia consciousness in the arts and popular entertainment, there was an attempt to incorporate this new communication tool in worship as well. One of the most complex and non-didactic of any multimedia worship presentations known to this author was done by John Cage in Spring Valley, New York, late in July of 1967. Rabbi Louis Frishman of Temple Beth El in Spring Valley, in conjunction with Rabbi Robert Schreibman of Temple Beth Sholom in New York City, allowed Cage and Ken Dewey to design a contemporary Jewish service.

The entire event lasted 90 minutes, beginning with a brief Reform service followed by film, slides, and audio tape of the Lower East Side Jewish ghetto in Manhattan. The famous Garment District was shown as it looked in both 1967

and in the early 20th century. Frances Alenikoff lit a candle to continue the service as LaMonte Young played long, somber notes on the organ. Ms. Alenikoff then danced a sabbath prayer, accompanied by Felix Fibich and the electronic music of Gershan Kingsley. Cage's sermon (McLuhan quotes) followed; Laura Foreman danced around the pulpit and the doors of the ark as he read. Taped music, flashing lights, and prayers by the rabbis concluded the ceremony.

Electronic psychedelic extravaganzas, such as Death of the Mind and Quasar,[35] had moved from the discotheque to the street and the avante-garde theatre by late 1966. Earlier in New York City there had even been a short-lived Psychedelic Theatre organized by Timothy Leary (see next section), but 1967 seems to have been the year for multimedia performances (all of which were usually called psychedelic in those days) to reach the legitimate stage of the American performing arts. We should remember that the Happening-type activities of Cage, Kaprow, and their contemporaries were Environmental presentations not intended for the traditional stage. Svoboda's Laterna Magika was a stage show, but a variety review in content; only in Europe had Svoboda presented full versions of multimedia stage works. However, this gap between Intermedia theatre and the serious dramatic stage was bridged by several works in the latter 1960's.

In February of 1967, Alwin Nikolias was commissioned by the Contemporary Music Society to do Somniloquy in the Guggenheim Museum auditorium. This 40-minute work used a taped electronic score, 2 slide projectors which used 200 hand-made slides, 4 lekos spotlights, and 12 flashlights equipped with reostats and gelatin filter globes. A scrim was stretched across the small stage to accomodate all the projections, which were carefully coordinated with the dancers. This work, and other electronic dance pieces by Nikolias, is covered fully in the June 1973 issue of The Drama Review. New York's City Center was

the site in September, 1967, for the Joffrey Ballet's multimedia work, Astarte. Using an interpretation of the love goddess myth in terms of a psychedelic experience, the group was able to produce a unique dance exploration. Trinette Singleton and Maximiliane Zamosa coordinated the movements of the dancers, the Crome Syrcus provided rock music, Gardner Compton made films, Thomas Skelton constructed kinetic scenery, and Midge Mackinzie supervised the total combination. Such effects as the dancers interacting with themselves on film were used. Also in 1967, the Boston Opera Company utilized the psychedelic slide patterns of Jackie Cassen and Rudi Stern in a presentation of Stravinsky's The Rake's Progress; this is probably the first use of psychedelic imagery in opera, but multimedia opera as such was attempted earlier with the stagings of Claudel's Christophe Columb by the Madeleine Renaud-Jean-Louis Barrault Company in May of 1953 (Bordeaux), 1954 (Rome), 1955 (Paris and London), and spring of 1957 (Broadway's Winter Garden).

In terms of multimedia performing arts on the serious stage, at least passing mention should be made of the Michael Butler Broadway production of Gerome Ragni and James Rado's "American Tribal Love Rock Musical," Hair. Beginning as an 8-week sellout show at Joseph Papp's New York Shakespeare Festival in Papp's Public Theatre in 1967, the show achieved enormous international success after its opening on Broadway (April 29, 1968) at the Biltmore Theatre. Hair brought no milestones to the New York stage; performing in the aisles was an old trick, and even electronic mixed-media rock musicals had been done before. The Beard had opened in September 1967 with a rock score and projections by USCO, while Your Own Thing--an adaption of Twelfth Night with rock music and 6 screens of slides, film, and liquid projections--opened in January 1968. The importance of Hair lies in the global publicity and acceptance that this play received, thereby enabling such devices as film projection and environmental

performing to reach a much larger audience than Reinhardt and Piscator ever achieved. Certainly, compared to most Intermedia performances Hair still looks like traditional theatre, but it opened up Epic Theatre methods and underground themes to millions who had previously avoided such theatrical style and content. Concerning this, Michael Kirby has said:

> If one compares theatre today with that of ten years ago, the differences are striking. Performances now tend to be more energetic, freer and less precise, visual rather than almost exclusively literary and decorative. It did not take long for the indeterminancy and physical expressiveness of certain works presented in lofts and stores to small audiences to be converted to the uses of Broadway and an international theatrical product like Hair.[36]

Multimedia theatre had even reached the public school level by the spring of 1969, when a production called Man and Power was given at Henry H. Gunn Senior High in Palo Alto, California. Richard M. Glendening, a faculty member, directed this "psychedelic multimedia happening" (as he called it) through 3 showings to an enthusiastic crowd of 1800 students, teachers, and parents at each performance. Man and Power was divided into 4 segments: (1) The Creation, (2) Power Conflict, (3) Renewed Hope, (4) Love and Brotherhood. Music from 23 different selections comprised the soundtrack; among the cuts were Block's "Senfonca Breve," "Where is Love" from Oliver, theme music from the James Bond film You Only Live Twice, rock by the Iron Butterfly, folk by Simon and Garfunkle, and the ending cut was the Beatles' "All You Need is Love."

Projection equipment used included 2 slide projectors, 6 film projectors, and 2 overhead projectors used for liquid abstractions. These liquid projections were used mostly in the Creation section, along with 2 films of germinating seeds. 2 films of missles and space launches were shown in the Power Conflict section, followed by a 6-minute animation film, A Terse Vision, of

thermonuclear effects on life forms. Other projections used in this section included a film on constellations and 150 slides of various subjects photocopied from books. Films (except for A Terse Vision) were shown simultaneously and were reversed if more time for projections was needed.

Section 3 featured a choral reading from Kahil Gibran's The Prophet (augmented by close-up slides of nature), and section 4 used slides of students plus other slides of women, children, couples, and families represented in famous paintings and sculptures. Ending section 4 was the Beatles' music and a 10-minute ballet duet; this last element is unusual to be accepted without foolishness from a high school audience, so Glendening must have been justifiably proud of his accomplishment. Multimedia drama presented on the serious stage is now an accepted possibility at all levels of American theatre, just as multimedia versions of the other performing arts and multimedia gallery pieces are known, even if they are not yet too common. That such a combination as Man and Power would even exist at the public school level so shortly after the public recognition of a multimedia consciousness in the college and art worlds is testimony to the speed of information transfer and assimilation in the 1960's. As we noted before, the direct and indirect mass audience for the World's Fairs of this decade were a most important factor in spreading the idea of multimedia nationwide in a short time. The two other important fairs from this period were Hemisfair and Expo '70.

Hemisfair--officially titled "The Confluence of Civilizations in the Americas"--ran April 6 - October 6, 1968, in San Antonio, Texas, attracting over 6 million visitors. Like the Seattle Fair of 1962, Hemisfair was important not so much for its innovations or its attendance size, but more for its ability to bring results of the new electronic age to a different segment of the American public. Most of the American events described so far occurred in

New York or Los Angeles, our traditional wellsprings of culture, entertainment, business, and communications. When a substantial event like Hemisfair can be made accessable to millions who have only read of multiscreen or Laterna Magika or Hair, then the national phenomena created by our mass media can begin acquiring a solid sense of reality. Thus, while such things as Laterna Magika, Kinoautomat, the Ford 10-minute 360° film about American culture and Ford products, General Electric's "GEnie" (a version of Laterna Magika), and Humble Oil's 5-screen film of common life and average people, My Name is Paul, could not be considered new in the light of previous achievements, they did serve as important revelations for millions of people who had never seen such wonders in the form of actual presentations. Two other exhibits--the USA Confluence Theatre and the multiscreen dome show at the Institute of Texan Cultures--did add significantly to the body of Expanded Cinema knowledge.

In the Confluence Theatre, 1,200 people sat in 3 separate viewing areas to watch Francis Thompson's film, US, about the good and bad in contemporary American life. After the first two historical sections, a transition was made from the Wright brothers' early airplane to a modern jet with a tremendous impact of surprise and power. At the instant of transition, the partitions between the audience groups rose up and away, allowing all 1,200 viewers to see the 38'x135' curvilinear screen, the largest in the world. A few triple-image sets were then used on the wide screen, but normally this documentary used a wide panorama. Multiple imagery was the standard in the Institute of Texan Cultures show in which a 45'-high, 90'-diameter dome served as the projection area. Rectangular forms of various sizes faceted the entire dome; 65 of these surfaces were plastic screens stretched over aluminum tubing, varying in size from 4'x5' to 12'x16'. Six 35mm Simplex projectors, ten 16mm Bell and Howell JAN projectors, 30 Kodak Carousels with Xenon light sources, and a 4-

track Ampex sound system were used to present "The People of Texas," a narrative about the ethnic diversity of old and modern Texas. This show is important because it represents one of the few serious attempts to combine the complex and impressive patterns of polished multiple imagery with the environmental absorption of 360° presentation. There are few works like it in the history of multimedia communication. This gem of Hemisfair was produced by The Office of Gordon Ashby, San Francisco.

Rounding out the series of spectacular fairs from the 1960's was Expo 70, held in Osaka from March 15 - September 13, 1970. This was the first World's Fair held in Asia, and it drew the record World's Fair attendance as well (over 64 million visitors). While little new was introduced in the way of multi-media combinations, the entire scope of the Fair and the high level of technical achievement deserve some description. For example, Toshiba and IHI presented Multi-Screen 360°, a pavilion that elevated spectators into a 9-screen circular theatre for an 18-minute show, "Light for Man," using various 3-screen groupings of 70mm images and 12-channel sound. Another exhibit, Hori-Mirror Screen by Mitsubishi and Toho Studio, carried spectators on a conveyor belt through two 18 meter x 21 meter rooms. In each room the viewers were crossfired by facing 70mm projectors. 1,224 tiny mirrors on the floor, ceiling, and walls of each room turned the images into a total environment, the first room for storms, the second for volcanos.

In the Mitsubishi Pavilion were exhibits intended for the visionaries, "Dreams in the Air" was a film projected on the world's largest smoke screen (2.6 meters x 4 meters), made by a powerfully controlled fine mist. Also in this pavilion was "The Joy of Participating," in which a 200° image (the field of the human eye) was rear-projected onto a huge "Crystal Ball Screen." Two alternating Bell and Howell 16mm projectors using 2½ meter-diameter lenses

accomplished this feat. Another pavilion with special effects was Pepsi-Cola's, in which the American artist-engineer combine, Experiments in Art and Technology (E.A.T.), presented the world's largest spherical mirror and a floating water cloud. Multi-imagery was also prevalent at the Pepsi Pavilion, as it was at the Dutch Pavilion (where an exhibit used 1,000' of film loops and 3 separate audio tapes of 6 channels each), and the Soviet Pavilion (where 10 separate films were projected simultaneously).

Probably, the most spectacular technical effects at Expo 70 were achieved at the Fuji Pavilion and the "Astrorama" display sponsored by the firm of Midori-Kai. The "Astrorama" dome was 31 meters high and 46 meters in diameter, completely covered on the inside by 190,000 glass and plastic panels, each 40 millimeters wide. 1,000 spectators at a time could see two 20-minute films, each shown from five 70mm projectors. Wide-angle panoramas and multiple images alternated in these films, while 11-channel stereo sound was carried by 515 speakers. Birth, the first film, concerned a fetus awaiting delivery; however, the fetus was an embodiment of man's progress from Prehistoric time to the present, so a review of civilization's milestones (especially art) covered the viewers' environment. Beginning in darkness with only the sound of the mother's heartbeat, the show progressed through its march of civilization, ending with a bud at the top of the dome which blossomed down all of the walls. A second show, March, concerned the velocity and change of an infinite and free world. The entrance to the Fuji Pavilion was the Fuji Air Dome, a tunnel of 16 clear vinyl tubes, each 80 meters long and 4 meters wide. Spectators were carried on a moving platform through the canopy of tubes as 28 slide projectors, multiple images on a 70mm Imax film, and 126 speakers of sound carried a "Message to the XXI Century," produced by Roman Kroiter and Kiichi Ichikawa, written and directed by Donald Brittain.

Just as popular electronic media interests seemed to have achieved their technical apogee at Expo 70, so also did Intermedia Environments achieve a new distinction in 1970. "Imagen de Caracas," a full-acre building supported by sixteen 78' steel columns--4 of which formed a central space of 9,620 sq. ft. containing a stage--was constructed as part of the 400th birthday celebration for the city of Caracas. 2 years of construction and a cost of 4 million Bolivars were required to make this massive addition to the city's 6-acre display site, Despositivo Cuidad (Mechanical City). Inocente Palacios was Director-General of this spectacle, which was meant as an active synthesis of the visitors' past history and future capabilities. Eight box-like screens, 33' high and 65' wide, were constructed of tubular metal framing and reflective aluminum viewing surfaces; these large screens were either movable or attached to the floor or ceiling. Other projection surfaces included 41 cubes and rectangles also of tubular steel and either fully or partially covered with metal or cloth. These boxes were portable, but they usually were hung from the ceiling in columns to create smaller spaces within the large area.

Eight 35mm film projectors were paired on the 4 columns and projected film in all directions; however, this was not an attempt at coordinated 360^{o} cinema. Further, there were slides shown from 45 projectors suspended from the ceiling. Each projector carried a separate message content in its slides so that no formal narrative was to be expected from the composite of all these visuals. Instead there was a complete Environment of information for each viewer to process individually as they all wandered through the collage of sight and sound. Some cross-reference symbols were included among the different projections, but the total idea was to mix fact, feeling, concern, and hope in a stew of dynamic juxtaposition. Various soundtracks came forth from 46 speakers spread around the ceiling; other sounds accompanied several 8mm projectors located all over

the building. Many other lights, slides, and photo displays contributed more information, and live actors were even employed to emphasize certain film sequences. All of this activity was coordinated by an automatic programmer located in a raised cabin in the southwest corner of the room. Constant surveillance from this observation post allowed manual override if anything malfunctioned. To aid the audience through this maze, there were reflectors on the central columns and ascending wooden platforms which afforded more of a total view. The only unfortunate thing about this massive, popular exhibition is that it was open for just a few weeks.

Beyond The Mass Audience In The 1960's

While there were numerous multiscreen and multimedia events which caught the public fancy during the 60's, it can be argued that a significant body of work which was just as influential was developed for the avante-garde section of society. Included in this section are works which have been called Happenings, Intermedia, multimedia, mixed media, Total Theatre, Theatre Pieces, Theatre of Mixed Means, and a variety of other names. Rather than attempting to manufacture some sort of conceptual unity, let us instead recognize that these were individualistic creations intended for serious students of the fine arts. This in no way implies that the works described previously were devoid of artistic intent or content; instead, it should simply be remembered that art, education, and entertainment all have unique, viable purposes, and that the former usually reaches a smaller audience than the latter two. This section will propose to round out our media education by dealing with events which were not so well covered in print and broadcast journalism as the World's Fairs, discotheques, and classroom lectures already noted.

Of the several groups of multimedia artists who surfaced in the 1960's, the most diverse--and possibly the most substantial--was USCO (the US Company).

USCO did not acquire that name until late 1964, but the central member, Gerd Stern, began public showings of art objects in December 1962 at Allen Stone's NYC gallery. An extension of Stern's involvement with the beatnik poetry movement, this show contained word collages and kinetic poetry (words used in conjunction with machines, images, and lights). Encouraged by this show, Stern traveled to San Francisco and worked toward his next one-man exhibition, which opened November 12, 1963. Included at this exhibition at the Museum of Art were works from the 1962 show, some new collages, a bending mirror piece, and a 7' octagon entitled "Contact is the Only Love." Incandescent, neon, and fluorescent lights flashed such highway ideas as "Yield," "Turn Ahead," and "Go On Go On" at rates from once a minute to 480 times a minute, while rotational sound on both sides of the octagon played a radio rock music mixture familiar to many highway drivers. The sculpture was constructed of masonite-faced plywood and supported by a concrete-filled tractor tire.

To pay the construction costs of "Contact" Stern engaged in 2 activities: (1) he often delivered "Mosaic," a poetry reading accompanied by slides of New York Pop Art, (2) he and several others organized a 2-evening theatrical presentation to coincide with the opening of the gallery exhibition. This 2-part presentation known as Who R U ? and What's Happening? was given on November 12th and 14th, 1963 in the auditorium of the San Francisco Museum. For this ambitious piece, 4 transparent plastic booths were each assigned 4 previously unacquainted personalities. Microphones connected each booth to the sound system mixer, and telephones linked the booths with a panel of 4 sociologists--Howard Becker, Sheldon Messinger, David Sudnow, and Paul Verden. Each sociologist was isolated from the room's sounds by headphones, so his conversation with his booth was amplified without his awareness of the content of other conversations. Additional sounds broadcast to the audience included soundtracks from commercial

video broadcasts, public telephone messages (time, weather, lost dog reports), and amplified sounds of the audience themselves. Complex audio tape mixes--done by Michael Callahan, Ramon Sender, and Morton Sabotnik, all of the San Francisco Tape Music Center--from 2 Ampex decks were mixed with the other stage sounds by Callahan and fed to 4 speakers, one in each corner of the auditorium. Two of the booths had their activities viewed on closed-circuit stage monitors, while other stage monitors showed the commercial TV broadcasts; to complete the visual mix on stage were images from 4 manually-operated slide projectors located in the aisles. Slides used were a prototype of USCO's Verbal American Landscape, shots of words from news media and street signs photographed by Ivan Majdrakoff. All of this involved 64 participants for the 2 nights and was received well by the audience; the San Francisco Chronicle reviewer panned the event, however, because of the indeterminancy of the work and the frequent feedback in the sound system.

Who R U ? and What's Happening? had been influenced strongly by Stern's reading in mid-1963 of a report by Marshall McLuhan to the National Association of Educational Broadcasters (the basis of his book, Understanding Media). One major result of these San Francisco shows was the determination of Stern, his wife Judi, and Michael Callahan to continue with media-barrage presentations of this sort. The next showing came at the annual arts festival at the University of British Columbia in Vancouver in January 1964. For this show, the Verbal American Landscape (V.A.L.) was complete, using 4 slide projectors, 2 tape decks, a 16mm film of the "Contact" octagon, and another 16mm film, Y, which juxtaposed highways, highway signs, closeups of a nude woman, highway sounds, and orgasm sounds. Partly by chance, McLuhan was another participant at the Vancouver festival; his reaction to the media presentation was not enthusiastic, but he soon developed better rapport with Stern.

After Vancouver, the Sterns added another 16mm film (of a December 1963 event called "Destruction" where participants brought cherished objects before a panel of judges who decided if the objects should be destroyed) and took V.A.L. on the road. The first 2 stops were at the University of Oregon (in Eugene) in January and the University of Utah (in Salt Lake City) in April of 1964. Both of these stops brought quick exits after the nude scenes. Calmer engagements were held at Carleton College (Minnesota) in April, the University of Wisconsin (in Madison) in April, and Trenton College (New Jersey) in May. At the University of Wisconsin, the new Kodak Carousel projectors were added, allowing faster pacing and better access to materials than was ever possible with hand-fed projectors. Further innovations were the order by early 1965 when V.A.L. was shown to a crowd of 500 at the University of Rochester. Here the group was called USCO for the first time, having added Callahan and Steve Durkee. They brought equipment as well as software, with Callahan providing 2 tape decks and 4 speakers, and Durkee adding two 8mm projectors to show the films he had made. Further, Paul Williams donated 4 Carousels mounted on tall tripods to straddle the auditorium seats. Various soundtracks from San Francisco were still used; additionally there was the "Billy Master"--referring to Billy Holliday--of speech fragments from various personalities (F.D.R., McLuhan, Timothy Leary, etc.) who had influenced Stern. McLuhan spoke before the Rochester performance, then he and USCO members answered questions. Later, V.A.L. continued to evolve, adding an oscilloscope, strobe machines, and diffraction machines to the previous elements. Renamed We Are All One, the USCO mind-blast was delivered at Brandeis University in both April and May, 1965.

One of the few events of the 1960's to exceed the spectacle of the USCO performances was the production of Karlheinz Stockhausen's Originale in early September of 1964. Judson Hall (across 57th St. from Carnegie Hall) served

as the location for this lavish 94-minute extravaganza directed by Allan Kaprow. Chairs were placed on the stage and in clusters around the floor area, while a large metal scaffolding was erected along one wall facing the mirrors covering the other long wall. All entries and actions in this production were carefully regulated by reference to a large central clock, but the effect was utter chaos to the audience. Stockhausen's score, Kontakte, consisted of street sounds and static on audio tape, plus enhancement by Max Neuhaus on percussion and James Tenney on piano. Other activities included Allan Ginsberg praying to Krishna, Michael Kirby hawking newspapers, Robert Breer showing one of his films and running a closed-circuit TV system, people yelling through bullhorns, and other people feeding goldfish in hanging bowls. One woman stripped to her underwear while members of the audience were pelted with leaflets, dried beans, pink toilet paper, and rotten green apples. Most of the audience showed enough spunk to throw the apples back. Chimpanzees and a dog were also regulars for the 5 performances, although at the 4th show the animals were delayed in traffic, so a lady and her blind dog were invited in from the street.

In addition to the USCO We Are All One performances already mentioned, there were many outstanding multimedia events in 1965, making it one of the most important years for this section of our study. Lacking further space, we will confine our details to the New Cinema Festival I from the late fall of that year. Other individual works which deserve at least passing mention, though, were done by Robert Whitman, Don Snyder, Aldo Tambellini, the ONCE Group, John Cage, Merce Cunningham, Stan VanDer Beek, and Robert Rauschenberg. Whitman's The Night Time Sky was done on May 14-16 at the First Theatre Rally, organized in NYC by Steve Paxton and Alan Solomon in TV studios at Broadway and 81st St. Spectators entered a large (50' diameter, 17' high) tent-like structure made of sheets, in which they were given shipboard feelings from film, audio tape, and environmental

lighting. At various times people appeared in holes in the dome to perform actions (playing records, projecting reflections of glass marbles); for the finale a film was shown on the dome, giving the spectators a view up through a toilet seat as a man dropped his pants, then dropped hugh feces toward the audience. Whitman said the viewers left "fertilized by the experience."[37] Other performances at the First Theatre Rally included Carolyn Brown's Balloon (a 20'x30' weather balloon for film projections, accompanied by dancers) on May 11-13 and Rauschenberg's Spring Training (which included a dancer with a small screen tied to her back) also on May 11-13.

Building on the multimedia light shows developed in San Francisco in the late 1950's and early 1960's (in which visual artists such as Tony Martin, Pauline Oliveros, and Lee Romaro added lights and/or liquid projections to the abstract tape music of such audio artists as Morton Sabotnik) at the S. F. Tape Music Center, such masters of the projected image as Don Snyder were able to take psychedelic art to a respectable level. On Monday nights during the summer of 1965 in NYC Timothy Leary's Castalia Foundation sponsored a Psychedelic Theatre at which Snyder was a noted participant. Such a work as Spectra-Mach I required four 16mm projectors, two 4-track audio tape decks, and 4 slide projectors to accomodate the designed dissolves and superimpositions. Other sophisticated psychedelic artists at Leary's theatre were Jackie Cassen and Rudi Stern and the resident masters, the USCO group.

Aldo Tamellini first hit the multimedia master level in 1965 with a grand work called Black Zero. His production involved hundreds of hand-painted black and white slides and films, all involving some variation on the black/white circle theme. A large black balloon, again representing the "black zero" concept, slowly emerged, grew, and burst to climax the presentation. Sound consisted of taped electronic music, plus the occasional use of live, amplified cello

music. Rauschenberg worked with environmental sound also, in his Oracle sculpture. Working in collaboration with Bell Laboratories' Billy Kluver, Rauschenberg gathered objects from the dumps and streets of NYC and equipped them all with a voice. Four of the objects--a funnel-shaped industrial duct, a window frame with a duct, a car door, and a staircase/console with hanging rubber tire--were mobile, and the fifth--a cistern that pumped water through a shower spray into a tank--was stationary. All of the objects had radios which could be tuned from the console, plus each one was capable of automatically changing stations at a set speed.

The most unique of the film-actor combinations of this period was "Unmarked Interchange" done by the ONCE Group at their "ONCE AGAIN" festival in Ann Arbor, Michigan. A 24'x36' screen was erected on the roof of a parking garage so that the Fred Astaire-Ginger Rogers film Top Hat could be shown. During the film, panels and drawer-like sections of the screen opened to reveal people performing diverse actions. One man read pornographic sections from THE STORY OF O, and a girl walked across a narrow catwalk to throw a custard pie in his face; another man played a small piano while a couple sat at a table with a candlelight dinner. All sounds were amplified along with the film's soundtrack, so the end result was a controlled madness of action and interaction. This event marked one of the few times since Piscator's newsreels that film not made specifically for a production was used in a major theatre piece.

Merce Cunningham's Variations V was presented on July 23, 1965, at the New York Philharmonic's French-American Festival; besides Cunningham's dance, there was music by John Cage and a 3-screen film and video projection by Stan VanDerBeek combining slides, film loops, images of Cunningham dancing, clips from the astronauts' space walks, and Nam June Piak's distorted TV images. Billy Kluver designed 10 photocells which triggered 10 radios and 10 tape decks when inter-

rupted by the dancers' shadows. Robert Moog contributed clusters of "spears" which emitted electronic sounds when approached. Cage was controlling the output of all this sound with a mixer designed by Max Matthews; Cunningham provided the finale by riding a bicycle through the spears.

Josef Svoboda even entered the American multimedia picture in February of 1965 with the only major electronic theatre mix he has staged in this country. Intoléranza was done in conjunction with the Boston Opera Company, and utilized 4 video projectors, three 12'x16' screens, and a large screen at the back of the stage used for rear projection of film. In addition to images on video tape, there were also closed-circuit projections from 2 house cameras (1 covering the stage and 1 on the audience), and remote broadcasts from studios up to 3 miles away. One studio broadcast additional actors (who monitored the stage actors from the studio) while the other provided special effects. Among the media interchange possibilities were images projected in negative form and 30-second delay repeats of the stage action--so the performers could respond to themselves. Such an imaginative use of video has rarely been rivaled.

Although the individual events noted above would have been sufficient for making 1965 a banner multimedia year, the crowning achievement was added in the form of John Brockman's New Cinema Festival I (often referred to as the Expanded Cinema Festival). This massive gathering of artists at the FilmMakers Cinematheque (Astor Place Playhouse, 434 Lafayette St., NYC) ran from mid-November through mid-December, gave many of these artists their first chance to meet and share with each other, attracted more mass press coverage than usual for an underground gathering, and served to solidify a consciousness of electronic media art as a worthwhile activity. New Cinema's impact was not noticeable immediately on the traditional cinema and theatre industries in New York--the 1964 World's Fair was probably more significant to public entertainment on the

East Coast at the time; however, the multiscreen/multimedia works which would become so familiar in New York and the rest of the nation in the latter 1960's were firmly built on standards first accepted by the practitioners at New Cinema Festival I.

27 artists with divergent interests in the cinema performed a variety of works, many of them multimedia combinations. While it would be impractical to describe all of the entries here, let us examine some of the more notable ones under 3 general headings: Happenings, multiscreen works, and Intermedia combinations of film and performers. First, several Happening-like activities centered on ritual.

John Vacarro's Rites of the Nadir was described by Jonas Mekas as a "theatre ritual";[38] Jack Smith's Rehearsal for the Destruction of Atlantis involved a huge red lobster, costumes, and active, violent theatrics; Piero Helizar's The Last Rites featured music by Angus MacLise and a tiny 8mm image on a huge screen which was blessed by "bishop" Helizar. MacLise's own Rites of the Dreamweapon was delivered in 3 parts; Part III ("The Mysteries of the Essence Chamber") was based on blasting rock music from the Velvet Underground combined with a stageful of strange objects lit by a revolving red/green beacon. People danced and walked on the stage at random while two 16mm's beamed on a thin screen in front of the stage. One of the projectors had no film, and the other had a short loop of unrecognizable objects; occasionally the projectors swiveled their light beams around the room, and frequently the lenses were covered with various colored filters.

On December 1 the Cinematheque moved to new quarters at 125 W. 41st St., with the first night's program devoted to the works of Oldenberg, Rauschenberg, and Whitman. Claus Oldenberg continued his involvement with Happenings by offering Moviehouse, with the audience in the aisles and projector light sans

film shining on them. As performers wandered about in the seats, usherettes gave activity cards to spectators and performers and a live, rhythmic piano tune accompanied the piece. Rauschenberg's Map Room II was a staged Happening with such elements as Deborah Hay in flesh-toned tights assuming a unified form with a flesh-toned couch as film was projected on white cards hung on the backs of some spectators. Rauschenberg walked around with a neon tube lit by energy conducted through his body from a Tessler Coil. Whitman's Prune. Flat. was regarded by many reviewers as the most impressive, unified work of the festival. Interaction between live performers and their filmed counterparts was so identical at times that reality became an extraordinarily confused issue. For much of the performance, 2 stage actresses matched actions with their filmed doubles on a large screen at the back of the stage. The highlight of the show came when a third actress, in a long white gown, mimicked her own disrobing actions that were being projected on her gown; when she completed her "strip" her nude image was superimposed onto her actual presence in the white gown.

Other memorable works combining performers and film included (1) Ed Emschwiller's Body Works in which 4 dancers in white received images of themselves from three 8mm projectors and two 16mm projectors, all hand carried; 3 portable screens and a fragmentation mirror were also used in this ½ hr. piece; (2) Roberts Blossom's "Duet for One Person" and "Poem for the Theatre," both performed by Beverly Schmidt; Blossom's Filmstage--a combination of actors with films, slides, and audio tape of themselves or other actors--existed in the NYC area since 1961; (3) Sames by Ken Dewey and Terry Riley, in which 5 women dressed in wedding gowns stood in somber poses on stage while film was projected on the ceiling; concurrently, light was reflected and diffracted around the audience by mirrors at the sides and rear of the theatre; (4) VanDerBeek's Pastoral: et

al in which dancers carried miniature screens that caught films of more dance by Elaine Summers and Bert Supree.

VanDerBeek also serves as our transition into multiscreen works with Move Movies and Feedback # 1: A Movie Mural. The former used 4 film projectors, 3 slide projectors, and a flashlight; 2 of the projectors faced screens on the stage, while the other 5 were carried around by assistants who often beamed the images into the audience. Feedback employed 5 film and 3 slide projectors, plus 2 audio tape decks. This piece filled the entire auditorium with images and sounds, much to the delight of the audience. Another spectacular multi-image work was Don Snyder's Epiphany of Light, using 2 dissolving slide images and film, with the images either synched or counterpointed to the audio track. Standish Lawder's March of the Garter Snakes, first developed in 1960, made use of 2 screens of kinetic slides. Beginning with photos of various sorts (single and multiple images, natural and abstract forms), Lawder progressed to "sandwiches" of glass containing such materials as lipstick, butter, and fingernail polish. When left in the projectors, the heat would cause these ingredients to burn, buckle, bubble, and otherwise produce movement from a still format.

USCO's contribution to the festival was Ghost Rev, named for a film shot by Jud Yalkut from a speeding motorcycle. 3 copies of the same film were shown as separate images, similar images moving at different projector speeds, and superimposed images--occasionally of different sizes as varying projection lenses were used. Callahan's soundtrack was on 4 monaural tracks fed to 4 speakers with a switching device to give directional control to the sound. Surviving from the old road show were the two 8mm projectors and the 4 slide projectors; however, further dimensions were added to the word slides by Carolee Schneeman and 2 of her dancers who painted the words onto the screen as they were projected. The resulting verbal buildup added further meanings to the

later images. Steve Durkee continued this action when the show was done as Hubbub on December 7 at the Rhode Island School of Design, on December 9 at the Massachusetts Institute of Technology, on December 12 at the State University of New York at Buffalo, then again at the Cinematheque on January 18-23, 1966. As Hubbub the show had 6 movements--CATHODE RAY, HIGHFREETHRUSAFEWAY, Y, GHOST REV, DIFFRACTION FILM, and OMIX--with the 2nd and 3rd being leftovers from V.A.L. and the others made either for Ghost Rev or Hubbub. Jud Yalkut's DIFFRACTION FILM was shot through a multi-diffraction filter and accompanied by sounds of water, birds, and frogs. OMIX was a strong, simple use of the oscilloscope combined with sounds of a heartbeat and chanting of the Hindu holy word "OM." Other sights and sounds from the total work included people walking in cities, slogans, road signs, screen celebrities, common objects, commercial products, highway images, Beatle songs, speeches, and TV ads. Reactions were mixed at all the performances, with the R.I.S.D. students being the most hostile even though this audience was given an added element--live rock music from The Overwhelming Odds.

Since the accomplishments of New Cinema Festival I there has been only one other electronic media festival to even approach its scope and quality. This other memorable gathering was the E.A.T. celebration called Nine Evenings of Theatre and Engineering. Held in the same 69th Regiment Armory on 25th St. and Lexington Avenue as the notorious 1913 show of modern European painting, the Nine Evenings received the same divided critical reaction as its predecessor 50 years before.[39] Certainly some of these presentations, which ran between October 13-23, 1966, were more successful than others, but they are all important for their explicit attempts to involve the expertise of engineers in the creation of art works. Unfortunately the visions were often more than technology or agreements with labor unions could handle, but the end results were seen by 10,000 spectators, a remarkable crowd for avante-garde works.

Each presentation was done twice during the run of the festival, with most having no rehearsal. Events done were the following: Physical Things by Steve Paxton, engineered by Dick Wolff; Solo by Deborah Hay, engineered by Larry Helios; Vehicle by Lucinda Childs, engineered by Peter Hirsch; Carriage: Discreteness by Yvonne Rainer, engineered by Per Biorn; Grass Field by Alex Hay, engineered by Herb Schneider; Two Holes of Water---3 by Robert Whitman, engineered by Robby Robinson; Kisses Sweeter than Wine by Oyvind Fahlstrom, engineered by Harold Hodges; Open Score by Robert Rauschenberg, engineered by Jim McGee; Bandoneon! by David Tudor, engineered by Fred Waldron; and Variations VII by John Cage, engineered by Cecil Coker. The first 4 were dance pieces, the next 4 evolved from Happenings and Intermedia, and the last 2 were basically electronic music works, although Bandoneon! did use some projected TV images, and Cage's entry was environmental in that it mixed and amplified sounds from within and without the Armory.

Most of these experiments were interesting in themselves, and have some relevance for multimedia explorations. Solo had dancers performing stiff movements while 8 other people moved brown platforms by remote control. Vehicle offered Alex Hay hovering over the floor in a transparent box, various projections on 3 screens behind the performers, and lighting intensity controlled by incoming signals from radio station WQXR. Physical Things involved people with transistor radios walking around in a huge transparent plastic dome and cylinder apparatus. Kisses Sweeter than Wine was a series of anger-motivated actions (pillow fight in a golf cart, huge head of L.B.J. carried around) seemingly uninvolved with electronic media.[40]

As with the New Cinema Festival I, Robert Whitman's performance received some of the best reviews of the Nine Evenings because he built his work on a powerful structure. Among the elements he used were remote-controlled, plastic-

covered cars; audio tapes of typing and Vietnam destruction; and films of travel penguins, a girl disrobing, girls standing before their reflections on a balcony, and closeups of hands. Hay's Grass Field seemed to be a metaphor of McLuhan's media-as-extensions-of-man theory. He began the piece by slowly laying out squares of flesh-covered canvas with numbers stenciled on them. When he completed this action, he sat in the center of the space and attached devices which amplified his body noises over the speaker system. Then, as Hay's enlarged closed-circuit TV image watched the area, Steve Paxton and Robert Rauschenberg meticulously picked up each square with slender poles and carried the canvas pieces to 1 of 2 piles. After all squares had been retrieved, the 3 men left the arena.

Open Score began with a tennis match between Frank Stella and Mimi Kanarek. An electronic "ping" at each ball/racquet contact was amplified to the audience; these contacts also singularly extinguished each light in the hall, with the game finishing in the dark. The next section involved 300 people who entered the darkened Armory and were introduced on audio tape as their images were projected on 3 large, closed-circuit TV screens. Here the media were capable of showing the audience something they could not see for themselves since the cameras operated with infrared light. To conclude the piece, Rauschenberg carried around Simone Whitman, who sang from within a canvas bag. One spotlight followed their movement, then darkened at the end. Carriage Discreteness had 16 people wearing wrist walkie-talkies, carrying around objects at the direction of Ms. Rainer. Simultaneously, the sound system carried a conversation between a man and a woman while 2 screens showed film clips of W. C. Fields and James Cagney. There was some excitement in the form of cardboard strips dropping from the ceiling and a man swinging down from the balcony, but most of the action was so slow and deliberate that one spectator finally entered the arena and tossed

a foam block to a performer. As he was led away, he explained that he only wanted to get some life into the event. For many of the viewers at the Nine Evenings, his sentiments were the clearest message.

Although there have been no major Intermedia festivals since 1966, there have been some spectacular events, one of which was Marta Minujin's mammoth multi-mass-media Happening, Simultaneity in Simultaneity, done on October 24, 1966, in Buenos Aires. A week prior to the actual event, a group of 60 local celebrities came to a TV studio and were filmed and photographed as they entered. Near midnight of the 24th, 35 of these celebrities returned to the studio, dressed as they had been the week before. Each entrance was broadcast to home viewers, who knew of the event from prior publicity. As a celebrity entered the studio, filmed front shots of him from the previous week were shown on the back wall of the studio, rear shots were shown on the front wall, and a series of 9 sideview slides were projected on the side wall. After each entrance display, the person was given a transistor radio and instructed to sit in a chair facing a TV monitor.

At 12:04 a.m. the studio participants and home viewers all watched the same 10-minute videotape and listened to the soundtrack broadcast on Radio Municipal and Radio Libertad (switching stations was required to hear the entire broadcast). 500 home viewers received a simultaneous telephone call ("You are a creator. Look at your environment."), and 100 of these people also received telegrams ("You are a creator." signed "Simultaneity in Simultaneity") while they watched 3 TV celebrities receive similar telephone calls and telegrams. Marta introduced the celebrities, but no sound was heard since her speech had been printed in that day's newspaper for viewers to read as she spoke. Original plans for the event to be even larger in scale failed to materialize when satellite telephone calls from Allan Kaprow in the USA and Wolf Vostell in

Germany did not come through. International air travel by these Happeners during the course of the event was also contemplated. Such novel, impressive uses of electronic media and mass media have seldom been equalled.

1967 saw at least 2 examples of multimedia mixtures incorporated into contemporary Environmental Theatre productions. In NYC, the "Angry Arts Against the War in Vietnam Week" (January 29-February 5) included 3 performances of American Atrocities in Vietnam, first at Second Avenue's Gate Theatre, then at the former courthouse at Second Avenue and 2nd St. Included in the highly mobile play were Alain Resnais' 1955 film about Nazi concentration camps, Night And Fog (color and b/w, 30 min.), slides of soldiers and peasants in Vietnam, slides of antiwar art by Goya, Bosch, etc., and audio tape sound effects. In the fall of that year, the New Orleans Group presented Ionesco's Victims of Duty, using audio tape, slides, films (which were occasionally projected simultaneously with the slides), and closed-circuit TV in an active Environmental performance. The electronic media even continued the show after the actors were finished; some of the audience remained, enthralled by the media, for an hour after the performance was over.[41]

Intermedia Environments of a more abstract nature were also to be found in the later 1960's. One of the best was Otto Piene's The Proliferation of the Sun, done 20 times in 1967 at Aldo Tambellini's NYC multimedia theatre, The Black Gate. Later this same exhibit was presented at Nuremberg's Kunsthalle. It used about a dozen projectionists, 8,000 slides, microphones, sounds on audio tape, balloons, and compressed air in a 35-minute performance situation, while spectators laid on the floor absorbing the bombardment. Other impressive multimedia Environments were created in the studios of WGBH-TV, Boston, in the winter of 1968 as part of their series of experimental video broadcasts, "The Medium is the Medium." Nam June Piak combined 12 of his modified TV sets, 2 nude

dancers, film of Richard Nixon and other personalities, and a recording of "Moonlight Sonata" into an untitled television mix. Aldo Tambellini's Black used 30 Negro children, onto whom were projected 1,000 slides and seven 16mm films. Three TV cameras mixed different views of this visual collage onto the final video tape. These WGBH-TV Environments, like the Alwin Nicholias multi-media dance piece, "Relay," broadcast on NET in the late 1960's present an interesting semantic problem. Are they Intermedia in their final form, since that form is the contained, synchronized medium of video tape? In the case of the Nicholias work, I am inclined to call it purely a video tape since its elements--no matter how diverse--were slowly and carefully mixed and edited at the studio, in the manner of a commercial film. The Piak and Tambellini creations, however, existed both as Intermedia (in the original studio situation) and as the single medium of a broadcast TV program on video tape. Of course, both forms are valid artistic experiences.

Some true video Intermedia was achieved by Richard Felciano, working with KQED in San Francisco in another series of experimental broadcasts earlier in 1968. In January, his "Trio for Speaker, Screen, and Viewer" was broadcast as the first video/music piece requiring audience participation for its existence. Instructions were given to the viewers to turn off the room lights, gather kitchen instruments, and perform directed activities with the utensils as specific light patterns were flashed on the screen. The piece ended on white light, signaling the viewers to turn on their room lights. Another video/music piece by Felciano in 1968 was Linearity, done in 2 parts. In the first, a harpist performed in a TV studio and her miked music was fed into a Don Bukla synthesizer. Felciano determined the output of the synthesizer, which served as the soundtrack for the videotape of the harpist. When she saw this tape, she played responses to what she saw based on Felciano's directions; thus the

final tape was a blend of the first tape and the second live performance, with the result determined as much by the first tape as by the artists involved.

One final attempt was made in the spring of 1968 to carry on the idea of a coherent Intermedia festival. Encouraged by Gerd Stern and John Brockman, the New York State Council on the Arts and the National Council on the Arts sponsored Intermedia '68 as an examination of the current state of new art forms. Twelve artists were commissioned to create new works which were presented on 6 New York state college campuses during March and April, with the initial unveiling in NYC on March 4 as a Museum of Modern Art benefit. Among the events were Dick Higgins' Danger Music # 2, in which the participants waved incense sticks; a version of Tambellini's Black Zero; Word, Dance, Music, a song, dance, and piano act by Al Carmines, Renny Carlip, and Aileen Passloff; Elm City Garage Works, a Happening by Ken Dewey; Les Levine's Photon: Strangeness 4, an Environment of wires, fish-eye mirrors, and television cameras; and Allan Kaprow's Round Trip, where people rolled a large paper ball from each end of a tunnel to meet in the middle (another Kaprow contribution was Overtime, in which 200' of fence was moved 1 mile through a woods).

Works more directly involved with Intermedia were done by USCO, Carolee Schneeman, and Trisha Brown Schlichter. Ms. Schlichter's dancers wore black and white costumes and climbed on a 13' wall bathed in film images; a dancer could "disappear" by turning the black side of the costume toward the film. Schneeman's Illinois Central Transposed was a theatre piece, using film, slides, dances, and audience participation. At one point, the audience covered the 8 dancers with glue, and the dancers then wallowed in scraps of paper. USCO's Ten-Foot Fanflashtic began as a 10'-high, 10'-wide plastic cylinder sculpture in which fans could blow around macaroni-shaped packing material. As the idea grew, a support apparatus with an aluminum floor was added so that the cylinder could hold 40 spectators. Black, white, and colored balloons were used in place

of the packing material, 4 strobe lights flashed with 20 flashes per second in various combinations to provide 45 possible silhouette patterns, and a 20-minute audio loop of rock music, classical music, babies crying, and other sounds played continuously as people watched or entered Fanflashtic. Audience response for this multimedia sculptural Environment was quite good, as was the case with responses to other works in the series. Still, by 1968 a changed American economy was making the idea of a significant multimedia gathering with extravagant new works a highly unlikely situation. Individual artists were usually straining to find support; groups and festivals were just too expensive to justify investments, except for World's Fair-type situations. Multimedia experiments were getting too technologically complex to support wide-scale artistic explorations.

Summer 1968 brought a strange blend of rock discotheque atmosphere and avante-garde music at the Electric Circus. Each Monday night for most of that summer a series of "Electric Ear" concerts was given at the Circus, featuring such serious musicians as Mel Powell, Pauline Oliveros, Michael Sahl, David Behrman, William Russo, Lejaren Hiller, and Morton Subotnik. Among the works which went beyond the scope of a tape music concert was Shelter 9999, by Alvin Lucier and Takahiko Iimura. This piece began with 4 people in dark glasses making clicking noises like bats, followed by 45 minutes of taped electronic music and 3 screens of slides and film (much shot from newspapers) by Iimura. Brilliant white lights then flashed off and on for 15 minutes; afterward, Lucier and his colleagues departed blowing conch shells. Salvatore Martirano's L.'s G. A. (Lincoln's Gettysburg Address) was the most multimedia-oriented of all the "Electric Ear" works, and it carried the most discernible narrative content as well. In addition to Martirano's electronic music, there were 3 screens of films by Ronald Nameth and poetry by Michael Holliday. Political commentary,

statements on war and space travel, and references to television soap operas were all worked into the content of this strange piece of music.

A few important multimedia festivals have been held outside the USA, with the most likely locations being in Germany, Venezuela, and Argentina--all home countries of major Happeners, kinetic sculptors, and lumia artists.[42] One of the few such events to take place in Asia was the 3-day "Crosstalk" festival, held in Tokyo in early February 1969. Held in the basketball gym built for the 1964 Tokyo Olympics, this gathering included Japanese--Toru Takemitsu, Toshi Ichiyunagi, joji Yuasa, Toshi Matsumoto, Takahiko Iimura, Tatsumi Hajikata--and Americans--Stan VanDerBeek, Gordon Mumma, Robert Ashley, Salvatore Martirano, John Cage. We can appreciate the nature of the festival by observing 2 representative works. Hajikata's Holy Ghost Vacuum or America Faints was intended for 1 dancer, 11 old women, 10 cows, 1 giraffe, and title music by George Cacippo. VanDerBeek's Found Forms called for 7 assistants to carry 8'x12' screens around the basketball court while he followed them with projectors mounted on swivel bases. Such works remind us of the high value attached to freedom of interchange and indeterminancy of results in most Intermedia varieties of multimedia theatre.

To end this section on avante-garde multimedia experiments in the 1960's, we turn again to our starting point, John Cage. On May 16, 1969, Cage filled the University of Illinois' 16,000-seat Assembly Hall with a 5-hour marathon of sight and sound known as HPSCHD. The title refers to the computer abbreviation for harpsichord, an instrument of which there were 7 on stage that night. Three of the musicians played fixed versions of Mozart's 18th century "Introduction to the Composition of Waltzes by Means of Dice," a work admired by Cage. Of the other musicians, Neely Bruce and Yuri Takahashi played fixed collages of music from Mozart to the present, David Tudor offered "computer print-outs for

12-tone gamut," and Phillip Corner was allowed to play any Mozart he wished. Further, all of the musicians were permitted to play any part of anyone else's solos. To insure that there would be ample music to fill the space, Cage added to the 7 amplified harpsichords 52 tapes of electronic music composed by himself and Lejaren Hiller. The electronic pieces involved octaves of 5 to 56 tones so the variety was endless; volume was a chaotic variable also since each of the 59 sources had its own amplifier, speaker, and controls.

Inside the building eleven 40'x100' plastic screens ringed the central performing space; over these hung an enclosing screen 125' high and 340' around. On these surfaces Ronald Nameth programmed 100 films and 8,000 slides dealing with man's ever-increasing awareness of his place in the universe--from cave paintings to space walks. Outside, 52 slide projectors bathed the plastic-covered windows with images that could be seen from both inside and out.

The Present

Although we have concentrated on the early development of Intermedia and its direct precursors, then focused on significant multimedia events of the 1960's, these space allotments should in no way indicate that multimedia usage is past its prime. Instead, this newest of our art and communication forms has established itself as both a livelihood and an academic discipline. Almost every urban center in our country has local production agencies that either offer or specialize in multimedia production. Nationally, there are well over 100 companies with interstate distribution producing various types of multimedia software. Public schools are the main market for the "multimedia kits" that many of these companies offer, but there are also regional and national producers making the kinds of "multimedia shows" that have occupied the bulk of this chapter. Business and industrial concerns offer a fertile market for multimedia presentations, both as board meeting instructional devices and as

convention entertainment and fact-sharing. In fact, the informational slide/tape presentation is finding increasing use from all types of governmental agencies, civic groups, and private organizations as an effective, yet relatively inexpensive means, of spreading ideas and building public awareness. School systems have accepted multimedia programs as a logical and useful part of the A-V explosion--the same movement that gave us self-paced learning and individualized instruction, with machines such as audio and video cassette players a necessary development. Multiple-screen learning situations have proved quite effective in studying contrasts, comparisons, interrelationships, and details, as well as simply being more exciting to look at, thereby increasing student attention and participation. Finally, several institutions of higher learning have added courses in multimedia research, design, and production; while normally offered in areas such as communication and education, it is not unusual to find multimedia production classes in psychology and history programs.

As far as multimedia combinations in art and entertainment are concerned, we find the same saturation as just noted in education. Not that multimedia programs are competing with television or film for the mass audience, but rather we find our visual mass media have incorporated much of what was learned from the multiscreen spectacular. Beginning at least as early as The Thomas Crown Affair in 1968, and progressing through other popular films such as Woodstock and Superfly, we find effective uses of simultaneous activities, multiple views of an event, and even multiple still shots to develop a scene. Metromedia's Let The Good Times Roll--a documentary of late 1950's and early 1960's rock music and American popular culture, released in the summer of 1973--made extensive use of split-screen and multiple mirror-image effects with striking visual results. This film also used some subject-matter juxtaposition bordering on social and political commentary, a technique polished nicely in multi-image slide shows.

We have noted before that some multi-screen developments were economically necessary to avoid the high costs of a multiple-image wide-screen film. Now we have come full circle to where the multiscreen techniques have matured enough in slide shows to warrant inclusion in commercial films.[43] This is a most fortunate development, since duplication and standardization of presentation facilities for any sort of multimedia programs distribution is a difficult procedure. The sheer variety of possibilities for multimedia formats, not to mention purposes, running times, and ingredients, makes the construction of a multimedia theatre a very risky and expensive business.

An example of an attempt at a multimedia theatre was made in Austin, Texas, in the spring of 1972; however, the results were not encouraging. Experiment Theatre was a 150-seat auditorium equipped with 4 Kodak Pageant 16mm projectors, 20 Kodak Ektagraphic slide projectors complete with 10 modified dissolve units, Sony quadradial sound, and a specially-designed 24-channel programmer to run the entire operation. Plans called for similar theatres to be built in other college towns (Austin sports the University of Texas), if the original Experiment proved successful. For a short time, this facility existed as the only commercial outlet in the country for serious dramatic multimedia, with hopes that it could house theatrical as well as cinematic projects. Unfortunately, 4 months of operation proved to be too financially straining, so the special gear was sold in favor of commercial film reruns. Some have speculated that a serious multimedia work offered for regular consumption cannot compete in terms of interest or clarity with a regular 1-screen film; however, in this case, it is more likely that much of the fault lay with the competence of the local producer. Whatever the reason, Experiment-type theatres have been presently shelved as viable outlets for independent multimedia products.

Multimedia theatres have survived in another form, though. Beginning with the San Francisco version in 1970, the Bing Crosby/Trans Lux Experience Theatres

have enjoyed sustaining success. Besides the West Coast location, there are Experience Theatres in Honolulu, New Orleans, Chicago and NYC, each playing heavily to the tourist trade with several 1-hour shows a day. In addition to a long, horizontal configuration of square screens onto which a few dozen slide projectors (arranged in the 4-on-1-screen matrix described at the Electric Circus), 3 or so 16mm projectors, and numerous special effects projectors and color wheels throw images, there are environmental effects indigenous to the locale. Thus, in San Francisco the seats shake during the earthquake sequence, in Honolulu the room temperature rises to embellish images of volcanos, and in New York "East River fog" literally sprays out from under the screen, covering the theatre. All of these locations offer well-produced, technically sharp entertainment vehicles. While these theatres are not currently available to independent multimedia artists, at least their very existence may provide a starting point for commercial multimedia programs some day, if the owners could allow a periodic "open stage" for local talent.

Another activity that has developed a multi-screen variant is the public video gallery. While those are not too common yet, it is quite likely that other cities will soon join such centers as New York in supporting commercial video screening rooms like The Global Village and The Kitchen, both in Manhattan. Surely there are quasi-public viewing centers scattered around the country already; the number of known video coops for portable (½" tape) productions are of necessity involved in some type of playback facilities. As interest grows in these groups, and financial support becomes more stabile, we will see more public video galleries, many of them using the multiple-monitor display situations common in NYC. Usually these multi-images are duplicates from 1 source, but the possibility of combining 2 or more tapes with any number of monitors alloted to any of the sources sets up fascinating potential for

this type of creative activity. Whether working with single or multiple sources, the video artist has an advantage with his self-contained screens that can be arranged in a 1-plane cinematic format or in an environmental distribution, depending on whether he wants rapt attention or audience movement and interaction.

Cinematic multimedia programs seem to be holding their own quite well in a number of occupations, but stage multimedia combinations may be in for a rather limited future as long as the current financial pinch on the performing arts continues. Recent years have certainly seen the continued use of projections in the traditional theatre--still and motion, front and rear screen--in such works as Inquest, Company, Coco, and A Funny Thing Happened on the Way to the Forum. Still, Broadway producers have a general feeling that the expense and inconvenience of projections more complex than Linnebach lanterns, plus the dearth of truly original lumia designers, makes dramatic stage projections a rather dubious business.[44] True geniuses like Svoboda and Nicholias will surely continue to find support for their complex ventures into electronic art, and creators of low-budget Environmental and Guerrilla Theatre intended for small audiences will likely find continuing uses for projections and audio tape. Yet, there is a limit for electronics use with avante-garde playwrights and writers, as Michael Kirby noted in a discussion with this author. Those without training in filmmaking and electronic manipulation find it hard to transcend a basic level of ability; after seeing what is possible with the backing of a World's Fair showcase or a commercial film or even a Broadway success, it can sometimes be hard to settle for 1 screen of slides or hand-spliced film. Definitely there is need for even further collaboration between young filmmakers and playwrights, each learning more of the other's art and expanding the inherent possibilities of the combination of media. An inspirational group for

such aspirants is the Elaine Summers Dance Company, a component of Ms. Summer's Experimental Intermedia Film Foundation. One of their recent works was Energy Changes, presented on September 21 and 22, 1973, in the sculpture garden of The Museum of Modern Art. Dancers moved to the music of Carman Moore and Philip Corner, performing gracefully through the statues and interacting with 3 films--Bodyscape, City People Moving, and Collage. Spectators were also encouraged to join in the movements and/or contribute additional instrumentation. A similar concept, Celebrations in City Places, was done in September of 1972 by Ms. Summers and troupe in the plaza of the Seagram's Building, using films of the space taken during the preceding months.

We now find multimedia communication evolved past the easy, early years of sensory and sensual self-awareness. There are now artists who have mastered the problems of image mixing and pacing, engineers who can build and maintain complex control systems, researchers who can analyze presentations and facilities with resulting design and delivery improvements, and audiences who have seen enough to be justly critical and appreciative. The future of American art, education, and entertainment is unquestionably linked to electronics, with multimedia combinations having a common future in all of these fields. Students of multimedia design will find themselves as interdisciplinary masters of each medium they employ, whether the contributing elements be slides, films, tapes, performers, or more physical experiences like temperature, motion, darkness, glare, silence, pain, or stimulating pleasure. Knowledge and professional training are the key words for the future of multimedia development. Imagination will be the legacy from the present.

POSTSCRIPT: 1978

Since the time when the preceding article was compiled and the present, two notable events occurred--Expo 74 in Spokane and the formation of the Association for Multi-Image (AMI) in the summer of 1974. In that Expo 74 merely continues the tradition of other World's Fairs described in this text, a description of its events has been relegated to Appendix A. This is not to cast any doubts on the quality of its exhibits, but simply recognizes that large-scale multi-image programs and Intermedia combinations reached the present limits of conceptualization in the 1960's and now are working primarily on technical sophistication. Similarly, recent multi-image programs at sales meetings, conventions, and training seminars have reached an incredible state of presentation control--especially in animation effects--but these marvels are breaking little new ground from the 1939 and 1947 Vitarama presentations. Thus, most of the best-known contemporary producers are not mentioned in this history because they are carrying on a tradition rather than establishing one. Individual programs may be breath-taking, but they are all a constant series of recombinations of what has been described here. We have reached a conceptual plateau which will not be transcended until the focus shifts from technology to program design and accompanying research into perception of multi-image.

AMI comes in for some special attention because it has continued to emerge as the legitimate voice for development of all types of multimedia programs. Through its publications, its Archives and Clearinghouse, its work in achieving terminology and presentation standards, and its sponsorship of nationwide multi-image festivals, the organization has gained the respect of the entire spectrum of multimedia producers and consumers. The increasing creditability of AMI helps bring order, stability, and progress to this complex electronic adventureland.

FOOTNOTES

[1]Copious descriptions of conventional cinematic wide-screen processes can be found in Kenneth MacGowan's Behind the Screen (1960) and Donald Perrin's U.S.C. dissertation, "A History and Analysis of Simultaneous Projected Images in Educational Communication" (1969).

[2]Experimental Cinema (1971), p. 14.

[3]Edwin S. Porter's Life of an American Fireman (1903) used what is considered the cinema's first split-screen shot--a vignette of the fireman's wife and child in the upper right corner, with the sleeping fireman filling the rest of the frame. Some multiple imagery was occasionally used in early films, including D. W. Griffith's spectacular The Birth of a Nation (1915). In later years, split screen effects have often been used to show such things as both ends of a telephone conversation. Of course, simultaneous images are a logical extension of simultaneous plot structures developed in editing and the rapidly-shifting visual viewpoints of Soviet montage.

[4]George Nelson, "Art X: The Georgia Experiment," Industrial Design, October 1954, pp. 41-51.

[5]Vortex was the apex of serious lumia art in the 1950's, but there had certainly been older noteworthy attempts at manipulating light and color, sometimes in conjunction with music. Among the most significant results were: (1) the Piano Opto-Phonic, developed in Russia in 1914 by Vladimar Baranoff-Rossiné: this machine, in which a motor was "played" by an electric piano and projected images painted on a glass disk, was used at a concert in Moscow's Meyerhold

Theatre in 1922; (2) Alexander Scriabin's Prometheus, written in 1910 and performed at Carnegie Hall on March 20, 1915, in which colored light projections were coordinated to an orchestral composition; (3) Thomas Wilfred's Clavilux, the world's first successful color organ (soundless), which was invented in 1919 and premiered at NYC's Neighborhood Playhouse on January 20, 1922. After Vortex in the 1960's there were hundreds of popularized discotheque "light shows," but the art of lumia was mostly advanced by kinetic sculptures. One of the more important lumia exhibitions was "Lights in Orbit," held in February 1967 in NYC's Howard Wise Gallery. Among the artists represented were USCO, Nam June Piak, Otto Piene, and Thomas Wilfred.

[6]The distinction between an Intermedia presentation such as Polyekran--where the tangible natures of different media are explored--and a multi-image film such as Woodstock is the definitional perplextion most often explored with multimedia. An even more complex semantic problem is the difference between Intermedia and a film (or videotape) in which the audio and images are not redundant reinforcements. Such a film is rare, since even the most abstract computer films with soundtracks usually result from careful synchronization in timing and mood between image and sound. Films in which abstract images and sounds are synched date from at least 1929 when Walter Ruttman's Melody of The World provided animated forms to match the moods of classical and modern music. Possibly, Intermedia films were created by Oscar Fischinger with Experiments In Hand-Drawn Sound (1932) and Norman McLaren with Allegro (1932), when they scratched the soundtracks directly onto the film; however, this author can make no judgments since he knows nothing of the visual content of these films. Of course, an Intermedia experience can be created with any film if it is joined with a distinctly-separate soundtrack. An example is Warhol's SLEEP

(1963), a silent film originally shown in conjunction with 2 transistor radios tuned to different rock music stations. This may or may not have been "good" Intermedia, but definitions are not intended to indicate quality.

[7]Public schools have dealt with electrically-operated audio-visual aids since at least 1893, when A. W. Clancy was appointed Education Director of the North American Phonograph Company. Amelia Mussiner had the honor of being the first A-V Director of a public school system when she became Curator of the St. Louis Education Museum in 1904. In 1917 the Chicago Board of Education became the recipient of the first slide library for scholastic purposes; a film library was also begun that same year in Chicago, after the slides had been donated by the Chicago Projection Club, a volunteer school-aid group.

[8]In Joseph Klapper's The Effects of Mass Communication (New York: The Free Press, 1960), pp. 109-110, he uses "multimedia" to refer to several separate media used in a lecture, political campaign, or advertising campaign. Apparently, this is the first published use of the word as an adjective. Popularity of the term "multimedia" led to the instructional units produced at the University of Wisconsin being referred to as "multimedia shows" or "multimedia programs." Soon this was shortened to "multimedia" used as a noun to refer to these slide/tape/film combinations, and this terminology was accepted in the popular press. Purely for semantic clarity, I continue to use "multimedia" as originally intended--an adjective--and "multimedia program" as the noun form.

[9]See particularly Richard H. Hubbard, "Telemation: AV Electronically Controlled," Audio Visual Instruction, November 1961, and Gerald F. McVey, "Multimedia Instructional Laboratory," Audio Visual Instruction, February 1966.

[10]Vsevolod Meyerhold, Meyerhold on Theatre, Edward Braun, ed. and trans., (1969), pp. 76, 99-103.

[11]A sample of The Miracle's script can be found in Michael Kirby's The Art of Time (1969), in an excellent chapter on "Environmental Theatre." Kirby notes the scarcity of American Environmental works between the 1920's and the 1960's. One of the few significant examples of this theatrical form in the USA during these years was Olsen and Johnson's crazy Broadway revue of 1938, Hellzapoppin. This series of skits contained such elements as film of Hitler with a dubbed Jewish accent, a semi-nude male equestrian in the balcony, an orangutan in a box seat, and puffed rice poured on the audience while the lights were out. Different versions of this revue were also done after World War II.

[12]Some of the ballet's actions were the dancers smoking and changing costumes on stage, a "fireman" pouring water into buckets, a nude couple standing near the edge of the stage in Cranach's Adam and Eve pose, and Man Ray sitting in a chair on stage and occasionally walking around while bright lights almost blinded the audience. Concerning Entr'acte, supposedly there was an accompanying score written by Erik Satie, but this is now lost. Picabia claims he wanted the soundtrack to be audience noises, but they would not respond even when he beseeched them. If true, this concept predates Cage's famous piano silence, 4' 33", by almost 30 years.

[13]Leo Kerz, "Brecht and Piscator," Educational Theatre Journal, October 1968, p. 366.

[14]Bertold Brecht, Brecht on Theatre (1964), p. 131.

[15]Jeffery Embler, "A Historical Study of the Use of Film to Provide Additional Content to Theatrical Productions on the Legitimate Stage," unpublished Ph.D. dissertation, The University of Pittsburgh (1971), p. 58. Embler is presenting a translation of Piscator's Das Politische Theatre (1929), an excellent primary source. The best English source on Piscator is by his wife: Maria Ley-Piscator, The Piscator Experiment: The Political Theatre (1967).

[16]The Sturmflut footage was by I. A. Hubler-Kahla, with scenery by Edward Suhr. Hoppla, Wir Leben! had scenery by Traugott Muller, projections by John Heartfield, music by Edmund Meisel, choreography by Mary Wigman, and newsreel film edited by Kurt Oertel and Victor Blum. Such events as the Russian Revolution, Mussolini's march on Rome, the Scopes Trial, and Trotsky's expulsion from the Communist Party were included in the newsreel.

[17]Rasputin's scenery was by Traugott Muller, the film was edited by I. H. Hubler-Kahla, and the music was written by Edmund Meisel. Schweyk also had film by Hubler-Kahla and music by Meisel, plus scenery and animation by George Grosz.

[18]Erwin Piscator, Political Theatre 1920-1966 (1971), p. 52.

[19]Ironically, the Federal Theatre Project was cut off by Congress in 1939 because the strong political tone of the plays angered Roosevelt's government just as Piscator's plays had angered Hitler's. Multimedia development and politics have rarely mingled successfully. For further reading in the story of the Federal Theatre Project, consult Hallie Flanagan's Arena (1965).

[20]Jarka Burian, The Sceneography of Josef Svoboda (1971), pp. 79-80.

[21]Embler, "Film on Stage," p. 112.

[22]Burian, Svoboda, p. 80.

[23]Embler, "Film on Stage," p. 119.

[24]Michael Kirby and Richard Schechner, "An Interview with John Cage," Tulane Drama Review, Winter 1965, pp. 59-60.

[25]Alan R. Solomon, Robert Rauschenberg (1963), p. 7.

[26]Richard Kostelantz, The Theatre of Mixed Means (1968), p. 56.

[27]John Cage, Silence (1961), p. x.

[28]Among Svoboda's multimedia stage works are Their Day (1959), Tales of Hoffman (1964), Intoleranza (1965), and The Soldiers (1969). Details and illustrations of these and many other fine productions can be found in Burian's The Sceneography of Josef Svoboda.

[29]The script for 18 Happenings had been published earlier in 1959 in the Rutgers Anthologist, and a previous performance of a Happening was done by Kaprow at Douglass College, Rutgers University, New Brunswick, on April 15, 1959.

[30]For data on other European trade exhibitions utilizing a multimedia or multiscreen approach, see Wolfgang Clasen's Expositions, Exhibits, Industrial Trade Fairs (1968). Such events as the 1961 Italia exhibition, the 1964 Swiss Holiday Pavilion, and the 1965 International Exhibition of Transport and Communication are covered.

[31]Labyrinthe, Technical Bulletin Number 8, The National Film Board of Canada, March 1968, pp. 1-6.

[32]Ibid., p. 12.

[33]Perrin, "Projected Images in Education," p. 53.

[34]This author has interviewed several clergymen around the country who have unspecific memories of their first encounters with multimedia worship; the earliest certainty was a University Christian service at Case-Western Reserve University, Cleveland. There, David Wood--an art major--combined readers, 3 slide projectors, hymns, and a communion meal. A later service, which occurred at the University of Michigan's Episcopal Canterbury House in October 1968, is described in Myron Bloy's Multimedia Worship (1969).

[35]Both of these works are illustrated and briefly described in Psychedelic Art (1968) by Robert E. L. Masters and Jean Houston.

[36]Michael Kirby, "The Influences of Happenings and Events," pamphlet from the Happenings and Fluxus exhibition, Cologne, 1970.

[37]See Robert Whitman, "The Night Time Sky," Tulane Drama Review, Winter 1965, pp. 101-107, for a complete account of this work.

[38]Mekas' Movie Journal, The Rise of the New American Cinema 1959-1971 (1972), pp. 212-215, carries descriptions of the festival as does the Winter 1966 issue of Film Culture, Gene Youngblood's Expanded Cinema (1970), Sheldon

Renan's An Introduction to the American Underground Film (1967), and Kostelantz's Theatre of Mixed Means.

[39]For two different reactions, see The Village Voice of October 27, 1966, for reviews by John Brockman (pp. 1-10) and Jonas Mekas (p. 27).

[40]Further details on all the Nine Evenings performances can be found in Doris Hering, "The Engineers Had All the Fun," Dance Magazine, December 1966, pp. 36-40.

[41]Details on these works can be found in the Spring 1968 issue of The Drama Review, specifically Saul Gottlieb, "American Atrocities in Vietnam: a Documentary Environment," pp. 168-178, and Richard Schechner, "6 Axioms for Environmental Theatre," pp. 41-64.

[42]Douglas Davis provides some descriptions of two major European groups, ZERO (founded by Otto Piene and Heinz Mack in Dusseldorf in 1957) and GRAV (founded by Julio Le Parc and others in Paris, 1960) in his Art and the Future (1973). Margarita d'Amico addresses the situation in Caracas in her book, Lo Audiovisual en Expansion (1971).

[43]Recent knowledge about the Soviet film industry has revealed that a government production of a 20-min. documentary, Our March, concerning the history of the U.S.S.R., was made in 1970 in honor of Lenin. They used a 70mm frame to present a simultaneous montage of images, combining old clips and news images, black and white and color, in a variety of dynamic patterns and formats. Illustrations may be found in the August 1974 issue of American Cinematographer. Presumably, wide-screen, multi-image effects are replacing

multiscreen and multimedia experiments in the U.S.S.R., as indicated by the correspondence noted (p.31) in this present writing.

[44]Mark Lipschultz, "Selected 'Still' Projection Apparatus for Scenic and Effects Projection," unpublished M.A. thesis, Pennsylvania State University, pp. 218-224.

III. THEORY

Now that we have devoted a large amount of space to the history of multi-media programs, multi-image programs, and accompanying developments in cinema, theatre, and Intermedia, we at last have a common base of knowledge about the use of electronic multi-imagery. Logically the next area of attention should be how to use this new communication tool properly. Perrin's theory of multiple imagery is presented first because it is the most well-known and oft-quoted statement of its sort. His concept was that simultaneous images on a large screen create a pattern of information comparison and simultaneous visual montage; these visually-rich displays increase information density and facilitate certain types of learning. All of the research in multi-imagery after this statement has taken its directives from Perrin. Accordingly, we are only now attempting to articulate new and broader statements about the proper nature and application of multi-image communication. Perrin's contributions to the development of this field are invaluable--as was his 1969 USC dissertation from which his article was adapted. It is the first comprehensive history, theory, and production manual for cinematic multi-imagery, and should be included in any materials collection in this field.

Siegler published prior to Perrin, but his comments are ultimately more limited, thus they are presented here after Perrin's elaboration. Siegler and other theorists were writing in response to the wealth of multi-image films shown at Expo '67. Consequently, their comments deal more with the possibilities of commercial multi-image films than with the slide/tape mixtures we commonly associate with multi-imagery. While their recommendations were carried out in a limited way with films such as The Boston Strangler (1968), The Thomas Crown Affair (1968), Woodstock (1970), Superfly (1972), and Let the

Good Times Roll (1973), multi-imagery has not yet proved to be a viable format for all commercial cinema. Dramatic narrative, with its dependence on character development, plot lines, and simulation of omniscient yet single-viewpoint reality, is not suited for an all-inclusive transformation into multiple images. If film and television were used only for aesthetic discovery--as demanded by Youngblood in Expanded Cinema--then multi-imagery would surely be a common device, along with jump cutting, multiple points of view, and holography, to provide striking new insights into existence. However, our electronic media also serve necessary social functions of reinforcement and maintenance--entertainment--which must be compelling but easily comprehendible, a task not often suited for the complexity of multi-imagery.

In the last two statements, by Wachtel and I, we try to indicate the parameters that should encompass multi-imagery, emphasizing its strengths and unique qualities. As usual, we have the advantage of hindsight in being able to apply ten years of active research and use which Perrin, Siegler, and others were not aware of. We have tried to incorporate this advantage into concise statements that recognize the current information about multi-imagery. Future theoretical statements must be much more complex and precise, and must again be built upon an awareness of research dealing with the properties of this modern media blend.

A Theory of Multiple-Image Communication[1]

By Donald G. Perrin

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A Theory of Multiple-Image Communication[1]

Donald G. Perrin

For the educator, multiple-image systems have a variety of appeals. It is possible to incorporate existing materials in a variety of media. Production is simple using automatic slide cameras, super-8mm, and the overhead projector. And the product can be tailored to achieve a specific set of educational goals.

Upon what rationale, principle, or theory are multiple-image presentations constructed? This paper will attempt to organize whatever pertinent information has been published and, where possible, to introduce relevant research which confirms or disputes the principle in question. Producers have designed multiple-image presentations with remarkable skill even though the underlying theory has not been verbalized. In 1963 when Allen and Cooney made their first research study on the use of simultaneous images in classroom instruction, there were only three prior studies to be found. After a careful search of the literature they concluded that "any thrust toward theory at this time would be premature . . . . the study rests somewhere in the realm of pre-theoretical experimentation and formulation."

In the past six years the literature has expanded enormously. The documentation is largely technical and descriptive, and only one new piece of research has been added (Lombard, 1969). From the existing body of knowledge there appear to be three major factors which distinguish multiple-image communication from conventional use of media: 1) simultaneous images, 2) screen size, and 3) information density.

The Theory

Media such as films, television, filmstrips, and slides have, until now, presented their images sequentially. In sequential montage the meaning of each

new image is determined by the context of what has gone before. In its temporal aspects, sequential montage is analogous to verbal language, where several elements in series determine the total meaning. Simultaneous images interact upon each other at the same time, and this is of significant value in making comparisons and relationships. An important contributing factor is screen size. On small screens, the overall identity of the image is most significant. On large screens (or screens side-by-side), the viewer makes his own montage of different image elements, increasing the probability of learning comparative information. The immediacy of this kind of communication allows the viewer to process larger amounts of information in a very short time. Thus information density is effectively increased, and certain kinds of information are more efficiently learned.

Simultaneity

For visual comparisons it seems axiomatic that simultaneous images are more effective than sequentially presented images. Millard (1964) enumerates at length the kinds of classroom situations where simultaneous presentation would be advantageous:

> The multiple-image technique enables the teacher to make comparisons, to illustrate the development of interrelated concepts, show relationships, and to otherwise combine the capability of several photographic aids either simultaneously or in some programmed pattern or sequence for instructional purposes.
>
> Using multiple images, we can effectively treat comparisons of the physical, geographical, environmental, dimensional, and spatial characteristics of objects and events. Dichotomies, alternatives, differences, likenesses, and many other forms of comparison can likewise be efficiently handled by this method.
>
> In a similar way presentations involving relationships, parts to whole, diagrams of apparatus, model to object, form to function, and the like, can be displayed with multiple images.

Such a listing can be expanded at length. For example: 1) question on one screen, answer on a second; 2) action and reaction; or 3) alternate courses of action; and so on. The possibilities are infinite.

The instructional effectiveness will, of course, depend upon the ability of the teacher to capitalize on the unique instructional and communicative powers of each type of projected material, and to program them into a unified and dynamic presentation.

One of the most basic mechanisms of learning is by association (Gagné, 1965). Low (1968), who worked on the Canadian National Film Board's Labyrinth at Expo 67, hypothesizes that the complex of simultaneous visual associations is especially crucial to memory and to conceptual learning:

Our awareness of several sensory simultaneous stimuli is probably one of the reasons why memory seems locked in the mind in such a peculiar manner.

Perhaps no single impression triggers certain memory combinations, but a group of impressions received simultaneously often may trigger long forgotten memories. Emotions also often seem totally mysterious in the way they come and go. Poetry uses an amalgam of thoughts, feelings, and word images poured in quick succession as an assault on the unconscious. Some poets seem impatient with the sequential quality of words and phrases and compress language in what seems to be an effort to achieve a kind of simultaneity. Roman Kroitor speaks of multi-screen being to single screen what the language of poetry is to the language of prose.

Certainly, images are especially rich in information and in the range of associations they stimulate. Without careful control by the communicator, some associations conflict with the intended message and are detrimental. Relevance, realism, and simplicity are important in learning from book illustrations (Spaulding, 1956), and in learning from films (May & Lumsdaine, 1958).

A Summation of Cues

The combination of two or more images would seem to increase complexity, and thus increase the visual task factor. Again relevance is a crucial factor, for in the multiplication of the number of images, irrelevant as well as relevant detail increases. For this reason, clear and simple images are preferred to keep the visual task close to optimum. At the present time this is a subjective judgment made by the producer.

Relevance and specificity are important in educational settings where learning is the desired outcome.

Hartman (1961), in his extensive review of multi-channel communication, is critical of the use of verbal and visual elements in many educational materials, particularly in educational films:

> A common practice among multiple channel communicators has been to fill the channels, especially the pictorial, with as much information as possible. The obvious expectation is for additional communication to result from the additional information. However, the probability of interference resulting from the additional cues is very high. The hoped-for enhanced communication resulting from a summation of cues occurs only under special conditions. Most of the added cues in the mass media possess a large number of extraneous cognitive associations. The possibility that these associations will interfere with one another is probably greater than that they will facilitate learning.

Thus, the selection of images and sounds and the way in which they are organized is especially crucial.

Audience factors should likewise be considered. Roshka (1958 (1960)), Maladin (no date (a)) and Allen and Cooney (1963) found simultaneous presentation effective with young children. Allen and Cooney and Roshka found that simultaneity has less effect with older children. Malandin (no date (b)) found four primary classes had difficulty relating images shown successively

to one another. Using groups nine to eleven years old, he found that "grouping the frames permits an increase in the number of recollections, but, above all, better organization of the recollections." Allen and Cooney worked with sixth and eighth graders, and compared factual and conceptual treatment of content. They found a significant advantage for simultaneous presentation with a mixed factual-conceptual treatment for sixth graders, but not at the eighth grade level.

Further research is necessary to ascertain the exact reasons for these findings. Perhaps with more difficult concepts, the advantages of simultaneous images would extend to a higher age level? Or perhaps the associations are important in initial learnings? The controlled absence of other factors essential to the theory, large image and increased density of information, may be a limiting factor. That simultaneity alone is a significant advantage in three out of three experiments at the primary level is an important beginning.

Large Screens

Simulation

As with simultaneous images, some of the advantages of a large screen are axiomatic. In simulators training visual coordination tasks, the large screen is a better approximation of the "real" environment. The Waller Gunnery Trainer encompassed the trainee in a spherical wall representing a 180° field of view. Aircraft simulators likewise require a wide visual field. Projected images are effective in representing large three-dimensional environments because distant space perception is based on monocular cues: relative size, interposition, linear perspective, aerial perspective, motion parallax, and light and shade (Graham, 1965). All but accommodation and binocular cues, stereoscopic images, and eye convergence are present in projected images.

In professionally produced films and slides, monocular cues are usually enhanced by composition, movement, and lighting effects (such as rim lighting which accentuates the outlines of important objects). The bright image, rich in monocular depth cues, on a screen distant enough to eliminate conflicting cues from accommodation, convergence, and stereoscopic vision, simulates a total environment. This is further enhanced by large screens which occupy a field wide enough to utilize the peripheral vision. Cinerama is an excellent example of a system utilizing peripheral vision:

Normally, as we move forward, we are dependent on what we can see to the right and left. These peripheral objects appear to back away (to the right and left) and curve around us backward to either side. This apparent movement helps us to judge the distance straight ahead and tells us where we are. The very wide angle of vision and curved screen in Cinerama both serve to make this an important cue to tridimensional vision. In the field of art, great pictures capture and "manipulate" the observer so he becomes part of the scene. His ego center is the center of visual space set by the canvas, or by Cinerama. If you must look for the details of tall objects in painting you feel small. When you look down over a valley or into a gorge you "feel" you are on top and some persons become dizzy. In Cinerama we actually sit in the leading car of a roller-coaster as we top the rise of a track. The view is spread out before us. As we "plunge" down the incline the field quickly enlarges with more peripheral detail flying outward and around (past us) adding a terrifying realism to the experience causing many in the audience to grip their seats. In the same manner we glide along slowly in a gondola while the panorama on either side slides by slowly, or we fly through valleys between walls of canyons we can almost touch. (Murroughs, 1953)

Large screens provide the physical and psychological factors necessary for realism and involvement, and may be comparable to real environments for many training purposes.

Visual Acuity

It would seem logical to assume that tasks requiring high visual acuity will benefit from large screen presentation. Blackwell (1968) found that in normal room environments, visual acuity is enhanced by increase in illumination, and degraded by uneven lighting, reflections, and glare. He combined these into a single factor called relative contrast sensitivity.

Difficult tasks require relatively high levels of background luminance, whereas easy tasks require low levels of relative contrast sensitivity and luminance... Thus, when more contrast sensitivity is supplied to the visual system, not only can the learner read smaller print or handwriting of lower contrast, but he can also detect more subtle changes in facial expression, and for example detect smaller differences in texture or pattern.

The implication here is that screens should be fully illuminated to meet the ASA standard for screen brightness, and that projection materials should be of correct density. Insufficient illumination or dense slides and films degrade visual acuity. If large screens are achieved with loss of illumination, other possible advantages of the larger screen size may be negated.

Logan (1948) depicts the field of view of the observer as a central "glare zone" encompassing a 60° field, the "binocular zone" as a field of 120°, with the "monocular zone" for each eye extending the total field to a total of 180°. Obviously these figures are somewhat arbitrary but they provide useful guidelines in determining screen size and the nature of the surrounding environment. The central "glare zone" is the most critical, and small screens such as home television with a 15° field of view are limited, not only by lack of image information, but by glare and distractions from the surrounding environment. The small screens used for projection in most educational establishments are similarly limited. Modern wide screen theaters encompass a 30° field at the

maximum viewing distance, so that all viewing positions are relatively favorable in terms of glare.

Another source of glare which has long been recognized is the wide black background used on the smaller, conventional-type movie screens. This expands the contrast ratio in the central zone of vision without adding information, which is another way of describing glare. In 1937 RCA introduced a screen with a grey background called the SynchroScreen to increase eye comfort for theater audiences. Larger and wider screens achieve a similar effect. Smith and Schlanger (1961) utilized a very wide screen with edges blending into the surroundings in the Colonial Williamsburg Theatre and Schlanger (1966) recommends a similar practice for new 70mm cinemas. Where the screen itself encompasses a wide field of view, the nature of the surrounding area becomes less critical.

Ambient light is also a contributing factor to relative contrast sensitivity. Visual information is lost where ambient light reflected from the screen exceeds the blackest black in the film. Logan (1948) found in empirical tests that ambient light level at the screen should not exceed 0.1 foot-Lamberts where the ASA standard screen brightness of 16 foot-Lamberts is used.

Under ideal viewing conditions, the limits of visual acuity will be determined, not by the viewing environment, but by the resolution of the film and visual transmission system. It is for this reason that theatrical film production uses wider than normal film gauges, at least for the initial photography. In this way the larger screen does not have objectionable graininess, and the full visual capability of the observer can be utilized. Thus, visual acuity is directly related to resolution of the image transmission system, screen size, screen brightness, and freedom from degradation due to ambient light, reflections, and glare, and distractions within the visual field. Difficult visual tasks require full screen illumination in a glare-free visual field. Visual acuity is reduced with dark images, excessive ambient light, and glare.

Physical and Physiological Effects of Large Screens

The dominance of Cinerama over our visual senses has already been mentioned by Murroughs (1953). Schlanger (1966) introduced two new terms to describe the effect of large screens, the visual impact factor and the visual task factor. As screen size increases relative to audience size, the visual impact increases. This is amply illustrated by all large screen processes, particularly the extreme examples such as Labyrinth and Diopolyecran. Some speculate that the development of large screens was necessary for survival of the motion picture art, and that the film "would be destined to suffer a slow decline in popularity unless it renewed its vitality in an increasing effort to expand its powers of communication and expression" (Cornwell-Klyne, 1954). Thus, cinema audiences declined in the late forties because they were watching films on television. However, in the next decade large screen motion pictures provided the added impact necessary for theaters to compete with the convenience of home viewing.

The visual task factor relates to the work the viewer must do to extract the necessary information. On the small screens associated with television and narrow gauge films, the resolution of the image is limited. Large screens receiving their images from wide gauge film are rich in detail, and in this respect more closely duplicate a real environment. Blackwell (1968) points out that more and more information is not a boon to the learner if the channels are fully loaded with distracting irrelevant information. Travers (1966) speculates that line drawings are advantageous because they eliminate superfluous detail. Unfortunately, artists do not extract visual cues in the same manner as the visual senses, and Travers' experiments show poor transfer of learning from simplified drawings and models to situations in a real environment. Schlanger (1966) holds the key. The line drawing, like an image with poor resolution,

increases the visual task factor to reconstruct visual cues which are lost in the abbreviated form. Thus, the visual task with television is often much greater than with large screen images. What is important is the relevance of the whole image and the image details and the selection of essential as compared to non-essential information.

Thus, the advantages of the large screen are conditional. Large screens are advantageous where they increase the accessibility of relevant information. The message designer must pay greater attention to detail, as the film directors found in the early days of wide screens. Composition and editing must be more carefully planned and executed with greater precision than for screens of conventional size.

Learning from Large Screens

The psychological difference of wide screens is amply documented by Barr (1963). The viewer perceives himself as part of the environment instead of "looking through a window." The openness of the large image encourages him to explore and select for himself, giving a sense of reality and participation. Also, the director has relinquished his image-by-image storytelling and begun to capitalize on the advantage of simultaneous montage.

TerLouw, in an informal experiment, found that greater interest and learning result with the use of large images. He set up a slide projector with a small screen and invited people individually to view some slides, controlling the rate of presentation for themselves. On repeating the experiment with a large screen, he found the subjects viewed each slide for nearly twice as long. An aftertest found this group better able to answer questions on details and relationships within the picture.[2]

Information Density

There are many dimensions to information density in multiple-image presentations. First it is important to distinguish between the method of presentation and the mechanism of perception. The theory of multiple image suggests that for making contrasts and comparisons, and for learning relationships, simultaneous images reduce the task of memory (a dimension of visual task) and enable the viewer to make immediate comparisons. Large images and multiple images facilitate this, as indicated by TerLouw's experiment. Langer (1942) stresses simultaneity as a key element in visual language:

> Visual forms--lines, colors, proportions, etc.--are just as capable of articulation, i.e. of complex combination, as words. But the laws that govern this sort of articulation are altogether different from the laws of syntax that govern language. The most radical difference is that visual forms are not discursive. They do not present their constituents successively, but simultaneously, so that relations concerning a visual structure are grasped in one act of vision. Their complexity, consequently, is not limited, as the complexity of discourse is limited, by what the mind can retain from the beginning of an apperceptive act to the end of it.

Thus, the amount of information presented can be much greater than with other communication media, but the processes of selection and organization are more crucial.

Organization

Teachers and researchers have long recognized the possibility of increasing the information learned by organizing the material into larger symbols more rich in information. Hence, visual organization is much more important than the actual amount of information present.

McFee (1969) substantiates this point of view:

Visual ordering makes messages of content easier. Much of our responding is so fast we are unaware of the processing we do. One of the tasks of the message designer is to make the visual sorting process easier; he selects and organizes visual information so that it is easier for the viewer to assimilate.

Empirical confirmation is illustrated by the introduction of TeleMation at the University of Wisconsin, where it was found by Hubbard (1961) that a tape lecture of 50 minutes can be boiled down to 20 TeleMation minutes with no loss of material or loss of learning by students. A similar finding resulted when the Army Ordnance Guided Missile School conducted a series of evaluation studies in 1958 (U.S. Army, 1959). Three 32-hour segments of instruction were selected emphasizing different kinds of subject matter. Instruction time was reduced 19.5 to 41 percent for a similar level of achievement, and an increment in learning was reported for the experimental groups nine weeks later. Allen and Cooney (1963) suggested the possibility that time saved in instruction was as much a function of care in preparation as it was a function of the multi-imaged delivery of the subject matter.

Rapid and Complex Imagery

The process of organization of sounds and images is the filmmaker's craft. If images rich in information can communicate instantly their content and context, one would expect to find excellent examples of this in recent fairs and expositions. Charles Eames (Lightman, 1959) for the Moscow Fair used rapid and complex imagery to achieve a specific kind of learning. He fused many specifics of American life together to communicate to the Russian people the larger concept of how American people live. His approach was based on empirical testing to determine:

. . . how many images a person could see and digest at one time. The object was to present a group of images that an audience could be aware of but not analyze in a way that would involve them with the subject. In such a presentation the panorama of our way of life would be so general that an audience would assume that it had seen more than it actually had. For example, in one twelve-second sequence of the finished film, 90 separate scenes of freeway overpasses flash by on the screens. No one could possibly count them, but the impression is that of an infinite number.

Fleischer (1969) similarly found he could use a large number of images simultaneously so long as they were specific, relevant, and simple in design.

There is real concern among educators that the producer is more concerned with the "happening" than the learning which results. By creating a swirl of color and movement he can involve and titillate the senses. Apparently the presentations at Expo 67 achieved both excitement and learning.

Multiple pictures make audiences understand more through feeling than through thinking. Pictures are thrown at spectators with or without words, stories are told without logical sequence; viewers are deliberately thrown off balance both mentally and physically. Film transmits facts, creates moods, and tests moral judgments . . . (Joel, 1967)

Kappler (1967), reporting in Life magazine, has no doubts that learning takes place, but feels affective learnings are communicated most effectively, observing that "it certainly drives hardest at sensations and emotions."

From present evidence it would seem that multiple images can achieve a variety of kinds of learning. Millard (1964) lists the many kinds of associations that are efficiently communicated. Eames (Lightman, 1959) indicates how multiple associations can communicate concepts. Kappler (1967) and Joel (1967) note the ability of the medium to work in the affective domain, teaching through feeling and emotion. It seems inconceivable that concepts could be learned

without retention of specific facts, or that emotions could be communicated without some factual-conceptual learning also. The size, organization, and pacing of the images appear to be crucial factors in determining whether units or systems of information are effectively communicated. It is clear that greater densities of information can be perceived; the question is, Are greater amounts of information learned? And under what conditions? Can the learner be over-excited? Over-motivated? Overloaded?

Arousal and Motivation

Research on motivation indicates that increase in motivation improves performances (Smith, 1966), but that there is an optimum level, as Eysenck (1963) stated: "for complex tasks optimum performance is achieved when the drive is relatively low; only for simple tasks is the optimum achieved with relatively high drive." Kleinsmith and Kaplan (1963, 1964) and Kleinsmith, Kaplan, and Tarte (1963) found that there is also some confusion between learning and performance, a person sometimes performing very poorly in a highly arousing situation, yet tending to remember most vividly those incidents in his life which were most traumatic or arousing. These researchers measured skin conductivity, and their findings indicated that "high arousal associates showed stronger permanent memory and weaker immediate memory than low arousal associates." Low arousal was accompanied by the normal forgetting curve. High arousal responses showed poor immediate recall with reminiscence. This explains some inconsistencies in research with regard to long term retention. For example, VanderMeer (1951) found color films did not increase immediate learning, but produced greater long term retention. Thus, in goal setting, it is important to distinguish the learning goal. If immediate performance is the goal, factors which induce arousal (interest, excitement, visual impact, emotion, etc.) should be lower than for situations where long term retention is the goal.

Levonian (1967) found that a very wide range of stimuli could create arousal, and:

. . . the effect of arousal induction on retention is independent of the emotion associated with the arousal. This suggests that fear and joy, for instance, would both enhance retention. The suggestion gains support from the fact that even though different sections of the film (carnival sequence, collision sequence, etc.) might be expected to mediate different emotions, the arousal-accessibility phenomenon emerged for items pertaining to each of these sequences.

A Note on Research

By way of contrast, it is interesting to compare rich concentration of images and ideas with the research of Travers (1966) who interprets his findings to indicate "that multiple sensory modality inputs are likely to be of value only when the rate of input of information is very slow . . . The silent film with the alternation of picture and print would appear to find much more theoretical support as a teaching device."

It is increasingly clear that the specific learning goal must be clearly defined. Travers' statement holds true for immediate performance close to criterion when learning is accomplished at a low level of motivation. The confusion between research and commercial production can be easily explained. The purpose is different, the approach is different, and the communication symbols themselves are different. The commercial productions of Eames and Fleischer are designed to achieve high visual impact, interest, involvement, motivation, and concentration--in modern terminology, to "turn on" the audience. Research works at low levels of motivation comparable to vigilance tasks; the learning of cognitive associations of nonsense words and symbols is certainly not too stimulating by comparison. Thus, producers and researchers are working

at opposite ends of the motivation scale, and at opposite ends of the real-abstract continuum. And while research is studying just a single variable, the commercial producer involves the whole visual sensorium.

FOOTNOTES

[1]This paper is based on a part of a doctoral dissertation completed at the University of Southern California.

[2]Personal communication with Adrian TerLouw, 1961.

REFERENCES

Allen, W. H. & Cooney, S. M. A study of the non-linearity variable in filmic presentation. Los Angeles: University of Southern California, 1963. NDEA Title VII, Project No. 422.

Barr, C. CinemaScope: Before and after. Film Quarterly, 1963, 16 (4), 4-24.

Blackwell, H. R. Vision engineering. Lighting, 1963 (July) through 1967 (March).

Cornwell-Klyne, A. 3-D kinematography and new screen techniques. London, New York: Hutchinson's Scientific and Technical Publications, 1954.

Eysenck, H. J. The measurement of motivation. Reprinted from Scientific American, May 1963. W. H. Freeman and Company, print no. 477.

Fleischer, R. Multiple-image technique for "The Boston Strangler." American Cinematographer, 1969 (February), 202-205 et passim.

Gagné, R. Conditions of learning. New York: Holt, Rinehart and Winston, 1965.

Graham, C. (Ed.) Vision and visual perception. New York: John Wiley, 1965.

Hartman, F. R. Recognition learning under multiple channel presentation and testing conditions. AV Communication Review, 1961, 9(1), 24-43.

Hubbard, R. D. Telemation: AV automatically controlled. Audio-visual Instruction, 1961, 6, 437-439.

Joel, Y. A film revolution to blitz man's mind at Expo 67. Life, 1967 (July 14), 25-28c.

Kappler, F. The mixed media--Communication that puzzles, excites, and involves. Life, 1967 (July 14), 28c.

Kleinsmith, L. J., & Kaplan, S. Paired-associate learning as a function of arousal and interpolated interval. Journal of Experimental Psychology, 1963, 65 (February), 190-193.

Kleinsmith, L. J. & Kaplan, S. Interaction of arousal and recall interval in nonsense syllable paired-associate learning. Journal of Experimental Psychology, 1964, 67 (February), 124-126.

Kleinsmith, L. J., Kaplan, S., & Tarte, R. D. The relationship of arousal to short- and long-term verbal recall. Canadian Journal of Psychology, 1963, 17 (April), 393-397.

Langer, S. K. Philosophy in a new key. New York: New American Library, 1942.

Levonian, E. Measurement and analysis of physiological response to film. Los Angeles: University of California, 1962. NDEA Title VII, Project No. 458.

Levonian, E. Retention of information in relation to arousal during continuously-presented material. American Educational Research Journal, 1967, 4 (2), 103-116.

Lightman, H. A. Seven screens for Moscow. American Cinematographer, 1959 (November), 670-671.

Logan, H. L. Brightness and illumination requirements. The Motion Picture Theatre. New York: Society of Motion Picture and Television Engineers, 1948.

Lombard, E. S. Multi-channel, multi-image teaching of synthesis skills in 11th grade U. S. history. Unpublished doctoral dissertation, University of Southern California, 1969.

Low, C. Multi-screen and Expo 67. Journal of the Society of Motion Picture and Television Engineers, 1968, 77 (3), 185-186.

McFee, J. K. Visual communication. In R. V. Wiman & W. C. Meierhenry (Eds.), Educational media: Theory into practice. Columbus, Ohio: Charles E. Merrill, 1969.

Malandin, C. Grouped and successive images. Unpublished manuscript, Centre d'Etudes et de Recherches pour la Diffusion du Francais (CREDIF), Ecole Normale Superieur de Saint-Cloud, France, undated. (a)

Malandin, C. Research on the understanding of filmstrips. Ministere de l'Education Nationale, Ecole Normale Superieur de Saint-Cloud, France, undated. (Mimeo) (b)

May, M. A., & Lumsdaine, A. A. Learning from films. New Haven: Yale University Press, 1958.

Millard, W. L. Visual teaching aids: Production and use. The Encyclopedia of Photography. New York: The Greystone Press, 1964.

Murroughs, T. R. Depth perception. Journal of the Society of Motion Picture and Television Engineers, 1953, 60 (June), 656.

Roshka, A. U. Conditions facilitating abstraction and generalization. Voprosy Psikhologii, 1958, 4 (6), 89-96. (Reported by I. D. London, Psychological Abstracts, 1960, 34, 85.)

Schlanger, B. Criteria for motion picture viewing and for a new 70mm system: Its process and viewing arrangements. Journal of the Society of Motion Picture and Television Engineers, 1966, 75 (3), 161-167.

Smith, A. A., & Schlanger, B. The colonial Williamsburg theatre's wide screen participation films. Journal of the Society of Motion Picture and Television Engineers, 1961, 70 (9), 677-685.

Smith, R. L. Monotony and motivation: A theory of vigilance. Santa Monica, California: Dunlap and Associates, Inc., 1966.

Spaulding, S. Communication potential of pictorial illustration. AV Communication Review, 1956, 4, 32-46.

TerLouw, A. L. Legibility standards for projected material. Notes from an address before the Indiana State Conference on School Planning and Audio-Visual Education, Bloomington, Indiana, 1956.

Travers, R. M. W. et al. Studies related to the design of audiovisual teaching materials. Final Report, May 1966. Office of Education Contract No. 3-20-003, U. S. Department of Health, Education and Welfare.

United States Army. Training by television and television prompting equipment. New York: Redstone Arsenal, Ordnance Guided Missile School, February 18, 1959.

VanderMeer, A. W. Relative effectiveness of color and black and white in instructional films. Port Washington, New York: Office of Naval Research, Human Engineering Division, Special Devices Center, 1951. Technical Report No. SDC-269-7-28.

Masquage: An Extrapolation of Eisenstein's Theory of Montage-as-Conflict to the Multi-Image Film

By Robert Siegler

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Masquage

An Extrapolation of Eisenstein's Theory of Montage-as-Conflict to the Multi-Image Film

By Robert Siegler

Once upon a time, a film was something that was projected upon a single screen before an audience seated on fixed seats. But in recent years the old assumptions have been called increasingly into question. In 1958 the Czechs sent to the Brussels Exhibition their Poly-Ecran system--images were simultaneously projected on many separate screens, scattered about the auditorium, from a series of projectors. At the New York World's Fair, the audience for one film show found themselves seated in a monstrous elevator, which took them into a simulated rocket to witness a film of their "flight." Francis Thompson and Alexander Hammid, in To Be Alive!, showed the potentialities of the triptych screen. In Expo '67 at Montreal, the many film exhibitions included several experiments with novel forms: in Labyrinth the audience walked from room to room, and was confronted with a wall-screen/floor-screen combination and a multiple-screen film in the shape of a cross (see FQ, Fall, 1967); in the Canada Pavilion the audience area rotated during the presentation; and in the Ontario Pavilion a 70mm projector threw onto a single very large screen a multiple-image film, the basis for the following article, whose individual images could move, grow, shrink, change shape, within a complex system of moving masks.

In his article "The Cinematographic Principle and the Ideogram"[1] Eisenstein gives cogent reasons for accepting the principle of montage-as-collision, rather than -as-linkage; and he goes on to assert that the montage principle applies both to film sequences and to their components, montage cells or individual shots. A Place to Stand, the film shown in the Ontario Pavilion at Expo '67, with its mul-

tiple images on a single screen, suggests that Eisenstein's montage principles may be applied on another filmic level: that of the mask.

The mask is the surrounding, delimiting area about the picture or illuminated area. In filmmaker's language, the mask is the area outside the frame-line. Eisenstein's films, like virtually all films to date, used one mask: that which surrounded the screen, separating it from the darkened theater. Certain types of iris effects and isolated (hence disturbing) constrictions of active viewing area were used by Griffith and other early film-makers. But the viewing area otherwise remained constant save for experiments in enlarging screen size (in the finales of spectacles such as Hell's Angels and Samson and Delilah), experiments in different screen ratios, and Gance's multiple-screen Napoleon. The multiple-mask film of the Ontario Pavilion alone and first brings systematically into play what I here propose to call the principle of masquage.

There is, first of all, a certain semantic confusion in the indeterminate use of the terms screen (or viewing area) as opposed to image. A given image may or may not occupy the entire screen. By saying that the screen is multiply divided, or using the term multi-image film, I mean that the multiple division has been achieved in the film laboratory, on the film itself, rather than by employing multiple projectors, as in the multi-screen film. We assume the technical means to have been achieved; our concern is with the result. Some practical application and procedures will be pointed out later.

Eisenstein's motive for comparing the montage cell to a molecule is two-fold: to prove the montage principle on both a simple and a complex level and to provide a scientific analogy (and thus order) for the new art of the film. If the individual shot is analogous to a molecule of a substance, then the total montage can be seen as a complex substance--a higher combination of these molecules.

With the assimilation of the multiple-image screen and the birth of the masquage principle, Eisenstein's analogy will have to be altered: the montage cell is to be seen as the atom, the basic structure, while it is the mask, through masquage, that is the molecular form, the intermediary structure between the montage cell and the montage complex.

Eisenstein strongly demarcates his version of montage from Pudovkin's: conflict, as opposed to linkage. Montage-as-conflict implies a dynamic medium, one capable of plastic change, in which the parts equal the whole: the rising of the lions, in Potemkin, depends as much on the fast cutting, on the implication of movement, as on the juxtaposition of sharply contrasted forms. Montage-as-linkage presumes a structure of events greater than its filmic parts: the usual montage sequence in which someone is run down by a car, quoted by Pudovkin himself, is typical, with its fast cutting between busy street, feet crossing the street, car wheels, car approaching the camera head-on, etc. None of the component parts are self-sustaining, but are linked together and cut with a certain tempo so as to gain an artificial form or a shape, both filmically and emotionally. It is this element of the architectonic arising from montage-as-linkage that implies also a rigidity. Montage-as-collision implies fluidity of componential structures, in terms of a counterpoint, a music: the famous mounting of Kerensky up the stairs and the inter-cutting with the peacock and the statues, by multiple juxtapositions within a sequence, give a certain inner form to that part of the sequence. If montage-as-collision cells may be seen as analogous to a contrapuntal melody, the total montage becomes the musical structure (fugue, passacaglia, ricercare); and masquage becomes the instrumental timbre or timbres chosen to play the melody, to articulate the form. Just as instrumental technique pertains to a process of articulating music (melody), so can masquage articulate the montage cell.

Linkage bricks and elements denote rigidity and subservience to a whole, a commune greater than its parts--a solidified structure dependent on architectural rigidity. (I say this only from a theoretical point of view; Pudovkin's films are anything but rigid and some of Eisenstein's certainly are!) Montage-as-collision cells, atoms, molecules denote living matter and inner movement of parts (the Odessa Steps sequence is comprised of inner movements and groupings each quite independent, yet not anarchistic to the total shape or form.) Montage forms are non-fixed, though the art-form necessarily dictates limitations: even with the limitation of the fixed, single-mask screen there is a certain allowed chaos that is possible (the disparate montage cells); and there are recognizable forms, but leading to unknown, mysterious shapes (the gathering of the Odessa populace, the ships on the water, the sense of tension, impending action, and the over-all emotional tone of this sequence).

> . . . montage is conflict.
>
> Conflict within the shot is potential montage, in the development of its intensity shattering the quadrilateral cage of the shot and exploding its conflict into montage impulses between the montage pieces.
>
> To regard the frame as a particular, as it were, molecular case of montage, makes possible the direct application of montage practice to the theory of the shot.
>
> S. M. EISENSTEIN

All this is now complicated by the multiple-image screen; all that pertained to the montage elements and cells, now applies to the mask through the masquage principle.

Masquage depends on the conflict between the darkened viewing area, the total screen area, and the illuminated image area(s). The masked section may be thought to be analogous to the montage cell. Everything that Eisenstein

postulated about the montage cell, the shot, may now apply to the handling of the mask. This application may be to the single mask of a single, undivided screen; to the multiple masks of multiple-image screen; or to the various masks of multiple-image screen film. Eisenstein's theories would apply to an individual mask or to a complex use of many masks over one or more screen areas.

Masks may be varied in shape, size, or content. Masks may or may not remain fixed in position or size: they may move across the screen, carrying with them a primary image. An example of this occurs in the Ontario Pavilion film: a full-screen shot of a single image, that of a motor boat crossing a wilderness lake, is cropped down so that the mask is close around the boat and moves with the boat across the blackened screen area, the masked area comprising about 1/10 of the original and immensely more effective for its condensation of the original, and also because of the focal conflict between the illumined and the darkened screen areas.

Masks may move, even when there is no movement implied in the image, as demonstrated in the same film: in another sequence, along with various other shots of wooded areas, there is a real pan in one mask-area, which is artificially continued by having the masked area then move away from two other adjacent masks (which fade out). The remaining areas then serve as a connecting device to the following sequence. Ideally, in the midst of an emotional scene, one could have a large, centered, square mask, containing the scene of the action, break down into component masks (varying in size, shape, ratio, etc.) and move apart or literally fly apart; they could either continue off the screen, or fade out, or come to rest at various positions on the screen--a heightening of the fragmentation of the emotional moment. The reverse process could be used in a scene of coherence, discovery, etc. The conflict of the mask area with the darkened screen is heightened by the physical shift of the mask from one viewing area to

another, this shift being similar to instrumental shifts in a symphony orchestra, as from double basses in the rear to a single violin in the foreground. Visual-physical phenomena occur which may be related to the phi phenomenon and our visual threshholds. Possible, then, are the jump-mask, dissolve-mask, etc.--an image may vanish from one position but simultaneously reappear in another, or fade out in one position as it reappears elsewhere. All the devices presently utilized to vary the montage cell may now relate to masks, as well as all those devices obtained by optical printing.

Moreover, all the montage conflicts Eisenstein formulated are applicable (conflicts of scales, volumes, masses, depths, directions, lights, duration) by a plastic use of the mask: conflict of mask shapes and sizes, mask ratios or proportions, mask geometrics, symmetrics of mask placements. Beyond this is the possibility of animating the mask, the continual changing of mask dimensions and shape, and the movement of these masks from place to place; possible are poly-morphous masks, their animation and manipulation, moving in non-geometrical, asymmetrical relationships. Finally, the mask may seem to dissolve, whether through a regular or a non-regular edge-of-image, in the manner of a static collage. This highest form would assimilate both masquage and montage principles, in all their applications, to produce a constantly changing picture-edge without simple defining masks--a film of the highest visual threshold, for some future audience.

To illustrate, let us take Marienbad, that most non-linear of the pre-masquage films (for, as the reader has no doubt already guessed: the masquage principle is one of simultaneity and non-linearity, and the multiple-image screen is a mosaic). Resnais, in certain scenes of remembrance, included a hierarchy of continually added detail (the moulding of Seyrig's bedroom, the furnishings, the light, her dress, etc.). Utilizing masquage principles, he could have

started with a primary image--of the man, before the memory--occupying the full screen. The first memory, being hazy, amorphous, could occur while the prime viewing area, centralized on the screen, began to shrink, cropping down to the man's face; in the upper, left corner would begin an amorphous fade-in mask, free-form, somewhat globular, containing the long shot of the near-empty room, never fading in clearly, then fading out--while at the lower right corner, the same shot, but enlarged, faded in, moving from off-screen onto it and fading out as it came into conflict with the prime viewing area, which then grew back to its original size. As the memories became more and more complex, more and more structured, the central viewing area's mask would grow smaller and smaller, the satellite masks more definite in structure (square, rectangle, either vertical or horizontal, pyramidal, etc.)--more geometric. Images would vary, within the masks: close-ups of the moulding in the bedroom; medium close-ups of Seyrig on her bed; the shots might include multiplications of the same shot, reproduced in the same geometric form (as was done in Grand Prix), perhaps in a cluster in one specific area. In contrast, a rather CinemaScope-like mask could lie across the bottom of the viewing area, including those encompassing views of the room which that proportion captures so well. By having all the images of the same geometric proportions, especially noncircular forms, a sense of harsh order could be implied; in contrast, having a conglomerate of non-repeated shapes and sizes during this nemonic process, fading in and out, moving in tandem about the screen, could magnify the variety of the stream of memory. Resnais's flash shots of Seyrig on the bed could be replaced by a jump-mask: the prime image centered on the screen, suddenly blacking out and the woman's image, in some necessarily contrasting mask proportion or geometry, appearing in a different physical area, and then the original image returning, in reverse--a direct cut between two physical locations.

The physical motion of looking away from the expected area of viewing, the possibility that any segment of the total screen, whether momentarily black, illumined with an image, or even blank, white, might become a working area, and the possibility that any part of the whole might become important, are aspects of masquage which relate it to montage and demonstrate the elements of linkage and collision with masquage.

The animated mask, the continually changing border, is utilized in a primitive manner in the Ontario Pavilion film, in an extremely wide-angle, medium shot of horses, which come down a race track past the centrally stationed camera, and on past. The mask is tightly cropped down on the horses, neglecting the surroundings; it moves from right to left with the race, but as the horses reach the center, they grow larger and less distorted (due to the wide-angle lens). The mask approaches with them, also growing larger, until it reaches dead center, when it continues panning, but grows smaller. The effect is not unlike the circularly distorted mask which Griffith used in some of the Babylon sequences in Intolerance: a peculiar focusing, imposed on the audience's perception.

This element of focus peculiar to masquage should be contrasted with the visual limitations of the CinemaScope-Cinerama screen areas: since the latter are constant in their masks, subtle or effective manipulations cannot occur without unnerving disparities occurring (gigantic close-ups, the chopping-off of heads and feet, etc.) or without having to show a continual stream of master scenes, infrequently altered with meaningful close-ups. Masquage opens up completely the possibility of any film ratio being utilized, any subdivision of the screen being pertinent--changes between subdivisions, screen ratios, and proportions are obtainable, according to the subject-matter and the emotional tone. The epic quality of the larger screens can now be subdivided, by masquage, for

intimate close-ups, personal scenes, scenes of a more complex nature: imagine the confusion of a battle scene, shown by simultaneously changing masks, each individually cut but all interrelated. (The complexities of sound for such films are too vast for this tentative discussion.)

The film-collage would be the ideal means by which Joyce's work could be translated to the screen. The high perceptual complexity of the film collage would make it, at first, an experimental form, perhaps a gimmick; but though the Ontario Pavilion film is also a kind of gimmick (a rather simple-minded bit of travelogue-propaganda of a distinctly scenic province) it should be taken for what it is: a prediction of future film form and technique, a Great Train Robbery of the school of masquage.

Masquage and the manipulation of the mask are visual technical tools, as is the cropping of still photographs. For film, masquage will become a tool for implementing style, form, and content.

Screen ratios and proportions have an inherent emotional content by their size and shape; early experiments in varying screen shapes now have renewed validity after years of neglect. The film-maker, wisely using masquage, must judge for himself which combination or combinations to use within the film structure, without overloading his subject-matter (no huge skin-pores in Cinema-Scope and no cramping of multitudinous details into a small viewing area--and yet . . .)

In argument with those claiming masquage to be an artificial, confusing technique, it should be pointed out that man's threshhold of perception and consciousness is continuously changing rather than constant. One daydreams while walking, is suddenly brought awake by a pretty girl passing, bumps into a friend and begins an argument, while in reverse order, the memories of the girl and of the daydream diminish, continue on another level, etc. Our threshholds of per-

ception and our areas of focus--not only those of the visual sense, but of the other senses, and those of time and space continuities--continually change, increasing, decreasing, inter-combining. Even more complicated are those combinations of conscious, subconscious, imagination, perception, and creation. Thus the element of change inherent in masquage holds an overwhelming artistic and technical potential for the art of the film.

The most obvious practical advantage to the masquage film is that only one camera will be needed, and only one projector and screen for the viewing of the film. The masquage film will be, at first, quite expensive due to the necessity of special optical printing and effects. But, such films theoretically could be shown in 16mm. There is no reason why simple masquage couldn't be adapted for making 16mm or even 8mm films. The masking would not always have to be done by optical printing: one could construct interchangeable fixed masks to fit into cameras and shoot through these. Given reflex lenses, the ability of good 8mm cameras to back-wind, fade in or out, and to dissolve, there is no reason why the technique could not be applicable. Moving masks could be shot with a zoom lens or on an animation stand, and used in A & B-roll sandwich printing. The most important element in such primitive applications would be to keep aware of the exact physical placement of the mask-openings, unless overlay of images were desired. The use of deliberate overlay, multiple images, color mask-edges, filters, I leave to the reader's imagination.

When the home-movie camera is replaced by a miniaturized and simplified video-tape camera, capable of recording both image and sound onto micro-sound/image tape and of storing magnetic impulses not only on surface layers, but in molecular depth, a set of sophisticated masks will be available and special grid lines, worked on the reflex viewplate and on the masks, will coordinate the image.

Those who criticize masquage as calling for superhuman creative and imaginative powers, due to its complexity ("Just how do you know where each image should go and what to do with it") can be answered by this speculation: the story board, the camera viewfinder, and the work-print will all contain a standard series of grid lines. Juxtaposition of the film with the story board--perhaps direct projection onto the story board--will make editing physically much easier. Perhaps these grid lines could be similar to the latent edge-numbers now used to coordinate film editing. The effect might be compared to the blocking-out of action for a stage presentation. Once again, film combines the aesthetic-imaginative with the distinctly physical, but this enigma of what is and what isn't reaches back as far as the history of films.

There has been no complex and satisfying use of masquage to date. In no way can masquage substitute for content; like montage, masquage can be used to make a shallow film flashy and like montage, the technique can destroy film style and content by over-use.

Ideally, montage (both linkage and conflict) and masquage are to be used in combination, in a sensible and restrained manner. With the higher thresholds (visual awareness, color response, sound textures, etc.) called for by new film-makers, and with the multiple-screen and masquage film, audience response will become more complex, more highly structured, potentially more sensitive. In turn, the complexity of the medium will demand of the film-maker an integrity of content and technique, on a more complex level of visual sensibility.

FOOTNOTES

[1] *Film Form* (New York: Harcourt, Brace, 1949. Meridian Books paperback, 1957), pp. 37-40. Compact expressions of Eisenstein's montage theory may also be found in "A Dialectic Approach to Film Forms" and "Methods of Montage," in the same volume.

Multi-Image and the Presentation of Space and Time

By Ed Wachtel

Every medium has a bias toward space and time.[1] Each, in its own way, imposes an order and a coherence on the world. In this paper I will argue that multi-image presents its own unique picture of the world; its own vision of the order of space and time. Further, I will suggest that an understanding of the space/time bias of multi image may provide artists and educators with guidelines for the creative and effective use of the new medium. But first, what is this "new medium"? Simply stated, multi-image is the presentation of two or more images simultaneously. Generally, the images are presented side by side, but other configurations are possible. Film, video and a series of slides can be used alone or in combination, but the medium is biased toward the use of slides for reasons I will discuss later. Since the sequence and interplay of images is fairly complex, the individual projectors and recorders are controlled by a central, computerized console. In fact, I suggest it is the integrating ability of the computer that makes multi-image a medium rather than a collection of media, just as the film projector made a series of still photos into the movie.

However, the new medium has not yet fulfilled its own potential. In relation to other media, multi-image continues to be the "new kid on the block." As such, it is still flexing its muscles in dazzling displays of light, color and speed.[2] It has yet to develop a coherent body of theory and aesthetics to govern its cultural integration, and its development as an art form. I cannot,

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This was originally a paper delivered at the 1978 AMI Convention in Chicago. Reprinted through permission of the author. AMI Archives and Clearinghouse No. CK 78w. Copies available from AMI; consult current ACH catalogue for price and ordering information. Mr. Wachtel is currently with the Center for Instructional Development, Queens College, C. U. N. Y.

in this brief paper, present a full, general theory of multi-image. I can, however, suggest a conceptual framework for such a theory. Perhaps, an examination of the way that multi-image orders the world; that is, its space/time bias, will suggest a framework for understanding the art, the applications, and the effects of the new medium. But before I return to multi-image itself, I must digress, briefly, to explore some aspects of the perception of space and time.

First, it is important to realize that there is nothing innate in the human nervous system that gives us direct information about time and space.[3] Consequently, we rely heavily on various assumptions and preferences to fill in the incomplete world view provided by our senses.

An example of one such assumption is the preference of Western man for symmetry. For most of us, there is something correct, something "true" about objects in space that are organized along the vertical and the horizontal. If our knife and fork are not set parallel at the dinner table, or if our desk blotter is not set square with the desk, we are uneasy until they are set "right."[4] Yet, there is nothing "natural" about this preference. In fact, many cultures, such as the men of pre-history, the Eskimo, and a number of African cultures do not share our passion for the right angle.[5] They bring order to their world through other assumptions.

Symmetry is only one of the assumptions that make up the space conception of Western man. Ever since the Renaissance another, more unique preference has characterized our ideas of space and time. I refer to the assumption that space is uniform, continuous, and separated from time. Renaissance painters were the first to codify this view of space by the invention of geometric perspective.[6] This system of representation demands a single viewpoint, a rigid frame of space and a fixed point in time. In perspective paintings, space is flat and con-

tinuous from the eye of the beholder to the vanishing point at infinity. This conception of space was given a scientific and mathematical foundation by Isaac Newton in the seventeenth century. Like the space in a Renaissance painting, the Newtonian universe was characterized by an absolute frame of space and by a single, unchanging line of duration.

With the development of the camera in the nineteenth century, this view of reality could be captured perfectly. But to students of art and perception, there was a paradox in this perfection. The camera could not alter the assumptions of single perspective that were ground into its lenses and built into its mechanism. Consequently, the camera exposed some uncomfortable facts about this conception of space. For example, if you were wondering why your vacation snapshots transformed a huge sun setting over magnificent mountains into a speck of light hanging over some molehills, you can stop wondering and blame your camera--It doesn't take into account the phenomenon of size scaling. Or, maybe a picture of your favorite aunt reveals a grimace or a strange profile that changes her appearance entirely. Again, blame your camera--It doesn't allow an integration of time into the viewing experience. So, by fulfilling the space conception of the Renaissance, the camera had helped to destroy it.

Artists, of course, were the first to respond. While the impressionists continued to use perspective to represent the relationships of objects in space, they allowed light a new temporal freedom. The play of light and color in impressionist works represents the visual experience of a scene over time. The Futurists and Cubists transcended single perspective more completely to represent objects from multiple spatio-temporal perspectives simultaneously.

As Picasso and the Cubists chronicled the end of single perspective and described the birth of a new, multi perspective space conception, Albert

Einstein was providing the scientific grounds for this new conception--a conception of space that recognizes an organic interplay of space and time.

So what is the role of multi-image in this scenario? Multi-image is an expression of this new conception of space. More than film, video or any other medium that preceded it, multi-image allows (in fact, demands) the presentation of simultaneous viewpoints and an integration of time and space. In this sense, multi-image is the technological fulfillment of Cubism.

To understand this assertion, perhaps we should take a closer look at the way that multi-image presents a picture of space and time. Generally, we think of multi-image as providing a set number of frames. One common use of these frames might be to display separate views of a single event. For example, we might wish to present multiple images of a football play. The actions of the quarterback could appear on one screen, the blocking at the line of scrimmage on another, and the maneuvers of the wide receiver on a third screen. In this case, we have preserved the temporal simultaneity of the event by displaying its various aspects at the same time.

Even this rather trite example shows how the multiple frame format presents a degree of simultaneity and interaction between space and time that is comparable to cubist intentions and consistent with the Einsteinian description of the universe.

The additional spatial and temporal freedom that results from a simple addition of frames to traditional single framed media such as film and television, has been noted by a number of theorists.[7] However, multi-image can go a lot further. First of all, unlike film, the shape of the slide frame in a multi-image presentation is variable. Since the slide projector has no gate, the mask of the slide itself is the only arbiter of frame size and shape. The normal 35mm slide frame may be almost doubled in area by using a larger mask.

Therefore the visible boundaries of the image on the screen can extend beyond the normal parameters of projectable space.

Second, the ability of the slide to be masked physically, rather than photochemically gives the multi-image producer additional freedom to configure spatial relationships in his work. The film image can only be masked photochemically; and this type of mask does not provide a true black around the image; the rectangular film frame remains visible. Physical masking can provide a true black around the projected image. Consequently, the multi-image screen appears as a void, structured only by the projected images. The film frame exists as a Newtonian container in which images can move about. The frame of multi-image is in fact, not a "frame" at all: it is a "field" created by the existence and interactions of projected images.

The fact that a multi-image screen is only structured by the arrangement of projected images, and not by the perpetual rectangle that is characteristic of the cinema, makes it, perhaps, a better representation of Einstein's conception of space--a space that has no reality except as a perceived arrangement of the objects in it.

By carefully masking all but the essential figure in each slide, the multi-image artist can create compositions that are free of ancient, Western ideas of time and space. Masked figures can be projected without reference to the vertical or the horizontal--there will be no rigid frame, no enclosed rectangle to demand the symmetry of the right angle. Figures can be lifted from their original backgrounds, from their original spatial or temporal contexts, and reorganized into new, simultaneous relationships. So multi-image offers the ability to integrate time and space even beyond the intentions of the Cubists. The lack of a fixed frame allows an organic expression of space/time comparable

to the transparency and a-symmetry of pre-historic cave paintings and the works of such modern painters as Paul Klee and Joan Miro.

At this point I would like to anticipate a reasonable objection: Isn't it true that film and television, through the technique of superimposition and the use of a split screen, can achieve a measure of simultaneity and an interplay of time and space? The answer, of course, is "yes." However, although both of these techniques can present simultaneous viewpoints, superimposition is limited by the number of views that can overlap and still present readable images; and the split screen can be split only a few times before the separate views are uncomfortably small. Furthermore, neither of these techniques can fully overcome the fixed spatial reference of the film or television frame.

As I mentioned earlier, when we are locked to a rigid spatial frame, duration becomes linear and sequential. For example, the clock is designed to record this linear idea of duration. What the clock measures is the sun's position with respect to a fixed point on the Earth. The film camera, too, is a "clock" that measures and records at 24 frames per second, the position of objects within its fixed frame. Consequently, even though film can be cut and edited, and the individual shots rearranged, each shot remains tied to linear duration. Furthermore, although the shots can be radically rearranged, this rearrangement, this filmic montage, must be presented in linear sequence, one show after another. Multi-image, of course, can present its meaning by simultaneous montage, without regard for linear duration. Time can be compressed to non-existence, to the instant. The cinema can only approximate this temporal freedom.

It is interesting to note that when a filmmaker attempts a radical compression of time in his work, the result is a series of still images. Charles Braverman's film, An American Time Capsule, (1969) is an example of such an

attempt. In this film, two hundred years of American history are compressed into a running time of three minutes. In order to cover two hundred years of events in three minutes, Braverman was forced to use still photographs. And it is ironic that he did. Cinema began by accelerating still photos to make a movie. The movie captured linear duration. But Braverman pushed linear duration to the breaking point. So much real time was squeezed into so little running time, that linear duration became impossible. So, Braverman returned again to the still photo, the "atom" of subjective time, and, of course, the basic unit of multi-image.

* * *

The analysis that I've begun in this paper has been intended primarily for multi-image artists and theorists. However, many of us here are also concerned about the application of multi-image to education. So, before I close, I would like to offer a speculation or two that have evolved from my analysis.

I have drawn some distinctions between the organization and presentation of space and time by multi-image and by film. I have suggested that multi-image presents a simultaneous, multi perspective, integrated pattern of space/time. Generally, film presents a more linear, sequential, single perspective view.

These different views of space are the result, not of different <u>contents</u>, but of different <u>methods</u> of presentation. For example, if identical landscapes were explored both filmically and by a multi-image work, the resulting presentations would be radically different, even though the original contents--the landscapes--were identical. Consequently, any content, <u>including</u> a college curriculum, will be transformed according to the space/time bias of the medium. For example, let us assume that we wanted to mediate a lecture on the rise of early civilizations. The material to be covered included three sub-topics: the beginning of agriculture, the changing social hierarchy, and the accumulation of

wealth and leisure. A three screen multi-image presentation might offer these topics on each screen simultaneously: emphasizing a pattern of interrelatedness among the rise of agriculture, control of wealth and land, and the changing social structure. Film, on the other hand, would tend to present each theme in sequence, emphasizing a linear, step by step development for each topic, and possibly, a cause and effect relationship between them.

The way that information is presented and transformed by each medium may, in turn, have even more significant effects. Marshall McLuhan, Lewis Mumford and other media theorists have suggested that the bias of a medium can effect our minds and thought processes. If they are correct, then the linear and sequential development of the cinema may emphasize cognitive processes such as deduction and logic, while the simultaneous, gestalt presentation of multi-image may emphasize insight, intuition and pattern recognition. If this is true, then the choice of a medium for a particular course or curriculum must be based on a variety of criteria. We must consider not only the content of the course, but also the long term effects of a medium on the minds and thought patterns of our students. We need a way to analyze and predict these effects.

I think that my analysis of multi image in terms of space and time may offer a valuable approach. The order and coherence that multi-image imposes on our physical world may also explain the structure it imposes on our symbolic world. Therefore, an understanding of the space/time bias of multi-image can provide the foundation for a general theory to guide the application of the new medium, its development as an art form, and to predict its effects on our minds and thought patterns.

FOOTNOTES

[1]Harold Innis, in Empire and Communications, University of Toronto Press, 1950; and in The Bias of Communication, University of Toronto Press, 1951, uses the phrase "space/time bias" to refer to the ability of a medium to support social control over space or through time. Here, I use it to refer to the conceptual formulation of space and time that is fostered by a medium.

[2]Paul Levinson, "Toy Mirror and Art: The Metamorphosis of Technological Culture," Et cetera, 34, 2, 1977, p. 153. Levinson argues that all media begin in a "toy" stage, with "content" subservient to displays of pure technique.

[3]Alfred A. Strauss and Newell C. Kephart, Psychopathology and Education of the Brain-Injured Child Vol. II, New York: Grune & Stratton, 1955, p. 61. Quoted in Marshall McLuhan and Harley Parker, Through the Vanishing Point: Space in Poetry and Painting, New York: Harper & Row, 1968, p. 4.

[4]These examples are adapted from S. Giedion, "Space Conception in Prehistoric Art," Explorations in Communication, E. Carpenter and M. McLuhan, eds. Boston: Beacon Press, 1960, p. 74.

[5]For a discussion of the space conception of prehistoric men, see S. Giedion, "Space Conception in Prehistoric Art," Explorations in Communication, E. Carpenter and M. McLuhan, eds. Boston: Beacon Press, 1960, pp. 71-89; of the Eskimo, see Edmund Carpenter, Eskimo Realities, New York: Holt, Rhinehart and Winston, 1973; of certain African cultures, see Jan Deregowski, "Pictorial Perception and Culture," Scientific American, 1972, 277, 5, 82-88.

[6]Elsewhere, I have suggested a relationship between the invention of geometric perspective and the glazed window. See, Edward Wachtel, "The Influence of the Window on Western Art and Vision," The Structurist, no. 17/18, 1978 (forthcoming).

[7]See, for example Herbert Zettl, "Towards a Multi-Screen Television Aesthetic: Some Structural Considerations." Journal of Broadcasting, 21, 1, 1977.

Theory and Evaluation of Multi-Image

By Ken Burke

I intend to present a system, a form, and some examples of criticism of multi-image programs. This will be an attempt to put some structure to what is now usually subjective, murky, and haphazard. However, any system of criticism should evolve from some larger-reaching theoretical foundation. Consequently, I'd like to try to define a very elusive subject--a theory of multi-image. Previously there have been only two formal statements published on this topic.

Donald Perrin's[1] is the best known of the two: simultaneous images on a large screen (or adjacent screens) create a pattern of simultaneous visual montage; these visually-rich displays increase information density and facilitate certain types of learning. This should have pointed the way to much fruitful research on proper and successful formats for multi-imagery. Unfortunately, most of the studies done in this area have perpetuated the mistake of comparing single and three-screen versions of identical or highly similar programs.[2] A further structural weakness in most of these studies is the use of identical soundtracks in both versions of the program. Since most of the necessary recall information was in the soundtrack, there is little wonder that these studies have shown little significant difference between single and multi-imagery. Even affective differences were nil, but this is no surprise either. These studies all used simple cuts or dissolves rather than the sophistical visual "dances" now available with modern programmers. Thus, it's not hard to predict that a student will not learn or experience more from a three-screen equivalent of a

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This material originally was published in the Spring and Summer 1978 issues of Multi-Images.

single-screen program. Perrin's theory was disregarded as researchers were unwilling or unable to test the effects of additional, enlarging, peripheral, relational material added to a single screen concept.

Another theory of multi-image was presented by Robert Siegler[3] after the visual extravaganzas at Montreal's Expo 67. He called for a dynamic system of frame masking to be used in film, allowing multi-image shapes to enhance the aesthetic and dramatic impact of all films. Like Perrin's theory, Siegler's idea was ignored by most practicioners, except in some innovative documentaries and Woody Allen comedies. Clearly, the sparse attempts at multi-image theory have been met by even more sparse responses from visual producers. It's true that more educators and promotors have followed Perrin's lead into multi-image slide shows than filmmakers have followed Siegler's proposal into cinema; however, we shouldn't allow slide show producers to become smug. Much multi-imagery still violates Perrin's theoretical intent by simply expanding linear ideas into a simultaneous format of sequential information. Showing several steps in a linear progression or showing more of the same type of visual is hardly a way of achieving "informational density" or "simultaneous montage." Rudundency is increased beyond a useful limit in many programs that I've seen; three screens are constantly used just to fill up space rather than show intriguing relationships or striking visual combinations.

Ultimately we must realize that there are shortcomings in the above theories, as well as in the producers who failed to follow them. Siegler overreaches by trying to provide a rationale for breaking all filmic communication into a simultaneous display. Perrin, writing at an exploratory time in terms of research, fails to elaborate what type of messages do not benefit from multi-imagery. In their zeal to promote the new approach to simultaneity and complex renderings, they leave the impression that all ideas are best presented through a prism

rather than an occasional microscope. Perrin stipulates that such devices as comparisons, contrasts, and parts of a whole should be the norm, but he doesn't specify that these can be rendered useless if the general program design overstresses visual and structural redundency.

Accordingly, I think that a useful theory of multi-imagery must recognize that multi-image is not suited to all messages. Many ideas and processes are linear and do not gain from a multi-image organization. Further research shows that these linear concepts are learned equally well by adults in single or multi-image formats. The successes of multi-imagery with traditional linear information are limited to young children, underachievers, and tactily-oriented haptic learners. A theory of multi-image must recognize that this form of communication is suited to certain types of complex topics for visually-oriented adults and other types of topics for other types of learners. Also, as I've explained before,[4] approaches to theory and criticism of multi-imagery must recognize that specific messages serve specific functions of communication. Thus, an informational message shouldn't be evaluated in the same way as an entertainment message.

Now, let me try a new theory of multi-imagery. Multi-image is a specific format of multimedia in which the simultaneous juxtapositions of visuals with each other and/or with audio elements combine to enhance the spectator's awareness. Multi-image programs may be used for any of the functions of communication--information, instruction, persuasion, entertainment, and enrichment--and they may occasionally retract to a single image format as demanded by the content of an individual program. Multi-imagery should be used only as it can significantly enlarge the spectator's perception of an idea, event, or experience. For example, in an informational program multi-image should be used to show relationships

(including contrasts, comparisons, parallels, etc.) and relevant peripheral additions to the main text. In enrichment, for another example, multi-imagery should also be used for relationships--especially humorous, ironic, or revelational ones--or to enhance a visual composition through the power of panoramas or the complexity and strength of additional elements. The use of audio in a multi-image program should provide a further dimension for enlarging relationships in creating a total sensory environment for the spectator. It must be recognized, though, that certain programs have educational functions which require occasional uses of audio-visual and multi-image redundancy; such redundancy should not be overused in programs for visually-oriented adults, however. It has already been proven that these learners, who comprise about 75% of the population, will gain little from an overly redundant multi-image presentation.

In multi-imagery, the medium should be the message and the message should be that simultaneous relationships can reveal more to the spectator than is possible in single-image communication. All images present a simultaneous complex of focal points for the eyes, but a multi-image program should juxtapose significant clusters of relevant stimuli to enlarge the spectator's comprehension. Ultimately the questions become: what functions do the juxtaposed relationships serve and how well are those functions served? Part of this consideration is the intended audience. A single multi-image linear program can serve the function of instructing children, underachievers, and haptics; yet, the same program may be dysfunctional over-redundancy for visually-oriented, normal adult learners. From this theoretical basis, a specific system of criticism of multi-imagery can be developed.

My theory of multi-imagery, emphasizes relationships and relevancy. No matter what message a multi-image program presents, the content should somehow

benefit from the unique combintations possible when using mixed media. Images juxtaposed with each other and with an audio track, must display some conceptual or compositional unity; there must be an overall relationship which ties together the whole package or there will simply be an unnecessary perceptual overload. In terms of information theory, a high state of information is one in which you cannot predict upcoming elements in a message. Some of this type of information is required to keep an audience curious and interested in your message. However, too much unknown information--as expressed by "Why are these slides together?" or "What's this got to do with what went before?"--will destroy the effectiveness of any message. To keep a program stable, relationships must be constantly employed in all dimensions: spatially among the present display of images, temporarily among one set of images and the next, and conceptually among the images and the soundtrack.

The other key to a proper use of multi-imagery is relevancy to the situation at hand. As I have shown in previous writings research indicates that linear ideas are learned equally well by adults with either single or multiple imagery. Therefore, a simple instructional unit or argument does not require the complex technique of multi-imagery. Simply stretching linear data across three screens is not relevant to the medium of multi images. Neither is filling three screens with redundant duplicates of key slides. Either of these procedures may be effective if used sparingly, but generally they are not relevant to an effective use of simultaneity. Multi-imagery should be used only as it can significantly enlarge the spectator's perception of an idea, event, or experience. A linear idea is relevant for multi-imagery only when used with young children or slow learners, because for them it does amount to an enlarged learning experience. Normal adult learners need additional peripheral enhance-

ments to linear ideas in order to enlarge their learning situations. Thus, what is relevant to one audience or topic may be totally irrelevant to another.

All this must be kept in mind when transferring theoretical concepts about multi-imagery to applied critical standards. No matter how technologically devastating a program is, nor how simple it appears to be, any program can be dysfunctional if it is not based on clear relationships and made relevant to its purpose and audience. When evaluating a program, a critic (teacher, art director, client, etc.) must demand that the program demonstrate functional characteristics and an awareness of the medium being employed. Whether the producer is a student doing a class project or a nationally recognized designer showing to a corporate convention, he/she must adhere to certain minimum standards of multi-image communication.

First, there must be a clear goal to the program--to show, to excite, to convince, to teach, to enlighten, to please, or whatever. A careful examination of communication theory will lead the critic to realize that all messages fall under one of five functions--information, instruction, persuasion, entertainment, and enrichment. For a justification of these five choices, see my chapter on evaluation in The Art of Multi-Image or my ERIC paper, no. ED 124 104. Any message could use elements from all functional techniques, but a successful message will subordinate technique to an overall, definable function. Thus, at the recent AECT/AMI Multi-Image Festival, Richard Shipp's "Three Finger Exercise" effectively used the entertaining effects of animation and fast pacing to deliver a persuasive message--"Buy AVL programmers!" This disarming technique of lowering an audience's sales resistance with pleasing distraction is an acknowledged and scientifically proven approach to the persuasive function. Similarly, some persuasion and entertainment may be effective in keeping an instructional audience keyed in on their subject.

Since most multi-imagery is intended for a specific audience, there is usually a foregone agreement between producer and critic as to what the function of the program will be. Further, except for student classroom projects, most evaluation sessions take place in a lengthy critique before the program is shown to the intended audience. Multi-image criticism, therefore, is not like reviewing a film or play for a general audience; rather, it is (normally) a private session between critic and producer with both intent on fine tuning the program to its most useful state. Relevancy becomes the overriding concern as the critic decides if the program fits its functional needs, if it displays clear functional characteristics, if the content is relevant to the message, and if the multi-image technique is relevant to the message. When these questions are decided in the affirmative, then the structure and style of the program must be examined to insure that coherent relationships exist among the components. Such analysis, when properly done, can be very extensive and time-consuming. It can also be very subjective if the critic simply feels "it's not quite what we had in mind" but cannot explain why.

To provide some direction to this necessary process of multi-image criticism, I have done some work on a general evaluation form as reproduced here on the next page. This form is the result of computer factor analysis of longer test instruments used at the 1977 AECT and SCA national conventions. At both conventions I showed a three-screen program of mine, "Deja VishnU," and asked the audiences to evaluate it on the 2-page forms provided; brief summaries of functional characteristics were provided on the test forms, but no further explanation of the forms was given. From a total of 36 evaluative items the 10 shown on my present form factored out significantly.* Also included in the significant

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*Using the Varimax Rotated Factor Matrix after Rotation with Kaiser Normalization, using only factors with Eigen values of over .97. Got that?

Association for Multi-Image Evaluation Form

Date _____

Producer of Program _____

Title of Program _____

What does the function of the program seem to be: (check one)

INFORMATION . INSTRUCTION . PERSUASION ENTERTAINMENT ENRICHMENT

Respond to the following statements by checking the appropriate box:

Strongly Agree		Not Certain		Strongly Disagree	
( )	( )	( )	( )	( )	The program's function was clear over 50% of the time.
( )	( )	( )	( )	( )	The program clearly demonstrates its functional characteristics.
( )	( )	( )	( )	( )	The program's structure enhances the function.
( )	( )	( )	( )	( )	The program's visuals are appropriate to the content.
( )	( )	( )	( )	( )	The program's length is appropriate to the content.
( )	( )	( )	( )	( )	The multi-image format enhances the content.
( )	( )	( )	( )	( )	Length and pacing are excellent.
( )	( )	( )	( )	( )	Aesthetic quality of the audio (variety, editing) is excellent.
( )	( )	( )	( )	( )	The program held my attention over 50% of the time.
( )	( )	( )	( )	( )	The program was an enjoyable experience for me.

OVERALL RATING:

()Superior () Above Average () Average () Below Average ()Inferior

COMMENTS:

Reviewer _____

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items were the concepts of functional choice and overall rating. The result is a checklist that can help guide any critic in evaluating any multi-image program, no matter what the length, purpose, or format. The critic's choices will still be subjective (as any criticism always is) but with this common instrument, both producer and critic will have a more substantial basis for discussion. "I don't like it" or "I don't understand it" would no longer suffice as reasons for rejection. Much more detailed explanations will be in order.

Using this instrument does require some clarification. To use it one should:

1. thoroughly understand the characteristics that differentiate various functions (see references above) and don't judge one function by the needs of another.
2. don't try to assign numbers to the evaluative items in an attempt to determine "Overall Rating;" (I tried several versions of this and found that any numerical sum invariably forced me to give too high a rating to a poor show).
3. accept that the items here stress structure, pacing, appropriateness, and enjoyment, just as my initial writings on functional/experiential criticism predicted.

What we normally expect to see on a critical form--technical and aesthetic quality of visuals, technical quality of audio, and quality of presentation environment--were important scales in the testing, but not as significant as the 10 scales presented here. These traditional evaluative areas will have to be incorporated into the critic's responses to attention, enjoyment, and overall value.**

Naturally, this instrument is useful only if it can be applied in real situations. I did that at the 1978 AECT/AMI Multi-Image Festival, rating every program immediately after presentation. While I did not have the opportunity to discuss function and rating with the creators, as normal multi-image critics and producers would, I found the instrument to be very useful, even in an anonymous festival situation. Based on this system I awarded the rating of "superior" to the following programs: Kodak's "Look at It This Way," Spindler and Sauppe's "Star Wars," (actually just a title sequence, not a true program), U. of North Carolina's "Women in the University," George Sosnowski's "Subliminal Trends in Advertising," and Bob Rowan's "Junkyard," "Geology Coal Group," and "Wil" from the U. of South Carolina's special presentation evening.

While I had no predetermined system for relating the 10 scales to the overall rating, I found that of the programs I rated "superior" all had 7 or more scales rated as "strongly agree." Thus, as a rule of thumb, I suggest that a program must achieve the highest possible rating on at least 7 scales to be rated as "superior." Distinctions between "above average" and "average" will be even more subjective, based on the distribution of scale ratings and visceral

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**One other important note is that the random sampling used to garner subjects at the conventions resulted in only 84 people being tested. Further work may bring some minor changes in the form presented here.

"feel." However, I strongly recommend that the critic predetermine a fairly solid concept of "average"--demanding a basically clear function, competent structure and technique, and a relevant use of multi-image relationships. "Average" should indicate what we expect any competent program to be; "average" is not mediocre! Thus, of 39 shows presented, I rated 12 of them as "average"--as good as I would hope any show would minimally be--17 as "above average," very enjoyable or tightly controlled experiences. "Below average" should indicate a serious, but manageable, problem--over lengthy, pace too fast or slow, function not clear, technical distractions, inappropriate content segments or irrelevant juxtapositions. For me, this was the case in one of the programs I viewed. "Inferior" is clearly a bad show with the function and/or structure obscured, the components severely flawed, or all of the above. Two of the 1978 Festival entries were "inferior" in my opinion, one due to an absolute disaster with the programmer and the other due to a very irrelevant lack of relationships.

A final note about relevancy of formats is the use of single-image programs at the Festival. Some producers demonstrated that their messages were linear ones, which fit well into the single screen dissolve mode. This should always be the choice of a producer, unless the content demands the simultaneous relationships of multi-imagery. In fact, many multi-image programs that I ranked as "average" might well have been better condensed to a single screen. (I don't use "multi-image" to refer to sequential-image, single screen programs; "slide/tape" or "multimedia program" suffices for me.) In addition to Rowan's "Wil," the best of this group was Tom Hedges' "The Paramount," a beautiful and eloquent argument for restoration of an old theatre.

Other specific comments on individual programs are not appropriate without the opportunity for direct feedback from the producers; however, AMI is embarking on a policy of being more publically critical of substandard presentations

at our national festivals. While we do not consider ourselves elitest judges of perfection (I've certainly done plenty of mediocre shows), we do wish to keep advocating high standards that will keep us all striving for improvement. Hopefully through the use of a theoretical system and evaluation form such as I have described here we will all be able to talk and work toward that common goal.

FOOTNOTES

[1]"A Theory of Multiple-Image Communication," AV Communication Review 17 (Winter 1969): 368-382.

[2]Ken Burke and Bernard Fradkin, "History, Theory and Research Related to Multi-Image," in The Art of Multi-Image, Association for Multi-Image, 1978, pp. 7-17.

[3]"Masquage: An Extrapolation of Eisenstein's Theory of Montage as Conflict to the Multi-Image Film," Film Quarterly, Spring 1968, pp. 15-21.

[4]Ken Burke, "A Pragmatic Approach to Criticism of Multimedia," Journal of Educational Technology Systems 6 (1, 1977-78): 57-76.

IV. RESEARCH

Now that we have discussed what multi-imagery is, how it evolved, and how it seems best to be used, the next area to explore is how empirical research has borne out the usage theories. As in any discipline, ideas about multi-imagery are only as good as they are applicable to real situations. Thus, the grand claims for commercial multi-image films made by Siegler in the last section must be modified by the reality of costs and audience demands that prevent all films from being multi-image wonders. Similarly, Perrin's theoretical statements about multi-image slide/tape programs are clarified when specific experiments are conducted with this form of communication. From this modification came my theoretical stand on multi-imagery being relevant to specific kinds of audiences and content.

As best as we can tell from existing research (which presents a shaky bunch of conclusions indeed) there are different results to be obtained from children and adults, media novices and media literates, normal achievers and low achievers, and visual and haptic learners where multi-imagery is concerned. It would appear that even simple triptych displays of sequentially organized material are advantageous for young, slow, and haptic learners as well as for people not versed in media instruction. Further, more conceptually organized designs have appeared to be successful for both cognitive and affective results in normal, adult learners. If these results are accurate, they indicate the direction that must be pursued in further multi-image research and design. Testing must be done to firmly establish the specialized audiences that benefit only from simple multi-imagery; then design studies must be done to learn how to properly expand upon linear, single-image concepts. The potential for multi-image to increase motivation levels, to deliver more information

in shorter time periods, and to organize a richer variety of interrelated concepts must be verified through studies that define the guidelines for these achievements. A side effect would be to more closely define the types of audiences and content which do not benefit from multi-imagery. Just as all commercial films don't lend themselves to a mosaic approach, so do certain instructional and motivational units demand the simplicity of a linear presentation. Also, more confirming research must be done in all of the above areas to verify (or change) these assumptions through the sheer weight of evidence.

For those topics that do benefit from multi-imagery, though, the key concepts will be perception and design. We must learn better how we process multi-image presentations, and, accordingly, design these programs for maximum benefit to their intended audiences. The articles by Goldstein and Pasquella lay the foundations needed for researchers and producers alike in breaking through to new levels of accomplishment. Given this foundation, it is hoped that the next ten years of study will prove as fruitful as the decade since Perrin's theoretical defense of multi-imagery. Already, new studies verifying previous results are coming to light.

Foremost among these are R. D. Owens and G. O. Coldevin's "Effects of Varied Temporal Visual Overlapping in Multi-Image Tape-Slide Presentations," (Programmed Learning and Educational Technology, February 1977, pp. 32-42) and Donna Toler's "The Effect of Presentation Mode on Visual Concept Discrimination by Visual and Haptic Students" (Ph.D. dissertation, Indiana University, 1979). Owens and Coldevin again show no significant differences between sequential and simultaneous presentation for simple visual material--hopefully a final proof that this type of comparison is useless. However, they did show that there was a significantly better amount of aural learning from the narration with the multi-image version. This is an entirely new finding and bears further investi-

gation. Toler's study verifies Ausburn's dissertation cited in the following article that simultaneous presentations of material achieve higher levels of recall than sequential presentations for both visual and haptic students. Simultaneous presentations also led to higher scores in regard to levels of visual complexity, but Toler's subjects were unlike Ausburn's in that her haptics did not benefit at a significant level due to presentation format (although their scores were improved by simultaneous presentations).

In that Toler's finding about improved performance for haptics through multi-imagery places some doubt on Ausburn's findings, this area is clearly one that bears further study. Are haptics helped only in simple visual recall tasks, with topics such as concept formation too complex for benefits to occur? Does the age difference between Ausburn's haptics (undergraduates) and Toler's haptics (7th and 8th graders) indicate any correlation between age and advantages of multi-imagery for this kind of learner? Then, what of the other groups of learners so far identified as helped by multi-imagery: children, slow learners, and media novices. What are the variables that increase and decrease the benefits of multi-imagery for them? These questions, along with the ones previously noted about conceptual design for normal adult learners, must be answered through more frequent, vigorous analysis.

A Review of Research on Multi-Image

By Ken Burke

Introduction

In the past twenty-five years multi-image slide/tape/film programs have become an accepted means of communication in education, business, industry, government, religion, and the arts. Periodical indices of all these disciplines list frequent titles on "multi-image" and "multimedia" while longer works have been devoted to the history and criticism of multi-imagery (14, 16) and the process of multi-image production (4). As knowledge about this new endeavor has grown there has been an increasing movement to bring order, improvement, and understanding to the use of multi-imagery. Psychedelic "image baths" of the late 1960s have been replaced with sophisticated and intricately controlled message presentations. Further, there are now more formal means of organization and communication such as the Association for Multi-Image (AMI), formed in mid-1974.

As more comprehension of multi-imagery has been accumulated by various academic and commercial groups, it has been disseminated through convention papers, seminars and workshops. This article offers another addition to that body of knowledge, as there has been only one prior published summary of research on multi-imagery (25). Many of the studies in this area are dissertation experiments that were not reported to the general public. It is this author's hope that sharing this data will provide more impetus for additional needed research.

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An Overview

Generally, research in multi-imagery has been limited in scope and complexity. Most studies are attempts to prove the superiority of a multi-image program over a similar single-image program. All but one of these experiments used self-contained slide/tape formats, and all but one used a triptych for the multi-image configuration. Thus, multi-imagery has rarely been tested against the traditional lecture mode or against the "media-enhanced" lecture mode. There are very few published accounts of multi-image lectures that employ a live instructor being tested for teaching effectiveness.

These limitations are important to keep in mind when trying to generalize from the existing research. It must be emphasized that an automated slide/tape program is a wholly different communication experience from a live lecture that incorporates multi-image teaching aids. Accordingly, test results from the use of multi-image programs should not be used as evidence either for or against simpler media-enhanced lectures. The traditional lecture vs. the media-enhanced lecture is also a different issue, but there is ample evidence in the ERIC data base (22) and elsewhere (40, 51) to support media-enhanced teaching. As an aspect of teaching with media, multi-imagery also has some empirical support.

Theories of Multi-Image

In 1969 Donald Perrin offered the first theoretical statement on multi-imagery (45). He said that simultaneous images on a large screen or adjacent screens create a pattern of information comparison and simultaneous visual montage. These visually-rich displays increase information density and facilitate certain types of learning. According to Perrin and others (47) some of the types of learning most appropriate to the multi-image method are comparisons,

contrasts, details, interrelationships, maintaining continuity through steps in a process, maintaining long interest spans and high motivation levels, and keeping the learners oriented on the subject.

Perrin's evaluation of the advantageous uses of multi-imagery has never been challenged in print. Unfortunately, most research on multi-imagery has not incorporated Perrin's directives. Most multi-image programs designed for testing purposes have been three-screen equivalents of single-image presentations. This design limitation has clearly been manifested in the research results.

Early Research -- 1950s and 1960s

Multi-Channel

When Perrin made his first theoretical statements about multi-imagery he had no concrete evidence that simultaneous projection was superior to sequential projection for adolescent and adult learners. However, there was a body of literature on multi-channel learning that was relevant to multi-imagery. The basis of these studies was the Broadbent model of information processing (10). Broadbent's theory that the central nervous system alternates rapidly between aural and visual inputs indicates little need for redundancy and/or simultaneity in message design.

Indeed, there were consistent results showing no superiority of audio/print/pictorial combinations over single presentations of audio, print, or pictures. The inadequacy of audiovisual redundancy to convey more information than single-channel transmissions was documented by Hartman (27, 28) and confirmed by Travers (54, 55), Severin (49, 50), Hsia (31, 32), and Olsen (44). From these studies the only useful purposes to be found for audiovisual redundancy were in aiding slow learners and in helping reduce the perceptual overload from high rates of information transmission. Conway (18, 19) challenged these findings,

pointing out the lack of attention given to the varying effects of verbal, visual and iconic signs on the learner. Conway's writings were theoretical, however, and never resulted in analyses of the most effective interactions between redundancy, related material, words, pictures and symbols.

The most positive aspect of the multi-channel research was in documentation of the cue summation concept. Hartman's early work had shown that the audio/pictorial combination was the most effective instructional use of electronic media support (27). Severin (49) further elaborated the use of audio with pictures. He showed that this combination produces more learning when related, rather than redundant, bits of information are combined across the channels of transmission. Anderson (3) then showed that learners have negative reactions to all audio, print, and pictorial combinations except pictorial/spoken which is perceived as clear, easy and complete. A proper use of cue summation rather than redundancy can thus be regarded as an advantage to learning. This gives clear support to audiovisual media such as film and television. What remained to be studied was the possible advantage of using many related cues with multi-imagery.

Multi-Imagery

The first studies comparing single and multiple image versions of the same material were done in Europe and have not yet been made available in English. These three studies (37, 38, 48) show that children learn material from filmstrips and other visual media best when multi-image versions of the programs are used. This simultaneous projection of images in their proper sequential order helps these young learners organize and retain the ideas and relationships of the images in the presentation. Allen and Cooney's study in 1963 (2) confirmed the earlier results. Children of sixth grade level and below benefit

from multi-imagery but eighth graders score equally well with either format. Information retention and image grouping procedures apparently develop in human minds by about age twelve. These mental operations seem to cancel the previous gains achieved through the use of simple multi-imagery.

Lombard in 1969 (36) confirmed the standoff between single and multi-image versions of the same program with older learners. His high school subjects retained well with both versions, although the scores were somewhat higher with the multi-image program. An interesting note is that one of Lombard's test groups were low-achievers and they did significantly better in cognitive recall with the multi-image program. This suggests that the adult mental cataloging ability noted above is more dependent on intelligence than on chronological age.

Related to this mental development aspect of multi-image efficiency are the findings of Hartman (28) and Hsia (32) that audio presentations work best with simple educational material, especially when the learners are young children or illiterates. Print versions of the same material or more complex material bring better results from older children and literate adults. It seems clear that various media styles and combinations will have different degrees of appropriateness for various levels of learners.

Validation Phase

By the early 1970s there was wide dissemination of Perrin's theory of multi-imagery as well as a steady growth of enthusiastic users of multi-imagery. Through Perrin's writings there was also an awareness of the research of Allen and Cooney and Lombard. Thus, several researchers were encouraged to undertake further study of multi-imagery. Unfortunately, most of their results continued

to show no significant differences between single and multiple image versions of slide/tape programs when used for cognitive retention with adults.[1]

Bollman (9) tested for affective responses and got a positive trend from the multi-image group; however, he also found no significant differences between this group and a group with a similar, single-image program. Bollman further noted that no significant differences resulted from the subject's proximity to the screen, although the best responses came from those closest to and farthest from the viewing surface. Atherton (5) tested for both cognitive and affective responses; he also tested formats by matching a slide/tape triptych against a 16mm film on the same topic. His trends favored the film group for cognitive gain and the slide/tape group for affective responses, but again there were no significant differences.

Didcoct's study (20) was the last in this series and his results would seem to close the investigation for good. He compared single and multi-image versions of two different programs, both for cognitive and affective results. For both programs the single-screen version received a higher cognitive score, and one of these was statistically significant. The multi-screen version of the first program received more positive affective scores, while the single-screen version of the second program was the affective victor just as it had been for cognitive scores; neither difference was significant, nor were one-week retention scores which favored multi-imagery for the first program and single imagery for the second. Thus, by the early 1970s a pattern was set that showed no learning gain for adults when using multi-imagery. There was usually a more positive emotional response to the multi-image method, but even this was not significant.

Didcoct also showed a disadvantage for a slightly weak multi-image program. He admits that his second pair of programs had a relatively inferior sound track

and feels that it created too much confusion in the multi-image version. His estimation is confirmed by the significantly higher cognitive score for the single-image version and by the 64% negative reaction to the multi-image program. Fradkin (24) also examined the effects of improperly used multi-imagery by studying a situation of information overload. Fradkin's subjects were shown four separate silent cartoon episodes about a central character. Test groups saw these sequentially, two at once and four at once. As could be predicted, the lack of relevant cues among the images resulted in less recall from the multi-image versions. Immediate and delayed retention significantly decreased as more images were added; thus, "information baths" would not appear to be useful for cognitive learning. A related study by Jones (35) shows that linear presentations of audio material are superior to simultaneous presentations when using isolated, coherent statements.

A final study from this period, done by Yolles (57), extends the previous knowledge about the use of multi-imagery with its prime subjects, children. Yolles arranged two versions of a multi-image program: one was designed conceptually so that images stayed up only when needed by the script and the other advanced all three images on each change with duplicate slides used to "retain" an image. Alternate versions of each program also varied the narrator's voice; one used an adult, the other a 13 yr. old boy. No change was attributed to the narrator, but both fourth and sixth graders recalled significantly better with the simultaneous-change design. Since such a simple use of multiple imagery almost negates the advantages of cue summation, it must be assumed that the age of the learners required the most basic format of simultaneous imagery. Simultaneity does help children synthesize information in space rather than time, but it becomes too complex when extended to a conceptual design. Allen and Cooney had previously shown that children do not learn conceptual information

well (although multi-imagery allows them to comprehend a mix of factual and conceptual information); Yolles indicates that children do not learn well from conceptual designs either. Another possible advantage in the simultaneous-advance method is that the eye is attracted to change (41), and thus information from previous slides is seen again and reiterated in context of the additional information shown on the new slides.

All in all, by 1972 there was substantial evidence that multi-imagery is effective only with children and slow learners, while poorly-designed multi-imagery is detrimental to learning. However, some other studies have emerged that show superior cognitive and affective responses from the use of multi-imagery.

Success with Multi-Imagery

The first study to show significantly better responses to multi-imagery used with adults was conducted in 1970 by Reid (46). He tested affective responses from church members to single-image and five-image versions of a 16mm film. Favorable responses to the film were measured by immediate commitments of time and money to the church social action program. All groups who saw a film contributed significantly more than did control groups, and two of the three multi-image test groups contributed significantly more than did their single-image counterparts.[2]

Ingli (33) then demonstrated superiority for multi-image used in cognitive retention. His study is unique in that he compared traditional lectures to multiple-image media enhancement of an entire course. Comparing students from Education, Communication and Fine Arts, and "other" colleges, he found that the multi-image enhanced course was significantly better than the traditional lecture method and best for the "other" college group. Ingli attributes this

result to the novelty and excitement of multi-imagery, which is normally used less in "other" disciplines than in education and communication. This success of multi-imagery with media novices may also have contributed to the significantly better scores recorded for this method by Reid and Brydon (discussed below), who are the only researchers to study adults not well conditioned to methods of simultaneous presentation. While it is positive to know that media novices can be taught better with multi-imagery, it may ultimately be a hindrance if media literates become immune to its benefits. A later study by Hosley (29) verified the success of multi-imagery with children by showing that fifth graders retained equally well with either field labs or multi-image teaching, although a combination of the two is significantly better than either used alone.

Another cognitive success with multi-imagery when compared to single-imagery was recorded by Ausburn (6). His test was different in that he used a visual location task rather than an instructional unit and he divided his subjects according to their visual or haptic orientation. Both groups did significantly better with multi-imagery, and the haptics improved significantly more than the visuals from using the multi-image method. Since visual tasks are difficult for haptic perceivers, this success with multi-imagery is analagous to the success of simultaneity used with children. In both cases, multi-imagery acted as an equalizer in a situation for a certain type of learner. Visual location proved to be a type of task well suited to multi-imagery since the visual perceivers also did significantly better with this method. Ausburn may have further provided an explanation for the equality between single and multi-imagery in most of the previous studies. Since visuals make up about 50% of the population, as compared to 25% each for haptics and indeterminates,

many of the previously tested populations may have been heavily weighted with visual learners. People with the combined adult capacity for temporal organization and the visual capacity for linear, logical comprehension would probably do equally well with single-image or multi-image versions of an informational unit. Since none of the above researchers except Reid provided a multi-image program that was dramatically expanded from the single-image program, an overload of visual subjects could easily neutralize any significant gains made by haptics. Ausburn's insight into the basic division of perceptual types will have to be addressed in future multi-image research.

Thus, multi-imagery has been proven statistically significant for children, slow learners, haptics, and media novices, as well as affectively significant when used in a complex, expanded format. Brydon (13) even showed superior results for simple multi-imagery used with a normal distribution of adult learners. Brydon's study was extensive in that he used two pairs of programs, one to test aircraft workers for cognitive recall and another to test affective responses from high school students. Both tests showed significantly better gain from the multi-image version of the topic. Brydon attributed his success to the inherent interest generated by the complexity and involvement of properly designed multi-imagery. His results are surprising, though, in that his design was not any better than that of his predecessors. For his cognitive test he used the basic simultaneous triptych, and for his affective test he merely added more, similar slides to the single-screen version; possibly he was successful because his subjects were media novices, like Reid's and Ingli's. Jodoin (34) completes this series of experiments with a design no better than Brydon's; however, Jodoin's single-image program and multi-image program augmented by duplicates and repetitions were not significantly different. Jodoin did achieve

a significant victory for multi-imagery, though, with a three-week cognitive retention test.

Of the nine studies[3] described above comparing single and multiple imagery for adult learners, five show no significant differences between the two methods of presentation and four show some better results with multi-imagery. More specifically, comparisons of cognitive scores produced five stalemates, one single-image victor, and three multi-image victors (including one retention test); affective comparisons resulted in five draws and two victories for multi-image. It must be remembered that several of these nine studies tested with two programs and measured both cognitive and affective responses, thus the discrepancy in the numbers of total tests. All of the pertinent information from the studies described above is summarized in Figure 1, along with some other studies to be described below.

Statistically, it would seem that the evidence supports no meaningful differences for multi-imagery when used for cognitive retention in normal adult learners. However, it is important to realize that while there were few significant victories for multi-imagery, there were consistently high scores from using multi-image programs. Except for the Didcoct study, all multi-image programs garnered highly positive responses. Further, when there were control groups for comparisons, both types of media-enhanced lecture unit outscored traditional lecture methods. Thus, it is clear that students of all ages are responsive to multi-imagery, even if their responses are not statistically better than their involvement with single imagery. These findings, in addition to the stronger affective results in favor of multi-imagery, should be enough to justify the further development of this form of communication. Accordingly, the next topic to be addressed in this paper is the most effective use of multi-imagery.

Figure 1

A COMPARISON OF MULTI-IMAGE RESEARCH

(All presentations were slide/tape with identical material unless otherwise noted)

Study	Measured	Subjects	Result
Malandin (no date b)	simultaneous images in patterns of 2, 4 and 5; cog.	children	simultaneous images effective for 9-11 yr. olds
Roshka (1958)	sequential vs. simultaneous images; cognitive	children	simultaneous better for younger children
Allen and Cooney (1964)	1 screen vs. 3; factual vs. conceptual material; cog.	6th and 8th grade	for 6th, 3 better for mix of factual-conceptual; for 8th, both equal
Lombard (1969)	1 screen vs. 3; similar material; cognitive	11th grade	equal, except 3 better for low-achiever females
Reid (1970)	1 vs. 5 screen film; similar material; affective	churchgoers	in 2 or 3 parishes, 5 screen better
Bollman (1970)	1 screen vs. 3; similar material; cognitive	undergrads	equal, various screen proximities equal
Atherton (1971)	1 screen film vs. 3 screen slide/tape; cog. and aff.	undergrads	equal
Fradkin (1971)	1 vs. 2, 1 vs. 4; retention of unrelated visuals	10th grade	1 better than either 2 or 4 for immed. and reten.
Tam and Reeve (1971)	1 vs. 2, 1 vs. 3, and sequential 3 vs. conceptual 3; cog.	undergrads	equal
Didcoct (1972)	1 vs. 3; 2 separate tests; cog. and aff.; retention	undergrads	test 1, equal; test 2, 1 better for cog.; retention, equal
Ingli (1972)	lecture vs. 3; cognitive; entire semester's course	undergrads	3 better for media novices; 3 better than trad. lecture
Yolles (1972)	sequen. 3 vs. concep. 3; effects of narrator's age; cog.	4th, 5th, 6th grade	sequen. better for 4th and 6th; narrator, no dif.

Figure 1 (continued)

Study	Measured	Subjects	Result
Brydon (1974)	1 vs. 3; cog. and aff.; 2 tests; 2nd, similar material	1-workers 2-10th grade	3 screen better for everything tested
Hosley (1974)	field lab vs. 3 screen; cog.	5th grade	equal, field plus 3 better than 3 alone
Meyrowitz and Fradkin (1975)	1 vs. 3; sequential 3 vs. conceptual 3; cog. and aff.	undergrads	1 and 3 equal; conceptual 3 better than sequen. 3
Ausburn (1975)	1 vs. 3; visual vs. haptic learners; cognitive	undergrads	3 better; haptics learn better with 3 screen
Jodoin (1976)	1 vs. 3; cog. and aff.; retention	undergrads	equal, except 3 better for cog. retention*

*Snowden (1965) and Trohanis (1972) also show significant reten. with multi-imagery.

Program Design

A closer reading of the studies cited above reveals a widespread misunderstanding of Perrin's theoretical arguments for multi-imagery. Most tests involving multi-imagery compared sequential and simultaneous versions of the same material. The enriching additions of multi-imagery--details, comparisons, inferential commentary--were avoided in order to keep the testing conditions more comparable. The end result was a series of multi-image programs that could hardly have been expected to yield better results than their single-image equivalents. Of the "no significant difference" group of multi-image researchers, none seem to have utilized the expanded possibilities of multi-imagery. Atherton was the worst in comparing a film with no true movement to a slide triptych composed solely of the same still images used in the film. Didcoct was probably the best of this group, in that he used identical material in his pairs of programs, but for multi-image he structured it conceptually so that the best combination of images were used for each segment. Lombard and Jodoin added some slides to their multi-image design; however, these additions were merely duplicates of previously used slides. Bollman added several new slides, but they were so similar in content as to be duplicates of the single-image version of his program. Even in the "multi-image superior" group, Brydon used multi-image designs identical to those of Atherton and Bollman. Only Reid's study has made significant use of added, related material in the multi-image format. This is the approach that should be taken if cue summation is to be properly translated into multi-imagery, but the realization has been slow in coming.

Two studies have been directed to the question of multi-image design for adults, but no conclusive findings have emerged. Tam and Reeve (53) compared cognitive responses to a program shown in single-image, sequential-triptych, and conceptual-triptych formats. As noted before, the sequential-triptych mode

is simply adding on the same images as in the single-image format, either one at a time or three at once. While this proved effective for children, it would seem to present too much redundancy to be useful for adults. The conceptual-triptych format, as used by Brydon and Didcoct, brings up images as they relate to each other, often with opaque slides used to remove unnecessary past illustrations. Multiple imagery scored higher than single imagery in the Tam and Reeve study and the conceptual grouping received the highest score, but none were significantly higher.

Meyrowitz and Fradkin (42) conducted a similar study in 1975. Again, there were no significant differences between single and triptych presentation modes, but there was a significant difference in favor of the conceptual triptych. Thus, for adults, conceptual arrangements of multi-images do work better than simple simultaneous multi-imagery probably because interest can be maintained as redundancy is reduced. This should not overshadow the more basic finding in both the Tam and Reeve and Meyrowitz and Fradkin studies that single-imagery and multi-imagery are not statistically significant. This brings the total of stalemates to thirteen (combining cognitive and affective measures), with multi-image proving superior in only five measures.

The failure to show differences is based on so many conceptual errors as to almost nullify the existing research. Despite the early discovery that simultaneous triptychs held no advantages for adults, later studies--such as Jodoin's--continued to use them. Despite Perrin's detailed account of the advantages of multi-imagery when used to transcend the linear thinking of single-imagery, most of the above studies did not allow the multi-image program its natural ability to add slightly more information. At best, designers discovered that a conceptual arrangement of the material is more interesting, but

this accomplishes little if the same information could be presented in a linear format.

Even more serious than the design failures is a conceptual failure common to all of the above studies which use a narrative soundtrack. In all of the programs described above, the soundtracks were identical. This is not a faulty design factor in itself, but it becomes one when a closer comparison is made between the soundtrack and the tests applied to these programs. All of the test answers--except for the first half of Tam and Reeve's test--are contained in the soundtrack. Even affective responses were indicated in the soundtrack of Atherton's programs. While the visuals usually served to clarify the audio in these experiments, an attentive subject need not have been influenced at all by the visual configuration. This fact, combined with the design failures and general disregard of visual and haptic learning styles and relative degrees of media literacy noted above, can easily explain the failure of multi-imagery to test out as a significant method of communication.[4]

Of the five measures in which multi-imagery did prove superior, two are immediately clear: Ausburn's and Reid's. Ausburn used no soundtrack to provide answers, he used a topic which needed multi-imagery for clarification, and he divided his subjects into visuals and haptics to control for different learning styles. Reid used the most expanded multi-image treatment--five images in a wider format than his single-image film--and he measured affective responses to another activity rather than directly to the program itself. Brydon's successes with multi-imagery are inexplicable in context of his design similarities to multi-image failures. Jodoin's failure with a design similar to Brydon's is more understandable, but he provides the new information of <u>retention</u> with simple multi-imagery. Other studies also show retention successes with multi-imagery (52, 56) so this is an area that bears investigation. How-

ever, it would seem more profitable to test immediate and delayed retention with expanded, conceptual programs such as Reid's rather than spend any more effort on multi-screen equivalents of linear films and slide shows.

Designers of multi-image must better understand the intent of Perrin's theoretical statements. Multiple imagery should be regarded as a unique medium with its own rules, conventions, and devices. Using it properly may require different strategies and techniques than would a comparable film or videotape.

Conclusions

From the above discussion we can make the following statements:

1. There is little to be gained from using complete audio-visual redundancy (27, 28, 30, 31, 49, 50, 54) except for: (a) teaching slow learners and children (1, 2, 31, 36, 37, 38, 39, 48, 57), and (b) overcoming presentation conditions of rapid transmission and/or high levels of noise (32, 44, 54).

2. For normal adult learners there is little to be gained from the redundant use of sequential-triptych versions of single-image audiovisual programs (2, 5, 9, 20, 34, 36, 42, 53).

3. Audiovisual combinations which use related cues in audio/pictorial combinations are very effective, both for cognitive and affective results (3, 49, 50).

4. There is evidence to show that relevant cues expanded into conceptual and complex multi-image formats can be very effective for both cognitive and affective learning (13, 42, 46).

Directions for Further Study

There seems to be a definite dead-end in comparing single-image and sequential-triptych versions of slide/tape programs. Even a good conceptual arrange-

ment of the same images or the addition of redundantly similar images adds little to a linear, single-image program. Normally, the only difference to be expected in such a situation would be a greater affective response to the complexity and activity of multi-imagery. Conceptual, expanded triptychs seem to have greater potential than single-image programs for certain types of learning, but more studies must be done to further identify these types. It may be found that certain design elements or certain types of content are most appropriate for multi-imagery. Visual location tasks have been proven to be a proper subject for multi-imagery; such things as comparisons, contrasts, and interrelationships have often been presumed to be proper subjects as well. These form and content variables should be identified if possible and elaborated further in sophisticated production manuals.

Other areas in which research is needed are perception and learning as related to multi-image programs. Goldstein (26) has begun this process by reviewing the literature on single-image perception and applying these findings to the situation of multi-image perception. Brooks (11) has designed a very sophisticated device for measuring eye movement responses to multi-imagery, while Nelson (43) and Meyers (41) have actually measured such eye movements. Nelson used a nine-image matrix with a pair of alphabet letters randomly distributed to each box. After a 25 millisecond exposure, subjects were asked to recall the content of the boxes. Nelson estimated that over 80% of the fixations were on the center, top center, and top left areas. When the same nine-image field was repeated several times learning of the content apparently occurred and more attention was devoted to the other areas of the matrix. This study is of marginal interest since the nine-image matrix does not translate directly into the horizontal triptych normally used in multi-imagery. Meyers recorded eye movement responses to an actual multi-image instructional unit

presented in the Telemation triptych format, that is one large lefthand image and two smaller, stacked, horizontal right-hand images. His findings were: (1) new images command more attention, (2) the larger of several new images commands more attention, (3) the comparison patterns are left to top right, then left to bottom right, (4) little available viewing time is spent on printed titles while much time is spent on sketches and diagrams, (5) most available viewing time is spent on images with 5-6, 12-16, or 3-4 points of interest while images with 1 point or more than 16 points receive little attention. Studies similar to Meyers' should now be done with standard, equal-sized triptychs. Perceptual factors such as color, movement, size, image configuration, rapidity of image change, and effects of dissolving images compared to straight "cut" images should also be studied.

A different group of perceptual topics which need to be studied center on the information processing capacity of individuals; these topics include grouping of cues, information and sensory overload, filtering, and the interrelationship of redundancy and information overload. A solid foundation has been laid in the writings of Bruner (12), Fleming (23), and Hsia (30). Building from this, future studies should be done to determine the amount of visual information which can be successfully combined with simple aural information. Then, attention must be given to the more difficult relationship of complex visual information and complex aural information. These two modes of informational complexity may exist in a flexible ratio where the perceiver's comprehension capacity is concerned. If guidelines could be formulated explaining such a ratio, then designers of multi-image programs could more accurately keep their work within normal levels of physical perceptual capacity.

Learning from multi-image programs must also be studied in depth. As noted from the previous research, it will be useful to test with expanded con-

ceptual treatments which transcend linear, single-image organizations. One of the advantages of simultaneous, multiple sources of information is the possibility of marginal commentary. Through the complex format of multi-image programs, peripheral relationships and ideas can be presented along with the basic subject matter of the program. It is necessary to test the hypothesis that more total learning will occur when students are exposed to these expanded-conceptual formats. Of course, even marginal commentary should be based on the proven principles of cue summation and use of related cues among the images.

Retention of information and satisfaction with the presentation method are also related to learning with multi-imagery. Jodoin has shown that long-term retention is better with multi-imagery; Trohanis (56) and Snowden (52) have further explored retention with different types of multi-imagery. Working with eleventh and twelfth graders, Trohanis used three 10-minute slide/tape triptychs on psychology. Subjects saw these in separate class periods, two in the same period, and three in the same period. Immediate recall favored the separate period method, but one-week retention tests showed no differences although all three were significant retentions. Snowden compared four pairs of multi-image lectures in each of two semesters; one type of lecture featured the live instructor with multi-image support while the other type consisted of the same multi-images run automatically with taped narration by the instructor. An added twist in the second semester was a 10-minute summary by another instructor at the end of each automated lecture. Immediate recall and 10-week retention tests were given in addition to a questionnaire on satisfaction with the instructional method. Scores from the automated group were higher for immediate recall and significantly higher for retention ($<.05$) in the first semester. For the second semester, retention scores were higher ($<.05$) for the live lecturer

group, possibly because of hostile feelings by the "summary" instructor toward the automated multi-image format. For both semesters the live lecturer group was more satisfied with their method.

In another study of satisfaction with multi-imagery (15), slightly unorthodox churchgoers preferred a non-traditional Easter program much more than did their orthodox counterparts. All groups were favorable to the multi-image program based on Jesus Christ Superstar, but the humanistic portrayal of Jesus was better received by the less orthodox worshippers.

Generally, it appears that students retain well with multi-imagery, although they prefer live interaction along with electronic media. Further, viewers will be receptive to almost any type of content if presented in a well-designed multi-image format. All of these areas would benefit from further study related to the design areas noted above.

Learning styles may also be a factor in these future studies. For example, slow learners are apparently aided by sequential multi-imagery. However, a program with an expanded treatment of a topic may be too complex for slow learners, just as such programs proved too complex for children (56). On the other hand, slow learners might still acquire the basic core information of a multi-image program even though they do not catch all the subtle additions possible in an expanded-conceptual format. If the excitement of a complex design could hold their attention, possibly the basic information might well be retained even if the marginal commentary is lost on them. If this did prove to be the case, an even stronger argument could be made for using expanded-conceptual multi-image programs for all types of adult learners. Even visuals and haptics could be reconciled with the expanded-conceptual format if the former could be attracted to the marginal commentary and the latter could be aided with the multi-image method of "supplantation learning" (6).

Other areas of study could be such things as program elements and learning environments. As regards program elements, researchers such as Dwyer (21) and Berry (7, 8) have found that slow learners retain more from abstract than from realistic images. Again, this is probably related to the information processing capacity of different types of learners. Possibly, multi-image programs could be designed to appeal to all types of learners, although some would learn more because they would be able to process more marginal commentary. The possibility of 360° environments for multi-image instruction should also be tested, as was begun by Carmichael (17). Such experiments could be conducted in permanent 360° chambers such as "The Egg" at the University of Texas at Austin.

Whatever the results, all of the factors relevant to the complexity of the topic, effectiveness of message elements, learning styles, ability of learners, and psychological/perceptual abilities should be incorporated into aspects of the testing. From these studies should result a substantial, reliable body of information that will aid all designers and users of multi-imagery.

FOOTNOTES

[1]For the remainder of this study, "adult" will refer to both adults and adolescent learners of at least eighth grade level since testing shows no real differences throughout this range. Accordingly, "children" refers to learners below eighth grade level. There is a final assumption that normal learners in both groups have attained a mental age roughly equivalent to their chronological age.

[2]Jodoin claims that Reid's computations are wrong, and that his multi-image film was statistically significant for all three groups.

[3]Fradkin's study is not included in this total since his emphasis was on learning from disorder rather than from planned construction. Ingli's and Hosley's are not included since they tested types of lectures rather than self-contained slide/tape programs.

[4]The author thanks Dr. Robert Heinich for suggesting this avenue of exploration.

REFERENCES

1. Allen, W. H., & others. Effectiveness of different combinations of visual presentation modes in teaching different types of learning tasks, final report. ERIC no. ED 044 759, 1970.
2. Allen, W. H., & Cooney, S. M. A Study of the non-linearity variable in filmic presentation. ERIC no. ED 003 563, 1963.
3. Anderson, J. A. Single channel and multi-channel messages: a comparison of connotative meaning. AV Communication Review, 1969, 17, 428-434.
4. Gordon, R. (Ed.). The Art of Multi-Image. Abington, PA: Association for Multi-Image, 1978.
5. Atherton, L. L. A comparison of movie and multiple-image presentation techniques on affective and cognitive learning. Unpublished doctoral dissertation, Michigan State University, 1971.
6. Ausburn, F. B. Multiple versus linear imagery in the presentation of a comparative visual location task to visual and haptic college students. Unpublished doctoral dissertation, University of Oklahoma, 1975.
7. Berry, L. H. Interactive effects of color realism and learner I.Q. on visualized instruction. ERIC no. IR 004 032, 1976.
8. Berry, L. H. An investigation of the effectiveness of realistic and non-realistic color in visualized instruction. ERIC no. IR 004 033, 1975.
9. Bollman, C. G. The effect of large-screen, multi-image display on evaluative meaning. Unpublished doctoral dissertation, Michigan State University, 1970.
10. Broadbent, D. E. Perception and Communication. New York: Pergamon, 1958.

11. Brooks, R. D. Instrumentation for the measurement of eye movement response to multimedia. Unpublished doctoral dissertation, University of Wisconsin at Madison, 1968.

12. Bruner, J. S. On perceptual readiness. Psychological review, 1957, 64, 123-152.

13. Brydon, W. P. Comparing single-screen and three-screen presentations. Unpublished doctoral dissertation, University of Southern California, 1974.

14. Burke, K. A pragmatic approach to criticism of multimedia. Journal of Educational Technology Systems, 1977, 6, 57-76.

15. Burke, K. Worship and multimedia. ERIC no ED. 124 204, 1973.

16. Burke, L. K. A history of multimedia. ERIC no ED. 126 889, 1972.

17. Carmichael, J. G. The use and development of programmed environment in educational communication. Unpublished doctoral dissertation, University of Southern California, 1974.

18. Conway, J. K. Information presentation, information processing, and the sign vehicle. AV Communication Review, 1968, 16, 403-414.

19. Conway, J. K. Multiple-sensory modality communication and the problem of sign types. AV Communication Review, 1967, 15, 371-383.

20. Didcoct, D. H. Comparison of the cognitive and affective responses of college students to single-image and multi-image audio-visual presentations. Unpublished doctoral dissertation, University of Wisconsin at Madison, 1972.

21. Dwyer, F. M., Jr. A study of the relative effectiveness of varied visual illustrations, final report. ERIC no. ED 020 658, 1967.

22. Faegre, C. L., et al. Analysis and evaluation of present and future multimedia needs in higher education, final report. ERIC no. ED 024 351, 1968.

23. Fleming, M. L. Perceptual principles for the design of instructional materials, final report. ERIC no. ED 037 093, 1970.

24. Fradkin, B. An investigation of the effects of multi-image stimuli on later recall of tenth grade students. Unpublished doctoral dissertation, University of Pittsburgh, 1971.

25. Fradkin, B. (Ed.). A review of multiple image presentation research. ERIC no. ED 130 680, 1976.

26. Goldstein, E. B. The perception of multiple images. AV Communication Review, 1975, 23, 34-68.

27. Hartman, F. R. Recognition learning under multiple channel presentation conditions. AV Communication Review, 1961, 9, 24-43.

28. Hartman, F. R. Single and multiple channel communications: a review of research and a proposed model. AV Communication Review, 1961, 9, 235-263.

29. Hosley, E. W. A comparison of two methods of instruction in environmental education. Unpublished doctoral dissertation, University of Maryland, 1974.

30. Hsia, H. J. The information processing capacity of modality and channel performance. AV Communication Review, 1971, 19, 51-75.

31. Hsia, H. J. Intelligence in auditory, visual and audiovisual information processing. AV Communication Review, 1969, 17, 272-282.

32. Hsia, H. J. On channel effectiveness. AV Communication Review, 1968, 16, 245-267.

33. Ingli, D. A. Teaching a basic audiovisual course by the multi-image technique. ERIC no. ED 060 634, 1972.

34. Jodoin, J. P. A comparison of three-screen and single-screen presentational formats on fact recall and attitude change. Unpublished doctoral dissertation, Boston University, 1976.

35. Jones, R. T. The effect of multi-channel audio stimuli on learning efficiency. Unpublished doctoral dissertation, Syracuse University, 1969.

36. Lombard, E. S. Multi-channel, multi-image teaching of synthesis skills in eleventh grade United States history. Unpublished doctoral dissertation, University of Southern California, 1969.

37. Malandin, C. Grouped and successive images. Unpublished manuscript, Centre d'Etudes et de Recherches pour la Diffusion du Francais, Ecole Normale Superieur de Saint-Cloud, France, undated.

38. Malandin, C. Research on the understanding of filmstrips. Ministere de l'Education Nationale, Ecole Normale Superieur de Saint-Cloud, France, undated.

39. Menne, J. M., and Menne, J. W. The relative efficiency of bimodal presentation as an aid to learning. AV Communication Review, 1972, 20, 170-180.

40. Meyer, J. R. A study of the effects of peer-produced, multi-media, multi-sensory, learning materials on the attitude and achievements of junior college students. Unpublished doctoral dissertation, University of Miami, 1975.

41. Meyers, J. R. A study of eye movements and fixations in a multi-image presentation. Unpublished doctoral dissertation, University of Wisconsin at Madison, 1972.

42. Meyrowitz, J., and Fradkin, B. Design of multi-image instructional presentations. Paper delivered to annual convention of the Association for Educational Communication and Technology, Dallas, April 16, 1975.

43. Nelson, J. M. An investigation of audience viewing patterns during multi-image presentations. Unpublished doctoral dissertations, East Texas State University, 1972.

44. Olsen, J. R. The effect of multi-stimuli presentations on learning gain. Unpublished doctoral dissertation, Catholic University of America, 1969.

45. Perrin, D. G. A theory of multiple-image communication. AV Communication Review, 1969, 17, 368-382.

46. Reid, R. O. A comparison of a multi-image and a linear film format as agents of attitude change. Unpublished doctoral dissertation, Syracuse University, 1970.

47. Roberts, A. B., and Crawford, D. L. Multi-screen presentations: promise for educational improvement. Audiovisual Instruction, October 1964, pp. 528-530.

48. Roshka, A. U. Conditions facilitating abstraction and generalization. Voprosy Psikhologii, 1958, 4, 89-96 (reported by I. D. London, Psychological Abstracts, 1960, 34, 85).

49. Severin, W. Another look at cue summation. AV Communication Review, 1967, 15, 233-245.

50. Severin, W. The effectiveness of relevant pictures in multiple channel communications. AV Communications Review, 1967, 15, 386-401.

51. Smith, M. D., Schagrin, M., and Poorman, L. E. Multi-media systems: a review and report of a pilot project. AV Communication Review, 1967, 15, 345-369.

52. Snowden, T. J. Comparison of three types of multimedia presentations. Unpublished doctoral dissertation, University of Wisconsin at Madison, 1965.

53. Tim-Kui Tam, P., and Reeve, R. H. The image accumulation technique as a variable in multiple-image communication. ERIC no. ED 048 734, 1971.

54. Travers, R. M. W. The transmission of information to human receivers. AV Communication Review, 1964, 12, 373-385.

55. Travers, R. M. W., et al. Research and theory related to audiovisual transmission, revised ed. Kalamazoo, Michigan: Western Michigan University, 1967.

56. Trohanis, P. L. Audible multi-imagery: information learning and retention capabilities. Unpublished doctoral dissertation, University of Maryland, 1967.

57. Yolles, R. S. Multiple image and narrative formats in teaching intermediate-grade science. Unpublished doctoral dissertation, University of Southern California, 1972.

Reprinted from

AV

Communication

Review

Volume 23, Number 1, Spring 1975

The Perception of Multiple Images

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The Perception of Multiple Images

By E. Bruce Goldstein

Introduction

The seeds for this paper were planted four years ago when I saw my first multi-screen presentation. This experience stimulated me to produce a five-screen presentation for my introductory psychology class, and then, a year later, to offer a course called "The Psychology of Art and Multimedia." This paper is a result of these initial attempts to consider multimedia--or, more specifically, multiple-image presentations--within the framework of existing perceptual theory.

The initial idea behind the "Multimedia" course proved naive. I had thought it would be possible to analyze the psychological and perceptual phenomena that occur during a multiple-image presentation by applying what is

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AVCR EDITOR'S NOTE: Although the terms multimedia, multi-image, multi-screen, and multimage are often used interchangeably, the term used here is multiple-image presentation, meaning, specifically, more than one image presented simultaneously, without regard to number of screens used, method of projection, or addition of sound.

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In order to make publication of this paper in this volume feasible, it has been necessary to omit the figures. The paper has, therefore, been edited (by the author) slightly to remove references to the figures from the text. Omission of material from the text due to this editing is indicated by elipses (.....).

known about perceptual psychology to the specific stimulus conditions that exist in multimedia. Unfortunately, I found this to be a difficult task. There is essentially no literature specifically considering multiple-image presentation from a psychological or perceptual point of view, and the psychological literature is not always easily applied to the demands of the multimedia environment.[1] In spite of these limitations, my multimedia course did occur. This paper presents the experimental and theoretical findings I was able to assemble and apply to understanding what happens in presentations that use multiple screen or image areas. Although some form of audio track typically accompanies the visuals in these presentations, only the visual aspects of the presentation will be considered here.

The questions people usually ask about multiple-image presentations have to do with how someone watching the presentation can cope with numerous images presented simultaneously, and often quickly as well. Most psychologists with whom I have discussed this feel that whether an observer can, in fact, successfully take in and remember all, or even part, of the information that is presented is an open question. On the other hand, most producers of multi-screen or multi-image presentations assume that observers can take in most of the information that is presented in their shows. A recent brochure published by a manufacturer of multimedia programming equipment states:

Multiprojection as a system of communication works on the basis that people are able to absorb considerable amounts of different visual information simultaneously. It is therefore ideal for use in those situations where the viewer/listener's time is limited. Generally, therefore, the "multi" screen system will be suitable for prestige exhibitions where they will perform the two functions of conveying the maximum amount of information in the minimum time and of being spectacular and entertaining.

This statement is interesting because it likens the observer to a sponge (albeit a busy one, whose time is limited). It is assumed that the observer will absorb all of the considerable amount of visual information that flashes before him. The purpose of this paper is to determine whether or not this is, in fact, true by asking three basic questions:

1. Can an observer perceive information presented over a large area of his field of vision?
2. How well can an observer perceive information that is presented simultaneously?
3. Once this information is perceived, how well can it be remembered?

Perception Over a Large Visual Field

To answer the first question, we must first consider the nature of the visual field--that area of space we can see with our head and eyes held stationary.

The Visual Field

(.....) The visual field extends about 180 degrees laterally and 150 degrees vertically (Gibson, 1950). You can estimate the extent of your own visual field by extending your arms in front of you and then, while looking straight ahead, moving them out to the side until you can just barely see your hands. The angle between your arms defines the horizontal extent of your visual field. If this angle is, say, 160 degrees, you should be able to see the full extent of a movie screen that is 1000 feet across if you are sitting 100 feet away, without moving your eyes or head!

Although the visual field covers a large area, the area of detailed vision is quite small. (.....) The image of an object falls within this area of detailed vision, which is about the size of a dime held at arm's length, only when you look directly at the object. When you look directly at the object you

are fixating that object and the image of the fixated object always falls on the fovea, the small area of the retina that is most sensitive to detail. (.....) Visual acuity, our ability to see detail, is high at the fovea but drops off rapidly as we move away from the fovea and towards the peripheral retina. Our inability to perceive detail in peripheral vision can be easily demonstrated by looking as steadily as possible at one of the letters near the center of this page. How many words can you read on either side of the fixated letter--without changing your gaze? Another way to demonstrate the same effect is to face a mirror and then look just slightly to one side without moving your head. Can you--without moving your eyes back--now detect the position of the pupils of your eyes? The reason that you can't is that when you look to the side, the images of your pupils cannot fall on the fovea. They fall on the peripheral retina which can't resolve enough detail to detect the pupils' position. There are, therefore, at least two different kinds of vision: detailed foveal vision and the less distinct peripheral vision.[2] This distinction between foveal and peripheral vision is an important one which, perhaps more than any other factor, influences our ability to process visual information.

If we can take in detailed information from only a small portion of our visual field, how can we see the details in a large scene? We see the details in a large scene because we normally do not keep our eyes and head fixed in place. We scan the scene by moving our eyes and head so that many areas of the scene can be brought into foveal vision. According to Julian Hochberg (1970), "Eye movements are, of course, the most massive instrument of visual attention . . . What doesn't fall within your field of view, you can't perceive at all, and what doesn't fall on the fovea, you can't see clearly." Therefore, the next step in determining how we perceive information presented over large

areas of the visual field is to investigate the process by which we scan the visual field.

Information from Foveal Vision: Scanning the Scene

How is a scene scanned? One way to answer this question is to present a scene, or a picture of a scene, to an observer and to measure his eye movements as he scans the scene. This has been done by a number of investigators, mostly with still pictures (Buswell, 1935; Yarbus, 1967; Mackworth, 1967; Gould, 1967; Noton & Stark, 1971a, b; also see review by Fleming, 1969). (.....) These investigators find that only certain areas of the picture are fixated, that these areas usually receive more than one fixation, and that most of the picture is never fixated! A fixation usually lasts from two- to eight-tenths of a second and an eye movement usually lasts from one- to eight-hundredths of a second. A subject therefore typically observes a picture by means of a large number of fixations separated by relatively rapid eye movements. Vision apparently takes place primarily during the fixations because visual acuity is greatly decreased while the eye is moving (Latour, 1962; Volkman Schick, & Riggs, 1967). Since eye movements are so rapid, the observer spends about 95 percent of his time fixating and only five percent of his time moving his eyes. However, for our purposes the important finding of these eye movement studies is that only certain parts of a picture are ever fixated. The next question, then, is, what determines which area of a picture is fixated?

One of the factors that determine the pattern of eye movements across a picture is the information content of specific areas of the picture. Mackworth and Morandi (1967) measured observers' eye movements while they looked at a picture. This picture was then divided into 64 squares and an independent group of observers was asked to rate the "informativeness" of each square. Informativeness was defined in terms of "recognizability." A square was rated

high in informativeness if the subject judged that it would be easy to recognize on another occasion. The results showed that observers differentially fixated certain areas of the picture and that these highly fixated areas were the areas that were rated highest in "informativeness." Two-thirds of all fixations occurred in one-tenth of the picture's total area.

While the information content or physical makeup of the picture is a major determinant of where we look in a picture, the pattern of eye movements can also be influenced by what the observer wants to look for or is told to look for. Altering the instructions to the observer causes large changes in where the observer fixates and in the overall pattern of eye movements. For example, when Yarbus (1967) told subjects looking at a picture to determine the ages of the people in the picture, the pattern of eye movements was different than when the subjects freely scanned the picture. Other studies indicate that novel or complex pictures are fixated more than less novel or less complex pictures (Webb, Matheny, & Larson, 1963; Berlyne, 1966; Leckart, 1966; Faw & Nunnally, 1967).

Another factor determining where an observer looks is motion or change. Many nerve cells in the visual cortex respond only weakly to steady illumination but respond with a burst of nerve impulses to moving stimuli or stimuli that are turned on and off (Hubel & Wiesel, 1962). An analogous situation exists for visual perception. A change in stimulation is one of the most effective ways of attracting attention.[3] Neisser (1967) states that "when something moves in a portion of the field to which we are not attending, it usually captures our attention almost at once," and both Gibson (1966) and Moray (1970) suggest that movement in the peripheral visual field triggers a built-in fixation reflex to bring the moving stimulus into foveal vision (cf. Bizzi, 1974; Schiller & Stryker, 1973). It has been my experience that it is sometimes

almost painfully difficult to resist looking at a stimulus that is rapidly moving in the periphery, and all of these findings are consistent with the fact that, while the periphery is poorly suited for detecting detail, it is quite sensitive to movement (Sweet, 1953).

In the above discussion we have emphasized the idea that we perceive pictures or scenes by scanning these scenes. Only certain parts of these scenes are actually fixated so that they fall on the fovea and can be seen clearly. We have seen that various factors, such as the amount of "information" in an image, instruction to the observer, the observer's interest in a picture, and movement or change all help determine the pattern of scanning. Our major emphasis up to this point has been on the importance of foveal vision, but in doing this we have ignored 99 percent of the visual field. There is increasing evidence that peripheral vision plays a role in our perception of pictures even though fine, detailed vision is not possible in the periphery. It is common experience that we perceive a "whole" scene even when it is exposed for so brief a period that only one or a few fixations can be made. Try closing your eyes and then, after five or ten seconds, rapidly blink them open and shut. We may not see all of the fine details of the scene but we are conscious of areas of the scene that are not fixated but are taken in through peripheral vision.* (.....) Peripheral vision apparently helps us to integrate or "piece together" the components of a complex scene.

Peripheral vision must also play a role in determining the eye movement patterns described above. The absence of fixations in large areas of a picture must be due to peripheral vision. These areas must be seen so the observer can make a decision not to look there (Mackworth & Morandi, 1967). An experiment by Williams (1966) supports this idea. He presented a field of about 40 degrees visual angle, containing a large number of geometric shapes of different

210 (BLANK)

colors. There was a two-digit number in the center of each shape. When the subject was asked to locate a particular number in the display, all shapes were fixated equally as the subject searched the display. However, when the subject was told what color the correct number was on, fixations were concentrated on that particular color. The observers in Williams's experiment must have used peripheral information to selectively direct their fixations to the relevant colors. Williams's result supports Mackworth's (1965) statement that "to reduce random search, eye movements must often be planned from data acquired by the peripheral retina." Peripheral vision must also be responsible for directing our attention to moving stimuli since, as stated above, peripheral movement elicits a fixation response which brings the moving stimulus onto the fovea.

Thus, the above experiments show that peripheral vision is important in helping us to perceive complex scenes and in determining our eye movements. But, the question still remains: How much information can be taken in by peripheral vision?

Information from Peripheral Vision

It has not been possible until recently to even begin answering this question. In a book published less than ten years ago, Gibson (1966) notes the absence of experiments which would provide an answer to this question:

> Experiments have shown that the periphery of the field of view of an eye does in fact register crude information. If an observer is required to fixate an uninteresting spot on a screen, and if a motion, pattern, form or color is then displayed at some angular distance outward from the spot, he can identify certain features of the display but not others. If this experiment were pursued in an attempt to determine what variables of information can be reported instead of what qualities of sensation the peripheral receptors possess, it might be very revealing.

The general results of experiments on the properties of peripheral vision are summarized by Edwards and Goolkasian (1974) who state that, "the ability of periphery to process information depends upon the region stimulated, the complexity of the task, and the size of the stimulus." Performance generally improves when stimuli are moved closer to the fovea, and are made larger, brighter, or less complex. Thus, there are reports of good performance in the periphery when the stimuli are easily discriminable and/or are located not too far into the periphery. Mackworth (1965) found that subjects could tell whether three letters which were presented for one-tenth of a second were the same or different when the letters were separated by ten degrees of visual angle. And Lefton and Haber (1974) found that subjects could judge whether two letters separated by four degrees were the same or different with about 95 percent accuracy (although they also found that the subjects took longer to make the judgment as the letters were moved further apart).

Edwards and Goolkasian (1974) studied peripheral vision at 10, 15, 25, and 58 degrees from the fovea for four different tasks which differed in complexity; the easiest task required that the subject simply detect a light, while the most complex task required that the subject be able to read a three-letter word. Performance was high for all four tasks at 10 degrees, but began to decrease at the more peripheral locations. At 15 degrees performance was still high for the simplest tasks but was low for the most complex one, and at 58 degrees performance was poor on all tasks except for the simple light detection task. This study underscores the fact that while information can be taken in peripherally, only crude information (such as detection of a light) can be taken in when the visual angle is large.[4]

We should also note that the subject's only task in the above experiments was to detect or identify a stimulus presented in the periphery. However, a

person watching a multiple-image presentation is simultaneously presented with both foveal and peripheral stimulation. The relevant question to ask is, therefore: Can peripheral information be perceived when the subject is attending to other, centrally fixated, stimuli? A few experiments suggest that the amount of information that can be taken in from a particular area of peripheral vision may be at least partially determined by information that is being presented elsewhere in the visual field. Biederman's (1972) results suggest that perception of a stimulus may be facilitated if it is part of a larger, coherent whole, such as a picture. There is also evidence, however, that the addition of extraneous, unrelated, stimuli makes it harder to process peripheral information (Mackworth, 1965), and that attention to a task such as counting the number of flashes of a centrally fixated light or the number of times a tone is sounded, results in a decrease in the perception of information that is simultaneously presented to the far periphery (Webster & Haslerud, 1964). This finding is an interesting one because it shows that trying to do two things at once--in this case, monitoring foveal and peripheral vision simultaneously--causes a decrease in performance on one of the tasks. This brings us to the second question posed at the beginning of this paper: How well can an observer perceive information that is presented simultaneously?

Perception of Simultaneous Presentations

Simultaneous Input in Hearing

The question of simultaneous information processing was first investigated in the sense of hearing (Cherry, 1953; Broadbent, 1958). In summarizing the results of many of these hearing studies, Kahneman (1973) notes that many studies show the difficulty of dividing attention between two tasks. For example, Mowbray (1953) found that subjects could not listen to one story

while reading another. Even in situations in which subjects can divide their attention between two simultaneous messages, performance on both messages together is usually worse than performance on one of them presented alone. It is possible to attend successfully to two messages at once only when they are both very simple or familiar. Kahneman also makes the interesting observation--which is particularly relevant to wide-angle displays of several images--that it is especially difficult to simultaneously attend to two auditory messages that are separated in space.

The general finding that it is difficult for an observer to attend to more than one message at a time led Donald Broadbent (1958) to propose his "filter model" of auditory attention. This model states that the information reaching the observer is carried in a number of different "input channels." For example, presenting one message to the left ear and another message to the right ear results in two input channels. According to Broadbent the reason that we can usually attend to only one message at once is that the nervous system is essentially a single communication channel--it can only handle one channel of information at a time. This limited capacity of the nervous system necessitates a filter which passes information in the attended channel and filters out information in the unattended channels. The nervous system can handle information from more than one channel only if the information in the channels is simple or familiar enough so that the input channels are not full. While many of the details of Broadbent's model have been replaced or modified since it was proposed (see Treisman, 1969; Norman, 1969; Hochberg, 1970; Broadbent, 1971; Haber & Hershenson, 1973; Kahneman, 1973), it is generally accepted that the auditory system selects, or at least concentrates attention on, one, or a limited number of channels, from the large number of channels available to the listener. This puts definite constraints on the total amount of auditory information that can be processed by the listener.

We are interested in determining whether there is a similar limit to the amount of visual information that can be processed by an observer.[5] We will start by asking the question: Can a number of channels of visual information be perceived simultaneously?

A Visual Channel

One of the first problems to consider in attempting to answer the above question is "what is a visual channel?" In audition a channel is often defined as the left ear or the right ear. It does not necessarily follow, however, that the left and right eyes should be designated as two different channels, since presentation of different stimuli to each eye results in a condition known as "retinal rivalry" (Moray, 1970). Rivalry refers to the fact that when different stimuli are presented to each eye only one stimulus is usually seen at a time. The stimuli that are presented to the left and right eyes are not seen simultaneously, but, rather, are perceived alternately, one after the other. Thus, if the left and right eyes are designated as two separate channels, rivalry would make it impossible for these two channels to be used simultaneously. As Kahneman (1973) notes, the idea of a channel "is not easily applied to visual attention." For example, Kahneman suggests that color or size could define a channel in vision. A subject might be instructed to attend to all red images (channel 1), to the exclusion of all blue images (channel 2). But it would be difficult to apply this idea to complex stimuli such as pictures or to large areas of the visual field (cf. Williams, 1966).

One alternative is to consider an area in space--for example, a particular screen area--as a visual channel. So, the right screen would be channel 1, and the left, channel 2. The visual analog of an auditory attention experiment in which two verbal messages are presented simultaneously would then occur when

two narrative films, or slide presentations, are shown side by side. In the auditory selective attention experiments in which meaningful material is used, words are strung together in a meaningful way and are related to each other by the rules of syntax and grammar (Neisser, 1967). A similar situation exists in a narrative film, in which a series of images are used to tell a story. In this case the visual channels would be defined in terms of both the content and the spatial position of the messages.

While the definition of a channel in terms of areas in space seems to work well for two simultaneous films, few multiple-image presentations follow the traditional linear form of most prose or narrative film. Gerd Stern, one of the pioneers of the simultaneous presentation form, questions the idea of using a linear, narrative form when he states, "We're dealing with the question of how you can get into the mind with information and images and whether literary, sequential ordering is really the only decent, rational and reasonable input" (Kostalenetz, 1967). McLuhan (1969) makes a similar point: "Multi-screen projection tends to end the story line.... That is, multiple screen in creating a simultaneous syntax eliminates the literary medium from film."

The definition of a channel in terms of separate areas in space encounters further difficulties when we consider some additional properties of multiple-image presentations. For example, what if two pictures are superimposed on the same screen area? What if a large panoramic picture which fills the screen is replaced with two smaller, and quite different, pictures on the same screen? (.....) It could be argued that every picture contains as many smaller "pictures" as there are fixation points on the picture! Therefore, the idea of a channel, while valuable in audition, is harder to apply to vision. Rather than discussing visual attention in terms of channels we therefore will use the more neutral term "inputs" (see Treisman, 1969; Kahneman, 1973) and will

modify our original question slightly to read: Can a number of visual inputs be processed simultaneously?

Simultaneous Input in Vision

The answer to the above question depends to some extent on the spatial separation between the inputs. It is usually assumed that two detailed stimuli that are separated by a large visual angle cannot be processed simultaneously due to the physiological limitations imposed by the small area of foveal vision. Although some simultaneous perception may be possible through peripheral vision, this is limited to the detection of crude information such as the presence or absence of a light (cf. Edwards & Goolkasian, 1974; Webster & Haslerud, 1964). Some recent visual search experiments have demonstrated that under some experimental conditions a number of stimuli can be processed simultaneously in displays which cover about two or four degrees of visual angle, an area only slightly larger than the fovea (Egeth, Vonides, & Wall, 1972; Jonides & Glickman 1972). There are, however, situations in which two or more stimuli can be simultaneously presented to the fovea but cannot be simultaneously processed. Two such situations are when different stimuli are presented to the left and right eyes, and when two or more stimuli are superimposed, such as the case when two slides are superimposed.

Simultaneous perception of two different stimuli presented to the left and right eyes is not possible due to retinal rivalry, and a similar situation exists when two or more different pictures are superimposed and are presented to both eyes. In this case both pictures can be seen (i.e., rivalry does not occur), but it is often difficult to perceive both pictures simultaneously. If a picture of a farm is projected on top of a picture of an airport, it is difficult to perceive the details of the farm and the airport simultaneously.

The overall effect, then, is that the details of one of the pictures are difficult to perceive while attending to the other picture.

It is also possible to present a stimulus that can result in two different perceptions. Two examples of this are the Necker cube ..... and Rubin's well known example of reversible figure-ground in which the stimulus can be interpreted as either a single vase or two faces (see Attneave, 1971; Hochberg, 1971a). In both cases the same result occurs. It is not possible to perceive the Necker cube or Rubin's reversible figure-ground in both configurations simultaneously (Attneave, 1971; Vernon, 1970). We experience an alternation back and forth between the two different perceptions.

Thus, all three examples above lead to the same conclusion: even when the stimuli are presented to the fovea simultaneously, it is difficult or impossible to perceive them simultaneously. Simultaneous perception of a number of visual imputs is not possible due to the nature of foveal vision (we can fixate only on one thing at a time) and the fact that even when stimuli can be presented to the fovea simultaneously we do not necessarily perceive them simultaneously. Thus, with the exception of the small amount of information which may enter through the peripheral visual fields (Edwards & Goolkasian, 1974) and situations where small, nonoverlapping stimuli are presented to the fovea (Egeth et al., 1972), it is not possible for multiple images to be perceived simultaneously. Visual input must, therefore, occur sequentially, with the bulk of visual information entering through the almost constantly moving fovea. This means that while it is not strictly possible to see two things "at once," nearly simultaneous vision can be accomplished by rapidly switching attention from one part of the visual field to another with eye and head movements.

The next question we should consider, then, is: How rapidly do you have to move your eyes from one area of the screen to another in order to perceive all of the information that is being presented? Unfortunately, there has been little research on this problem. It seems likely, however, that one of the most important factors influencing the rate at which we must switch our attention from one area to another is the rate at which the information is being presented.

How do we measure the rate at which information is presented? This is a difficult question to answer because it is not clear how to measure the information in a picture. The amount of information in both visual and auditory stimuli has generally been defined in terms of degree of predictability of the stimulus (Shannon & Weaver, 1949; Attneave, 1954; Treisman, 1966; Moray, 1970). A picture that is predictable is said to have low information content. By predictable, we mean that we can predict the contents of one area of the picture by looking at the contents of another area. An example of this type of picture is a desert scene. After seeing one part of the desert you would be able to predict fairly accurately what the other parts look like. High predictability equals low information content. In contrast, a picture in which we cannot easily predict the contents of one area by looking at another area is said to have high information content. Thus, a picture of a complex city scene, would contain a large amount of information since one part of the picture cannot be easily predicted from another part. (.....) Low predictability equals high information content.

The results of Mackworth and Morandi's (1967) experiment tie this idea of predictability to the subject's eye movement patterns. In this experiment subjects rated the "informativeness" of an area of a picture in terms of how easy it would be to recognize that area on another occasion. Mackworth and

Morandi found that the areas that were rated high in informativeness generally contained unpredictable contours and received more fixations. If this result holds when more than one picture is presented we would expect that pictures that have a high information content (are less predictable) would receive more fixations than pictures that have a low information content (are more predictable.[6]

Adding additional pictures complicates the specification of information content. Relationships between pictures appearing both simultaneously and sequentially must be considered, and the total amount of information in a multiple-image display would not necessarily equal the sum of the information in each of its components. For example, a display of two very similar, or identical, pictures would probably not impart twice the information as one of them displayed alone. It is therefore necessary, when specifying information, to consider the overall display rather than each component separately.

The above discussion should suffice to indicate the crude nature of our ability to measure the information in pictures. The problem is even more complex than this, however, because we are interested not only in the information present in an array of pictures at a particular point in time, but also in the amount of information occurring per unit of time. The information per unit of time (or rate of information flow) would presumably be a function of 1) the information content of the overall display at any point in time, 2) the relationship between successive displays, and 3) the rate of change between successive displays. Again, the concept of predictability can be applied. A highly predictable sequence of images would presumably contain less information than an unpredictable sequence.

If fixations are, in fact, related to the rate of information flow it would be expected that high scanning rates would be associated with high rates

of information flow and low scanning rates, with low rates of information flow. For example, two sequences of slowly changing (or highly predictable) simple images could be scanned at a leisurely pace; missing some of the images would not be crucial since predictability is high. On the other hand, high information flow would demand faster scanning both between pictures and within details of a specific picture. Since the maximum rate of switching is two to four fixations per second (Moray, 1970, p. 147; Noton & Stark, 1971a),[7] it may not be possible to take in all of the information if the rate of information flow is high (due either to large amounts of detail within each picture, fast rates of change, and/or low predictability between pictures in a sequence). This condition is often referred to as "overload."

Senders (1967) conducted one of the few experiments in which observers were asked to scan a constantly changing stimulus display. The stimulus display consisted of six dials similar to those used in an airplane instrument panel. When subjects monitored the position of a moving needle on these dials, Senders found that the number of fixations on each dial was approximately proportional to the speed at which the needle moved. In other words, the time spent sampling a dial was approximately proportional to the amount of information transmitted by that dial. If observers monitor a multiple-image presentation in a similar way, we would expect the number of fixations to be greater in areas which are changing rapidly and/or contain more information.

Another factor which should be considered in our discussion of the relationship between scanning rate and information is the idea that in many cases it may be neither necessary nor desirable for an observer to take in all of the information that is available in a display. For example, it might not be important that the subject perceive many of the small details in a picture even though these details may add "information" to the picture. It is highly un-

likely that a subject will perceive all of the details of a picture unless exposure times are extremely long, and the important consideration for the observer may be, in fact, simply to determine what the picture "means." It is often possible to extract the "meaning" from a picture without perceiving every truck in the picture,[8] or, to put it another way, even if every truck in the picture is perceived, individual trucks may be forgotten while memory for the overall meaning of the picture remains. The above ideas are especially relevant to Miller's (1956) ideas regarding how information should be specified. He argues that information should be defined in terms of the units that the perceiver uses for a particular task. So, the specification of information (and the accompanying scanning rate) really depends on the level of analysis required in a specific situation. The information contained in the words on this page can be analyzed in terms of the individual letters that make up the words, the meaning of the individual words, or the meaning of a string of words. The situation for visual displays is similar. The observer can be concerned with small fixation points within a picture, the meaning of the picture as a whole, or the meaning of the picture as it relates to other pictures that are presented either simultaneously or sequentially. Thus, if the observer is primarily interested in the general meaning of a series of pictures, small details within the pictures will not be important, fewer fixations will be required per picture, and the rate of scanning can be slower.

Now that we have considered how an observer can perceive information presented simultaneously over a large area of the visual field, we can ask, finally: Once this information is perceived, how well can it be remembered?

Remembering Pictures

We have seen that it is possible to observe scenes covering large areas by using foveal scanning and peripheral vision. But, is a scene that is observed

always remembered at a later time? This question has recently been considered by a number of investigators. Nickerson (1965), Shepard (1967) and Standing, Conezio, and Haber (1970) have all shown that observers can recognize pictures which they have previsouly seen, with a high degree of accuracy. For example, Standing et al, presented subjects with 2500 pictures for 10 seconds each over a period of either two or four days. Following this initial presentation, the original pictures were paired with new pictures and the observers were asked to pick the pictures which were originally presented. Observers were able to do this with an accuracy of over 90 percent. Similarly, Shepard found that subjects recognized pictures with an accuracy of 98 percent following presentation of 680 pictures. The general conclusion from these studies has been that "recognition memory for pictures is essentially perfect" (Haber, 1970). This conclusion has important implications since it means that once a picture is observed, it can be easily remembered.

It is important, however, to determine under what conditions this excellent memory for pictures occurs. In all of the above experiments subjects had at least five seconds to view each picture and were able to pay full attention to the pictures. When subjects are required to do a distracting task such as counting backwards by threes while viewing the pictures, their performance is reduced considerably (Freund, 1971; Loftus, 1972). Another important variable especially relevant to multiple-image presentations is the time available for viewing the picture. Standing et al. (1970) obtained recognition memory of greater than 90 percent for 120 pictures presented for one second each. Potter and Levy (1969) (.....) found that subjects could remember pictures well if they were presented for one or two seconds, but at shorter exposures performance dropped off rapidly. A picture is recognized only about 15 percent of the time when it is presented for 125 msecs.

Potter and Levy's finding provides some practical data which could be applied to multiple-image presentations: for a picture to be remembered the observer should be given one to two seconds to observe it. This sets limits to the speed of presentation if good recognition memory is desired. Although Potter and Levy's results are perhaps satisfying from a practical point of view, a basic question still remains. That is: What process takes place as the picture is being observed which results in good recognition memory? The data in Loftus's (1972) study suggests that the number of fixations a picture receives is one of the major determinants of subsequent memory for that picture. He found that the more fixations a picture received, the higher was the probability that the picture would be remembered. Pictures fixated only once were correctly recognized 45 percent of the time, while pictures fixated eight times were correctly recognized 70 percent of the time. That number of fixations, and not exposure time, is the crucial variable is indicated by the fact that pictures receiving an equal number of fixations were remembered equally well, even if one picture had been exposed longer than the other. For example, the recognition memory is the same for pictures receiving one to three fixations whether they are presented for 0.3 or 1.0 second. Therefore, it appears that the primary reason that recognition is better following long exposures is that subjects have more time to make multiple fixations during the exposure.

That recognition memory for pictures is impressively high even if the pictures are exposed for relatively brief periods does not mean that every detail of a picture is remembered following a brief exposure. In the experiments discussed above, the subjects' memory for the pictures was tested by asking them to decide which one of two dissimilar pictures was originally presented. The high percentages of correct recognitions reported by Nickerson, Shepard, and Standing and Haber would undoubtedly be lower if the two pictures were more similar.

If, instead of being asked to decide whether he has seen a particular picture before, the subject is asked to recall the contents of the picture, performance drops considerably. Brighouse (1939) repeatedly flashed pictures for a quarter of a second and following each flash asked the observer to describe the key features of the picture (such as buildings, people, etc.). It took an average of 14 exposures of the picture before all of the key features were named. Similarly, Haber and Erdelyi (1967) and Haber (1970) found that subjects were able to remember or reporduce only a small part of photographs that they had just seen. These studies emphasize the fact that even simple "single" pictures are made up of "multiple images." So, we may be able to recognize a picture after a short exposure, but if it is necessary that observers recall details of a particular picture, or a complex idea transmitted by the picture, longer exposure times may be necessary.

In the studies described above, subjects were asked either to recognize a picture or to recall the characteristics of a picture. While recognition and recall are perhaps the most commonly used ways of measuring memory, Cofer (1973) has pointed out that "an experience leaves many effects other than those which we can correctly recall or recognize as having occurred before." A study by Sachs (1967) supports this idea. In Sachs's experiment subjects were interrupted while reading a passage of prose and were presented with a test sentence that was either identical to one of the sentences in the passage or differed either in form or in meaning. The subject's task was to decide whether the test sentence and a sentence from the passage differed in form (Is the wording of the test sentence exactly the same as one of the sentences I just read?) or in meaning (Does this sentence mean the same thing as one of the sentences I just read?). Sachs found that if the test sentence was presented almost immediately after the relevant sentence in the passage, the subject would

remember both the exact form and meaning of the sentence. If, however, there was a delay of 80 syllables between the relevant sentence and presentation of the test sentence, the subject could not determine whether the form was the same or not but could still recognize the meaning. Sachs concludes that "the meaning of the sentence is derived from the original string of words by an active, interpretive process. The original sentence which is perceived is rapidly forgotten, and the memory then is for the information contained in the sentence." Therefore, while we may not remember the exact form or wording of a sentence we can often still remember the meaning of the sentence (see Cofer, 1973); Kintsch & Monk, 1972).

While the above results apply only to verbal memory, Johnson (1973) draws a parallel between these results and our memory for visual displays, stating that "long term storage of visual information may better be compared to paragraph comprehension than to memory for a specific word within a list or sentence. Some overall schema or overall representation of meaning is stored but the great bulk of the visual detail of the picture or of the lexical and grammatical detail of the paragraph is used and dropped aside...." Thus, we may remember the content or meaning of a picture even if we may not be able to recognize or recall specific details of the picture.

Conclusions

Vision and Perception of Multiple Images

Now that we have surveyed the perceptual literature relevant to the perception of multimedia, we are in a better position to ask: Is the observer a sponge? Can he absorb all of the information that is presented to him? One thing we have seen is that if the observer is to be successful in absorbing even a fraction of the information presented he must do it in a very unsponge-

like way. Perception involves a continuously active process of scanning, fixating, constructing scenes from parts of scenes, interpreting, and remembering. An observer who takes part in this active process can take in a large amount of information--but the observer's capacity is limited by the constraints set by his perceptual apparatus. Our perceptual system demands that an object be fixated if it is to be seen in detail; thus, if the purpose of a presentation is to present detailed information, then time must be allowed for the observer to fixate every relevant image at least once. As manufacturers of multimedia equipment claim, projecting multiple images, may, in fact, present "the maximum amount of information in the minimum time." But we know there is no guarantee that all of this information will be processed and remembered by the observer unless adequate time is allowed for the requisite fixations. On the other hand, we know that once a picture receives only a few fixations it is very likely that the picture will be recognized later. The presentation should be slow enough to allow the necessary fixations, but, since our memory for pictures is excellent, overly long exposures are not necessary.

But it is really impossible to talk about simultaneous presentation of multiple images without first asking what the purpose of a particular presentation is. The reason for this is that our question, Can an observer absorb all of the information that is presented to him?, must be considered in conjunction with the idea, discussed above, that what we mean by "information" depends on the level of analysis that is required in a specific presentation. We may, in fact, not care whether the observer remembers anything specific about the presentation. For example, the primary purpose of a presentation may be simply to create an environment or an emotional effect. It has been suggested that informational overload, a condition which exists in many multi-image presentations, may, in fact, be "an essential stimulus condition" where the intent is to "over-

whelm, impress, or exhilarate. . . ." (Fleming, 1970). This idea is consistent with Spottiswoode's (1950) and Hochberg and Brooks's (1973) suggestion that high cutting rates in film may help maintain the observer's interest or arousal. Burch (1973) makes a similar point when he suggests that making some shots too short to be comfortably grasped will create a "tension" through frustration.

On a slightly higher level of information transfer, the purpose of a presentation might be to make just one or two points about the subject of the presentation. In this case it may not be necessary that the observer fixate on every image, especially if the images are redundant. It might, in fact, be desirable to create some "information overload" even in a presentation intended to make only a few points. This was essentially the situation in Charles Eames's six-screen Moscow fair presentation, in which:

> . . . the object was to present a group of images that an audience could be aware of but not analyze in a way that would involve them with the subject. In such a presentation the panorama of our way of life would be so general that an audience would assume that it had seen more than it actually had. For example, in one twelve-second sequence of the finished film 90 separate scenes of freeway overpasses flash by on the screens. No one could possibly count them, but the impression is that of an infinite number (Lightman, 1959).

Again, the point that the overall meaning is remembered long after the specific stimulus configuration is forgotten is relevant here. Once the point is made it is not necessary that the subjects remember specific pictures or details of these pictures.

At the other end of the information transfer continuum is the presentation in which the purpose is to present specific concepts or fairly technical information in such a way that the observer will be able to recall this information later. In this type of presentation multiple images are valuable for presenting

comparisons, or showing relationships (Perrin, 1969) but should be used with restraint.

Suggestions for Further Research

The main focus of this paper has been on the question, What does perception tell us about multiple-image presentation? In this final section it seems appropriate to reverse the question. What does multiple-image presentation tell us about perception? One of the things it tells us is that there are large gaps in our knowledge of perception. One of the reasons for this is that, until recently, the psychology of perception has, for valid reasons, concentrated on the investigation of rather simple stimulus displays. This situation is, however, beginning to change with the emergence of a new concern for picture perception (Gibson, 1954, 1971; Gombrich, 1956, 1972; Hochberg, 1962, 1972; Harmon, 1973; Kennedy, 1974) and the perception of "real world scenes" (Biederman, 1972; Biederman, Glass, & Stacy, 1973). Research on the perception of multiple images, and film in general, is a logical extension of this new interest in the perception of complex, meaningful material. Multiple-image projection specifically extends the problems of picture perception in space, because of the wider visual angles usually employed, and in time, because of its property of constant change.

A number of important questions for further research suggest themselves. Perhaps the most important one is: How does an observer observe a multi-image presentation? The answer to this question involves extending eye movement studies to dynamic displays. Many of the rules found for scanning static pictures will undoubtedly still hold, but it will be interesting to see how the addition of movement and constant change influences eye movement patterns. Eye movement patterns should be studied as a function of number and/or size of screen

areas, the pictorial content of the images, relationships between simultaneous and successively presented images, and perhaps most importantly, the rate of presentation. This eye movement research should, when possible, be combined with experiments on pictorial memory. An excellent start in this direction has been made by Loftus (1972) who measured both eye movements and pictorial memory in the same experiment. Further work is needed, however, particularly with respect to the effect of parameters such as the relationships between separate images and rate of change of the images. The above experiments should help us to provide a more satisfactory answer to the question, Can a number of visual inputs be processed simultaneously?

Another area in which research is needed is a further specification of the capacities of peripheral vision. Gibson's (1966) plea for further research in this area is still valid today; an important and, as yet relatively neglected, approach to this problem would be to use meaningful stimuli more like the kind we experience in everyday perception. For example, it might be difficult for peripheral vision to detect the properties of an isolated stimulus but it might do quite well in extracting information from the same area of a real, continuous scene. The reason that this result might be expected is that the content of the periphery of a continuous scene would often be somewhat predictable from the content of the centrally fixated part of the scene. This predictability provided by the general nature of real world scenes could, to some degree, compensate for the lack of acuity in the periphery. These ideas should, however, be tested empirically.

Another problem which deserves further attention is how to specify the amount of information in a visual stimulus and particularly a complex one such as a picture. Should we use the term information at all and, if so, how should it be measured? As we have seen from the above discussion, this is a difficult

question to answer. And any proposed measure of visual information should be validated by showing that it bears some relationship to an observer's performance. For example, it should be demonstrated that changing the "information content" of a picture or series of pictures causes parallel changes in measures such as the observer's recall, recognition, time needed to comprehend the picture, number of fixations, etc. (cf. Neisser, 1967; Green & Courtis, 1966).

Closely related to the above considerations is the problem of specifying the "meaning" of a sequence of visual images. Neisser (1967) states that "sentences are far more than the sum of their parts" and the same is undoubtedly true of visual images. That there is a "grammar" or "language" of film has long been assumed (Eisenstein, 1942, 1949; Spottiswoode, 1950), but it is only recently that attempts have been made to discover how this language might operate (Gregory, 1961; Pryluck & Snow, 1967; Wollen, 1969; Worth, 1968, 1969; Worth & Adair, 1972; Metz, 1973, 1974). It may make little sense to talk in terms of the information contained in a single picture if what is important to the observer is the meaning transmitted in a number of pictures ordered in a specific sequence. It would be particularly interesting if experiments analagous to those of Sachs (1967), Kintsch and Monk (1972) and Cofer (1973) were designed using visual rather than verbal stimuli.

The above questions are all relevant to an understanding of the perceptual and cognitive factors that operate during a multiple-image presentation. However, these questions are also of great interest to perceptual psychology in general. In many respects, simultaneous presentation of multiple images is like the environment: it contains meaningful material, it surrounds us, and it is constantly changing. When we have achieved an understanding of how multi-image presentation works we will have also come a long way towards understanding how we perceive the world.

FOOTNOTES

[1]A number of excellent accounts of current perceptual theory are available. Readers interested in examining the perceptual literature in more detail should consult the writings of Gibson (1950, 1966), Hochberg (1964, 1971a, b), Neisser (1967), Gregory (1969, 1970), Haber and Hershenson (1973), and Kaufman (1974). Another approach is found in papers concerned with comparing presentations of images simultaneously with presentations of images singly. Unfortunately, little research has been done in this area and the results that are available are often equivocal. For example, Allen and Cooney (1964) compared comprehension following the presentation of multi-images (nonlinear condition) to comprehension following the presentation of single images (linear condition) for the same images and subject matter. They found that linear presentation resulted in better comprehension for some types of subject matter, while nonlinear presentation was better for other types of subject matter. The differences they observed, while statistically significant, were small. Readers interested in studies of this type should consult the papers by Cooney and Allen (1964) and Perrin (1969) for theoretical discussions and further references.

[2]This distinction between foveal and peripheral vision is similar (but not exactly identical) to Neisser's (1967) "attentive" and "preattentive" processes, respectively.

[3]The potency of change as an attention getting device should be considered when programming a multimedia show. There are two basic techniques for changing from one image to another when slides are used. A single slide projector can simply be advanced to the next slide. In this case there is typically a

brief period of blackness between slides. The other method of changing images involves using two projectors and a dissolve unit. The dissolve unit causes one image to fade down in intensity while the other image simultaneously fades up in intensity, with the overall illumination of the screen remaining approximately constant throughout the change. While dissolves often result in beautiful visual effects, they may not attract attention as well as a simple slide charge, since change itself is minimized in a dissolve.

*In the original paper a description of Biederman's (1972) experiment which showed that information taken in through peripheral vision influences our recognition of objects in complex scenes appeared here.

[4]Also see Senders, Webb, and Baker (1955), Sanders (1963), Gould and Schaffer (1965), Hershenson (1969), Harcum (1970), Menzer and Thurmond (1970), and Loftus (1972).

[5]A related problem, which will not be considered in this paper, is whether simultaneous input from both visual and auditory sources results in better information transmission than input from vision or audition alone. Readers interested in this problem should refer to Travers's (1964) paper in which he presents evidence that simultaneous input from both senses often results in no increase in information transfer compared to either visual or auditory input alone. He interprets these findings as being consistent with Broadbent's filter model of attention.

[6]Other factors such as the picture's novelty, special interest to the observer, etc. would also play a role in determining fixation patterns. For

the present discussion we are assuming that these factors are relatively constant across pictures.

[7]Note that this is the maximum switching rate. This figure would be decreased for displays of large visual angle, due to the extra time required for the larger eye and head movements that would be needed to scan the larger display.

[8]It is easy to demonstrate that a single picture of moderate complexity can be comprehended when presented for less than 100 msec (Goldstein, unpublished observation; Potter & Levy, 1969), an exposure time long enough for only one fixation.

REFERENCES

Allen, W. H. & Cooney, S. M. Nonlinearity in filmic presentation. AV Communication Review, 1964, 12, 164-176.

Alpern, M. Muscular mechanisms. In H. Davson (Ed.), The Eye, (Vol. 3) New York: Academic Press, 1962.

Attneave, F. Some informational aspects of visual perception. Psychological Review, 1954, 61, 183-193.

Attneave, F. Multistability in perception. Scientific American, 1971, 225, 63-71.

Berlyne, D. E. Curiosity and exploration. Science, 1966, 153, 25-33.

Biederman, I. Perceiving real-world scenes. Science, 1972, 177, 77-80.

Biederman, I., Glass, A. L., & Stacy, E. W. Searching for objects in real-world scenes. Journal of Experimental Psychology, 1973, 97, 22-27.

Bizzi, E. The coordination of eye-head movements. Scientific American, 1974, 231, 100-106.

Brighouse, G. A study of aesthetic apperception. Psychological Monographs, 1939, 51, (5, Whole No. 231), 1-22.

Broadbent, D. E. Perception and communication. New York: Pergamon, 1958.

Broadbent, D. E. Decision and stress. New York: Academic Press, 1971.

Burch, N. Theory of film practice. New York: Praeger, 1973.

Buswell, G. T. How people look at pictures. Chicago: University of Chicago Press, 1935.

Cherry, C. Some experiments on the recognition of speech with one and with two ears. Journal of the Acoustical Society of America, 1953, 25, 975-979.

Cofer, C. N. Constructive processes in memory. American Scientist, 1973, 61, 537-543.

Cooney, S. M., & Allen, W. H. Nonlinearity in filmic presentation: Part II, Discussion, AV Communication Review, 1964, 12, 302-324.

Edwards, D. C., & Goolkasian, P. A. Peripheral vision location and kinds of complex processing. Journal of Experimental Psychology, 1974, 102, 244-249.

Egeth, H., Jonides, J., & Wall, S. Parallel processing of multielement displays. Cognitive Psychology, 1972, 3, 674-698.

Eisenstein, S. Film sense. New York: Harcourt, Brace and World, 1942.

Eisenstein, S. Film form. New York: Harcourt, Brace and World, 1949.

Faw, T. T., & Nunnally, J. C. The effects on eye movements of complexity, novelty, and affective tone. Perception and Psychophysics, 1967, 2, 263-267.

Fleming, M. Eye movement indices of cognitive behavior. AV Communication Review, 1969, 17, 383-398.

Freund, R. D. Verbal and non-verbal processes in picture recognition. Unpublished doctoral dissertation, Stanford University, 1971.

Gibson, J. J. The perception of the visual world. Boston: Houghton-Mifflin, 1950.

Gibson, J. J. A theory of pictorial perception. AV Communication Review, 1954, 2, 3-23.

Gibson, J. J. The senses considered as perceptual systems. Boston: Houghton-Mifflin, 1966.

Gibson, J. J. The information available in pictures. Leonardo, 1971, 4, 27-35.

Gombrich, E. H. Art and illusion. Princeton, N. J.: Princeton University Press, 1956.

Gombrich, E. H. The "what" and the "how": Perspective representation and the phenomenal world. In R. Rudner & I. Scheffler (Eds.), Logic and art, Indianapolis: Bobbs-Merrill, 1972. Pp. 129-149.

Gould, J. D. Pattern recognition and eye-movement parameters. Perception and Psychophysics, 1967, 2, 399-407.

Gould, J. D., & Schaffer, A. Eye-movement patterns in scanning numeric displays. Perceptual and Motor Skills, 1965, 20, 521-535.

Green, R. T., & Courtis, M. C. Information theory and figure perception: The metaphor that failed. Acta Psychologica, 1966, 25, 12-36.

Gregory, J. R. Some psychological aspects of motion picture montage. Unpublished doctoral dissertation, University of Illinois, 1961.

Gregory, R. L. Eye and brain. New York: McGraw-Hill, 1969.

Gregory, R. L. The intelligent eye. New York: McGraw-Hill, 1970.

Haber, R. N. How we remember what we see. Scientific American, 1970, 222, 104-115.

Haber, R. N., & Erdelyi, M. H. Emergence and recovery of initially unavailable perceptual material. Journal of Verbal Learning and Verbal Behavior, 1967, 6, 618-628.

Haber, R. N., & Hershenson, M. The psychology of visual perception. New York: Holt, Rinehart and Winston, 1973.

Harcum, E. R. Perceptibility gradients for tachistoscopic patterns. Psychological Review, 1970, 77, 332-337.

Harmon, L. D. The recognition of faces. Scientific American, 1973, 229, 70-83.

Hershenson, M. Perception of letter arrays as a function of absolute retinal locus. Journal of Experimental Psychology, 1969, 80, 201-202.

Hochberg, J. The psychophysics of pictorial perception. AV Communication Review, 1962, 10(5), 22-54.

Hochberg, J. Perception. Englewood Cliffs, N. J.: Prentice-Hall, 1964.

Hochberg, J. Attention, organization and consciousness. In D. I. Mostofsky (Ed.), Attention: Contemporary theory and analysis. New York: Appleton-Century-Crofts, 1970.

Hochberg, J. Perception I: Color and shape. In J. A. Kling & L. A. Riggs (Eds.), Woodworth and Schlosberg's Experimental Psychology. (3rd ed.) New York: Holt, Rinehart and Winston, 1971. Pp. 395-474. (a)

Hochberg, J. Perception II: Space and movement. In J. A. Kling & L. A. Riggs (Eds.), Woodworth and Schlosberg's Experimental Psychology. (3rd ed.) New York: Holt, Rinehart and Winston, 1971, Pp. 474-550. (b)

Hochberg, J. The representation of things and people. In Art, perception and reality. Baltimore: Johns Hopkins University Press, 1972. Pp. 47-94.

Hochberg, J., & Brooks, V. The perception of television displays. Unpublished paper for the Television Laboratory, WNET-TV, New York, 1973.

Hubel, D. H., & Wiesel, T. N. Receptive fields, binocular interaction, and functional architecture in the cat's visual cortex. Journal of Physiology, 1962, 160, 106-154.

Johnson, R. C. Long term recognition for visually, verbally, and thematically coded pictorial material. Unpublished doctoral dissertation, State University of New York at Buffalo, 1973.

Jonides, J., & Glickman, H. A conceptual category effect in visual search: O as letter or as digit. Perception and Psychophysics, 1972, 6, 457-460.

Kahneman, D. Attention and effort. Englewood Cliffs, N. J.: Prentice-Hall, 1973.

Kaufman, L. Sight and mind. New York: Oxford University Press, 1974.

Kennedy, J. M. A psychology of picture perception. San Francisco: Jossey-Bass, 1974.

Kintsch, W., & Monk, D. Storage of complex information in memory. Journal of Experimental Psychology, 1972, 94, 25-32.

Kostelanetz, R. Scene and not heard: USCO. Harpers Bazaar, 1967, 101 (52) December, 1967.

Latour, P. O. Visual threshold during eye movements. Vision Research, 1962, 2, 261-262.

Leckhart, B. T. Looking time: The effects of stimulus complexity and familiarity. Perception and Psychophysics, 1966, 1, 142-144.

Lefton, L. A., & Haber, R. N. Information extraction from different retinal locations. Journal of Experimental Psychology, 1974, 102, 975-980.

Lightman, H. A. Seven screens for Moscow. American Cinematographer, 1959, 40, 670-671.

Loftus, G. R. Eye fixations and recognition memory for pictures. Cognitive Psychology, 1972, 3, 521-551.

Mackworth, N. H. Visual noise causes tunnel vision. Psychonomic Science, 1965, 3, 67-68.

Mackworth, N. H. A stand camera for line-of-sight recording. Perception and Psychophysics, 1967, 2, 119-127.

Mackworth, N. H., & Morandi, A. J. The gaze selects informative details within pictures. Perception and Psychophysics, 1967, 2, 547-552.

McLuhan, M. Counterblast. New York: Harcourt, Brace and World, 1969.

Menzer, G. W., & Thurmond, J. B. Form identification in peripheral vision. Perception and Psychophysics, 1970, 8, 205-209.

Metz, C. Methodological propositions for the analysis of film. Screen, 1973, 14, 89-101.

Metz, C. Film language. New York: Oxford University Press, 1974.

Miller, G. A. The magical number seven, plus or minus two. Psychological Review, 1956, 63, 81-97.

Moray, N. Attention. New York: Academic Press, 1970.

Mowbray, G. H. Simultaneous vision and audition: The comprehension of prose passages with varying levels of difficulty. Journal of Experimental Psychology, 1953, 46, 365-372.

Neisser, U. Cognitive psychology. New York: Appleton-Century-Crofts, 1967.

Nickerson, R. S. Short-term memory for complex meaningful visual configurations: A demonstration of capacity. Canadian Journal of Psychology, 1965, 19, 155-160.

Noton, D., & Stark, L. Scanpaths in eye movements during pattern perception. Science, 1971, 171, 308-311. (a)

Noton, D., & Stark, L. Eye movements and visual perception. Scientific American, 1971, 225, 34-43 (b).

Norman, D. A. Memory and attention. New York: John Wiley, 1969.

Perrin, D. G. A theory of multiple-image communication. AV Communication Review, 1969, 17, 368-382.

Potter, M. C., & Levy, E. I. Recognition memory for a rapid sequence of pictures. Journal of Experimental Psychology, 1969, 81, 10-15.

Pryluck, C., & Snow, R. E. Toward a psycholinguistics of cinema. AV Communication Review, 1967, 15, 54-75.

Sachs, J. S. Recognition memory for syntactic and semantic aspects of connected discourse. Perception and Psychophysics, 1967, 2, 437-442.

Sanders, A. The selective process in the functional visual fields. Institute for Perception. RUO-TNO, Soesterberg, The Netherlands, 1963.

Senders, J. W. On the distribution of attention in a dynamic environment. In A. Sanders (Ed.), Attention and performance, North Holland, Publ., Amsterdam, (Acta Psychologica 27), 1967.

Senders, J. W., Webb, I. B., & Baker, L. A. The peripheral viewing of dials. Journal of Applied Psychology, 1955, 39, 433-436.

Shannon, C., & Weaver, W. The mathematical theory of communication. Urbana: University of Illinois Press, 1949.

Shepard, R. N. Recognition memory for words, sentences and pictures. Journal of Verbal Learning and Verbal Behavior, 1967, 6, 156-163.

Shiller, P. H., & Stryker, M. Single-unit recording and stimulation in superior colliculus of the alert rhesus monkey. Journal of Neurophysiology, 1972, 35, 915-924.

Spottiswoode, R. A grammar of the film. Berkeley: University of California Press, 1950.

Standing, L., Conezio, J., & Haber, R. N. Perception and memory for pictures. Single trial learning of 2500 visual stimuli. Psychonomic Science, 1970, 19, 73-74.

Sweet, A. Temporal discrimination by the human eye. American Journal of Psychology, 1953, 66, 185-198.

Travers, R. M. W. The transmission of information to human receivers. AV Communication Review, 1964, 12, 373-385.

Treisman, A. Human attention. In B. M. Foss (Ed.), New horizons in psychology. Baltimore: Pelican, 1966.

Treisman, A. Strategies and models of selective attention. Psychological Review, 1969, 76, 282-299.

Treisman, A., & Davis, A. Divided attention to ear and eye. In S. Kornblum (Ed.), Attention and performance IV. New York: Academic Press, 1973, Pp. 101-118.

Vernon, M. D. Perception through experience. Agincourt, Ontario: Methuen & Company, 1970.

Volkman, F. C., Schick, A. M. L., & Riggs, L. A. Time course of visual inhibition during voluntary saccades. Journal of the Optical Society of America, 1968, 58, 362-369.

Webb, W. W., Matheny, A., & Larson, G. Eye movements as a paradigm of approach and avoidance behavior. Perceptual and Motor Skills, 1963, 16, 341-347.

Webster, R. G., & Haslerud, G. M. Influence on extreme peripheral vision of attention to a visual or auditory task. Journal of Experimental Psychology, 1964, 68, 269-272.

Williams, L. G. The effect of target specification on objects fixated during visual search. Perception and Psychophysics, 1966, 1, 315-318.

Wollen, P. Signs and meaning in the cinema. Bloomington: Indiana University Press, 1969.

Worth, S. Cognitive aspects of sequence in visual communication. AV Communication Review, 1968, 16, 121-145.

Worth, S. The development of a semiotic of film. Semiotica, 1969, 1, 282-321.

Worth, S., & Adair, J. Through Navajo eyes. Bloomington: Indiana University Press, 1972.

Yarbus, A. L. Eye movements and vision. New York: Plenum Press, 1967.

DESIGNING MULTI-IMAGE PRESENTATIONS

by

Donald Pasquella

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need to make a personal statement. This specific need will have a great impact on the design of the presentation.

The designer's problem is to take data which is vague, uninteresting, incomplete, diffuse, and unorganized and give it a new physical order in response to a need.

The second most important factor that influences the design of a multi-image presentation is the attitude of the designer.

Attitude refers not only to the designer's attitude toward the solution of a particular design problem but also toward his work in general (caring about such things as quality, craftsmanship, harmony, coherence, etc.) and his attitude toward innumerable other things (theater, films, music, image-sound combinations, ideas, people in general, himself in particular, this client, this audience).

I believe that the main reason why one sees so many mediocre, poorly executed, and BORING multi-image presentations at so-called professional conferences (NAVA, AECT, AMI) is that the producer-designer's attitude is not what it needs to be to do quality work.

Good design in multi-image is like good design of anything. You don't see it too often. George Nelson, a well-known designer, said, "The reason good design is hard to come by is that its creation requires a high degree of emotional and intellectual maturity in the designer and such people are not found too often."[1]

The combination of the two factors of need and attitude will determine or influence every single decision, whether conscious or intuitive, during the process of making a multi-image production.

Within these two broad categories there are layers of sub-categories which sometimes augment or interfere with the other sub-categories. Everything is hooked to everything else.

For example, you may be called upon to design and produce a multi-image presentation to solve some particular needs for a client. The main need, as the client sees it, is to introduce a new line of products at a sales meeting. But the client also wants to motivate his sales force. He also wants to make himself look good in the eyes of his boss. The show is to travel to twelve cities. It must be done by a certain date and for a certain amount of money. The client doesn't want to pay for a big road crew but he wants a flashy, knock-em-out-of-their-chairs production. What is your attitude toward these various needs? Whatever it is, it will affect the design of the production.

The third factor which influences the design of the presentation is compromise. Every multi-image production is a series of compromises. Minimally, the designer will confront the limitations of time and money.

Also, the client's requests for modifications and changes, 'suggestions' from his superiors, and a variety of other client whims will alter the appearance and scope of the project. Clients can be very stubborn about their requests and suggestions. This seems to be true not only in the corporate world but for educational productions as well. This clash of wills, of ideas, and of taste when client intransigence bangs into designer narcissism can sometimes strengthen, although will often weaken, the overall quality of the production.

But, unless the designer is doing a personal expression project he is working in the service of others, to please them and satisfy their needs. The challenge, then, is to always do one's best work within the limitations and peculiarities of the assignment.

The fourth factor which influences the design of a multi-image production is the form-content relationship. How does the content of the presentation, the message, affect the design? Will the format of the presentation enhance the message?

The pacing and rhythm of the presentation will be affected by the complexity or simplicity of the content, by what the audience already knows, and by the mood which you are trying to create through the various image-sound combinations.

The fifth factor which influences the design of a multi-image presentation is the cluster of physical considerations which relate to the format and staging of the presentation. It would be foolish to design a 5-screen, 30-projector show if the environment in which it is to be shown is inadequate in terms of size and power availability.

The numerous physical considerations are linked together in complicated, overlapping arrays, interacting and interfering with each other, influencing the many design decisions. For example, if there will be ambient light problems at the staging site you may want to modify the style or density of the visual elements. Ambient sound problems might affect the style and balance of the sound mix.

The number of projectors per screen area will affect the kinds and rapidity of effects which you can do on any one screen area. The number of projectors per screen area will also affect the maximum possible running time of the presentation and hence the amount of content which can be presented within that time.

I'll clarify that. The capacity of the slide tray is 80 slides, 81 if you use the zero slot. I'm referring, of course, to the standard Carousel tray since everybody who does professional multi-image productions uses Kodak Ektagraphic projectors. By the way, I have yet to meet a professional producer who uses the 140 slide Carousel tray. These trays are too unreliable. So, let's say that you are using 80 slides per projector and two projectors per screen area which will give you 160 slides per screen area. Now, even if each slide was on the screen for 10 seconds, which is really quite long in a multi-image

production, you have a maximum amount of time of 1600 seconds, or just under 27 minutes.

The options available to you to increase that maximum time are few. You can add more projectors per screen area, increasing the cumbersomeness of the set-up and usually necessitating a more elaborate programmer. Or you can go to black on the individual screen areas for varying lengths of time while the rest of the presentation continues. Or you can try to do a tray change in the middle of the show while it's running which might be possible in a relatively simple, slow-paced presentation but practically impossible in a more complicated 15-projector, fast-paced show.

The physical considerations which must be taken into account when designing a production also include the type of programmer you intend to use. Obviously, there's no sense in designing a show with variable rate dissolves if your system has only one fixed dissolve rate. The size of the room and the size of the audience affects the size and type of the speakers required which, in turn, affects the balance and equilization of the sound mix. So it goes.

The five factors mentioned above which influence the design of multi-image presentations do not stand isolated from one another. Each requirement, each design decision, will have an effect in some way on every other decision. Therefore, it would be useful to take a more detailed look at the layers of design elements and production factors which impinge upon the manifestation of a multi-image production. But first, I'd like to offer a word of caution.

A Caveat

You, or the client, may believe that the multi-image format in and of itself possesses magical powers, some mysterious mojo which will make the mundane spec-

tacular and the boring exciting. For the past fifteen years multi-image enthusiasts have been saying that this format offers impact and total involvement. What more could anyone hope for in any audio-visual presentation? For example, Benedict and Crane say, "The use of three screens takes a presentation out of the realm of the commonplace and makes it unusual, different, novel, interesting, and innovative--and yet it is still manageable."[2] Palmer Dyer says, "Perhaps the foremost reason why many producers choose this format is its uniqueness. The impact of the multi-screen visuals literally galvanizes the viewer's attention. Thus, many programs are developed solely to take advantage of this uniqueness...this involvement of the audience."[3]

The caveat is this. FORMAT ALONE CANNOT CREATE IMPACT OR INVOLVEMENT. Three screens or thirty screens of insipid images, poorly executed, combined with a boring, poorly recorded and ineptly mixed sound track, with no sense of pacing or rhythm in the visual arrays, lacking internal coherence, and badly staged is NOT goint to create more impact or involvement than a well-executed, informative and entertaining, nicely presented single-screen production.

Design Elements and Production Factors

Now, we begin to take a more detailed look at some of the various design elements and production factors which you will run into when designing and producing a multi-image presentation.

In one sense, multi-image production is nothing more than rhythmic pattern-making for a specific purpose. But, how does one design such a thing?

It might be well to begin with a statement from Ladislav Sutnar, a visual designer:

> "Depending on the requirements of specific problem needs, the varied aspects of design can be reduced to three interacting, fundamental

principles--function, flow, and form. These may be defined as follows. 'Function' is the quality which satisfied utilitarian needs by meeting a specific purpose or goal. 'Flow' is the quality which satisfies logical needs by providing a space-time sequence relationship of elements. 'Form' is the quality which satisfied aesthetic needs with respect to the basic elements of size, balance, space, color, line and shape. With these three principles as a basis, design is evaluated as a process culminating in an entity which intensifies comprehension."[4]

Within the design process, the individual design elements and production factors will determine the overall design of the production.

A design element is one of the constituent parts or principles of the total design. A production factor is any circumstance, condition, or cause which affects or determines the final design of the production.

Once you have understood what the client's needs are, what the usual constraints of time and money are, who the audience is and what they already know, and where this presentation is to be staged you are ready to submerge yourself in the production.

Many, but not all, producers begin with a script. The script helps organize your ideas and thoughts about the project. Sometimes a producer will also use a storyboard of rough sketches of the scenes to be photographed for this same purpose. Educational and professional producers vary quite a bit in their desire for a script or storyboard prior to production. The educators, perhaps because they are word-oriented people whose main purpose in a production is to transmit information, tend to use completed scripts heavy on the words and weaker on the visual side. Professional producers, on the other hand, tend to be more interested in creating moods in their audiences than transmitting information, although there is always an informational component to their productions.

Therefore, the professional producers are more willing to start production either without a script, or with a very rough one.

The time to decide on the format for the presentation is as early as possible but at least prior to the photography stage of the production. You don't want to go out and shoot for a three-screen show and then try to stretch it into a five-screen later.

Another early decision to be made is the format of the photography. This will affect the budget since the cost of purchasing and processing 35mm film is different from 120 roll film which you'd need for super-slides. You also need to remember that you can only get 16 super-slides per roll of 120 while you get up to 36 exposures in 35mm. How many slides do you need to shoot? What will be the shooting ratio? (Shooting ratio is the number of slides shot to the number of slides used.)

The decisions on the running time of the presentation, number of screens, number of projectors per screen area, and some early feel for the rhythm and pacing of the various segments of the show are all connected.

What is to be the visual style of this presentation? If you are working in 35mm will you use both horizontals and verticals? If so, you'll need square screens in the staging phase to prevent portions of the slides from disappearing into the black void beyond the screens (assuming you want to fill the screen left to right with the horizontals and top to bottom with the verticals).

What about super-slides? You can gain approximately 50% information area per slide than the standard 35mm slide. But, how are you going to shoot them? Normally, you use a Hasselblad camera with an A16S super-slide back. Of course, a super-slide can be punched out of any piece of film larger than a super-slide with a Wess super-slide punch. Do you have access to one of these? If not, you may have to compromise and stick with 35mm.

It is not recommended that you mix slide formats--35mm, super-slides, 110--within one presentation since there will be a noticeable and potentially distracting, difference in visual quality.

Are you planning to use both live photography (shot either on location or in a studio) with copy stand photography from books, magazines, and tear sheets? The tone and texture of the two types of pictures will be quite different. With live photography you are taking pictures of people and things; with copy stand photography you are taking pictures of ink and dot patterns.

If you are using copy stand photography will all the pictures be in color or will there be a mixture of color and black and white? If you mix color and black and white will that confuse or distract the audience?

In putting together the visual elements of a multi-image production you have the option of mixing images of varying iconicity--cartoons, charts and graphs, line drawings, pictures of paintings or watercolors, representational photographs, abstractions, etc. But too broad a mixture tends to make the production look incoherent and lacking in harmony.

The same goes for the various slide modification techniques such as solarization, hand-coloring, sandwiching and color gels.

Among the other image variations include Kodalith, Diazo, and Color-Key processes. These can be used individually or either sandwiched or superimposed with other images.

You should try to make the show visually interesting. But, the pictures individually and collectively shouldn't distract from the purpose of the presentation. The pictures should be of high quality, at least the best you can do under the conditions, and the quality should be consistent. For example, you shouldn't mix over-exposed and under-exposed slides with properly exposed slides because you shouldn't subject your audience to imperfection if you can help it.

Please understand that the visual elements help create the mood of the piece. If the image quality is poor the audience is not going to be very enthusiastic or involved with your production. (Unless, of course, the content of the pictures is something that they really desire to see--e.g. something erotic.)

You can use typography and other graphics to help establish mood and aid in the comprehension of the message. And you can use slide masking to modify the image area on the screens. These techniques can be very effective. But, over-use of either graphics or slide-masking might be distracting and counter-productive.

You, or the client, may decide that the presentation could be enhanced by the addition of film or video. If you choose film you have three possibilities for both shooting and projecting: 35mm (the standard theatrical gauge), 16mm (the standard non-theatrical gauge), and Super-8 (the standard amateur gauge). Of these three, 16mm would be the best choice under most conditions. You need to consider image brightness, image sharpness, and image size as well as the availability and cost when deciding on the film format to incorporate in your production. Super-8 has the lowest quality, both in terms of image brightness and sharpness, but it is also the cheapest. At the opposite pole it's 35mm with its bright, sharp image and high cost. Therefore, 16mm is a good compromise for most situations. One other alternative to consider in using film with a multi-image presentation is the use of the anamorphic format. Also, you may want to use more than one film projector on the different screen areas to run either independently or in interlock.

However, before you decide to use film projectors in your presentation, don't forget that there will be some trade-offs. If both film and slides are up at the same time you will have images of different sizes, different bright-

ness, and different sharpness. This is important in those situations where those differences distract from the purpose and mood of the presentation. One alternative is to remove the slides from the screens and let the film run by itself.

It's worse with video. To retrieve a video image you need either a video projector (and usually an operator) or a bunch of monitors. With most video projectors you will get a low contrast, poor color, somewhat fuzzy picture (and worse if they are improperly tuned). But, you will get a moderately big picture.

With video monitors you will get a very bright, but very small, picture. The video monitors will appear so much brighter than any slide you are projecting you might as well just go to black on the slide screens and run the video by itself. An alternative would be to keep the slides up but not change them while the video is running. Nobody is going to be watching them anyway.

The best multi-image presentations I've seen are those where the images were shot for that specific presentation and for that specific screen arrangement. The multi-image photographer needs to always be thinking of a number of things while shooting: are you getting adequate coverage from different points of view of the various situations and scenes required by the script, how are the various shots going to link together in the final editing and programming phase, what is the screen arrangement, and are you getting a variety of long shots, medium shots, and close-ups? Also, the multi-image photographer will shoot seemingly unrelated shots which might be useful later as transitions in the presentation.

What about panoramas? No doubt about it, when well done they can be extraordinary. One of the more interesting aspects of multi-image is its potential for expanding and contracting the visual array. To move from three screens of

individual 35mm slides each ten feet wide to one huge picture thirty feet across is a visual shock which can work wonders in your presentation.

As usual, there's a catch. In this case it comes in the staging. The proper presentation of panoramas requires precise registration of the projectors involved and the proper functioning of those projectors.

One of the biggest drawbacks to gravity-fed slide projectors, such as the Kodak, is that although the slides are supposed to fall into the gate properly each time there will be times when a slide will hang-up and not drop all the way or will drop in a slightly different position than it did last time. This will ruin the effect of your beautiful panorama. There is usually less chance of this happening if you use glass-mounted slides since the glass adds weight and the mount does not fray, buckle or warp.

If you are using panoramas in your presentation you will have to make some other decisions which will affect how things look on the screens. For example, if you are using one long screen instead of a number of smaller screens butted up against each other you may want to do your panoramas so that there is a soft-edge overlap of the individual images to eliminate the line between the separate segments of the panorama. Keep in mind that if you have projector areas overlapping in the panoramas they will also overlap in all other segments of the presentation. This means that you will need to arrange your projector array so that certain banks of projectors are used for panoramas while others are used for the rest of the show. If you are using individual screens instead of one long one there is no sense in trying to do soft-edge panoramas since the screens themselves will be physically separated. In such circumstances the panorama will be presented and seen in fragments.

You can have the panoramas spread across all the screen areas of only some of them. For example, if you are doing a five-screen show you have the option

of using a two, three, four, or five-screen panorama. It can be a nice effect to vary the size of the panoramas during the course of the show.

We tend to think of the visual arrays in multi-image presentations as being dominantly horizontal. There is no technical nor aesthetic reason for this (although some could be invented); it's just become conventional to do it this way. The horizontal layout seems to be the norm both in screen arrangement and in the individual slides. One alternative would be to do an all vertical presentation.

Perhaps an even more interesting alternative would be to bombard one huge screen area with clusters of overlapping images of varying sizes and shapes to create constantly changing image galaxies.

Whatever visual style you employ, whatever arrangement of image arrays you choose to use, you should always attempt to achieve the highest quality images. Quality in color photography consists, minimally, of proper exposure, proper focus and depth of field, correct color balance between film stock and subject lighting, and good composition.

Through multi-image photography, slide masking, panoramas, and proper staging you are creating an elegant diversity within a central vision.

Unlike film, multi-image presentations did not go through a silent period in its history (unless you want to count a three-day run at the Paris Exposition of 1900 as the silent period). Therefore, sound is an integral part of the multi-image presentation. In fact, the sound track is often used as the glue that holds together the disparate elements of the presentation. The sound track helps provide information, convey mood, and give depth and meaning to the entire production.

The sound track is composed of a maximum number of four elements: words, music, sound effects, and silence. All sound tracks are simply variations and

combinations of these four elements. Naturally, within each of these elements there can be quite wide interpretations.

Before you get too deeply into the design of your sound track you need to decide on the final presentation format for the sound. Will it be mono, stereo, three-channel, or quad? Part of that decision will be based on the environment in which the program is to be presented (the size of the room, ambient sound problems within the room), the size of the audience and their arrangement in the room, and the kind of sound arrays you wish to achieve. If, for example, the audience is to be more wide than deep you may opt for a mono sound track rather than stereo since the people sitting too close to a single stereo speaker will hear only a part of the stereo mix. If you choose to use quad sound you'll need to use a playback deck which has more than four-channels since you'll need one channel of your tape for the cue track for the projectors.

Information density in a sound mix usually is referred to as 'thickness.' A thick mix is one in which there are a lot of individual sound elements mixed together in overlapping arrays. Some proponents of multi-image prefer thick mixes in an attempt to coax more involvement out of their audience (under the assumption that the more the audience has to work to make sense out of the presentation the more involved they will have to become).

Most, but by no means all, sound tracks contain a verbal component. You begin by deciding if the verbal component is to be mixed in with the other sounds on the tape or is to be presented live by a teacher or performer in conjunction with the sound track.

You will need to give some consideration to the number of voices you'd like to use. You will need to decide if they are to be adult or children, male or female, 'normal' voices or 'character' voices, professional or amateur. Will the voices be intelligible (and not just to you who will have heard them count-

less times before the show is presented but also to someone who will see the program only once)?

Will the verbal component be narration, interviews, dramatic or comic dialogue, or combinations of these? Will there be verbal redundancy or repetition of particular words or phrases? Will the verbal component be used simultaneously with vocal music at any point? (There's nothing inherently wrong with this procedure but it does increase the thickness of the track and may interfere with intelligibility.)

The music is another critical element in the overall production. Music is a short-cut to emotion. That's why music is used in film, to enhance the mood that is being established in the various scenes. The type of music selected is more important than the particular cuts which are used although certain popular songs with vocals are more intelligible than others.

I should remind you that it is usually illegal to use copyrighted music (for example, all those records which have either ASCAP or BMI imprints on the label) without obtaining permission from the copyright holder. Your choices are: get original music composed and performed for your production (an expensive alternative); use 'cleared' music from one of the many 'music libraries' which are available; get clearance from ASCAP or BMI to use their music; or risk getting caught using uncleared music. Some music is in the public domain ('cleared' due to expiration of the copyright) and can be used with impunity. Beware though, the arrangement or performance could be copyrighted even though the music itself is in the public domain.

Most multi-image shows do not use vocal music in professional presentations because the vocals are either unintelligible to the average listener or are distracting from the verbal component of the sound track.

What kind of music should be used? Keep in mind the purpose of the presentation and the kinds of moods you are trying to create in your audience. Don't just use music which you like or that is familiar. In fact, if music is too familiar it can distract from the presentation because the viewer is thinking of the circumstances under which the music was last heard and will drift away from your show.

Most commercial productions which I have seen recently (1978) tend to use upbeat, lively music that's not too far-out or crazy, a sort of over-40's disco music. Educational productions tend to use classical music, film music, vocals with a 'message,' and jazz. (In effect, violating all of the guidelines which I have suggested earlier.) Student productions often use heavy metal, rock and roll, country western, or vocals with 'messages.' There's no accounting for taste.

However, it's generally not a good idea to mix disparate musical styles over too broad a range in a single production. The track will sound patched together without any kind of unity or coherence.

The other important decision to be made with regard to music is when to use it in the production. Many producer/designers choose to use music under the entire production, from beginning to end. Others will use it intermittently to enhance particular segments of the show. There is no right answer. However, multi-image presentations seem to be the only audio-visual format currently which tend to use music under the entire presentation. As I said earlier, many designers choose to use the sound track to hold together the other disparate elements of the production and to give it a sense of timing.

Finally, I'd like to add a word about the quality of the sound track. If you transcribe a scratched or defective record to tape for your sound track you will be guaranteed a poor quality, amateurish, and potentially distracting

sound track for your program. For some peculiar reason (perhaps because they are primarily, if not exclusively, content oriented) many educators who produce and design multi-image shows seem to be deaf to technical imperfections in their sound tracks.

Also, don't forget that the mood of your presentation can be enhanced in various segments by the judicious use of sound effects, either those which you purchase from a 'music library' or those which you record yourself.

These various sound track components of verbal, music, sound effects, and silence must be recorded and mixed together at the proper levels to reduce hiss and other noise in the system. An attentive ear must be tuned to the final mix to check for balance between the various segments, especially to make sure the verbal component is intelligible to someone who will hear it only once.

So far, from what I've seen, there hasn't been much use of music to contrast with the images on the screen. For example, it's not unusual in certain kinds of film to use ominous music under innocent or innocuous scenes to create suspense, anxiety, and foreboding. It may be that because multi-image has not been used to any great extent in a narrative, dramatic role we have not yet had much reason to use music in such a fashion.

Once the visuals are all shot and the sound track is complete the assembly of the presentation begins in earnest. The completed sound track is approved by the client prior to programming. The visuals are laid out horizontally (the visual array which is going to be presented at any given moment in time) and vertically (the sequential replacement of image to image on the individual screen areas) corresponding to the various segments of the production.

Usually at this stage of the process the designer is making final decisions about when and where he wants to have any screen areas go black (i.e. no image being presented). Black screens are achieved either by the use of opaque

slides in the projector or, in the case of the more sophisticated control hardware today, by using one of the function controls on the programmer.

Also, at this stage the designer will reactivate his instinct for bringing order out of chaos. He will, in the process of laying out the slides on the light table, start building rows of neat, orderly image arrays arranged symmetrically. A favorite device of many designers is the so-called 'bookend effect.' One version of the bookend effect is, in a three-screen show for example, to have a vertical slide on the center screen while horizontal slides are left and right. Or, to have a horizontal on the center screen and have verticals left and right. Or, in the case where one is using all horizontal slides, the designer will sometimes make a dupe slide of, let's say, the image of the left screen and place the dupe on the right screen but flipped so that the left and right screens are mirror images of each other.

The designer will also flip a slide to orient the graphic elements within the slide to a new direction (a man pointing left will be pointing right when flipped).

There are at least three things to be said against the use of flipped slides in a presentation. First, a flipped slide will be out-of-focus. When you place slides in a Carousel tray you should have all the individual slide emulsions facing the same direction. If any slide is flipped so that the emulsion faces the opposite way that slide will be out of focus. (In any optical system there is only one point of focus. If you are off that point of focus, even as little as the thickness of a piece of transparency film, the thousands of wee tiny points of light start becoming thousands of mushy circles--known as circles of confusion--which we see up on the screen as unsharpness ("out-of-focus"). You can avoid the problem of having out-of-focus slides in your presentation (provided the slides are sharp to begin with) if you have all your slides in the same

thickness of slide mounts, if you don't flip your slides so the emulsion is facing the opposite direction from the other slides, or if you use an auto-focus projector which will graciously, automatically, and hopefully accurately find the new point of focus for you.

The trouble with auto-focus projectors is that it takes them a moment to search for focus which can be terribly distracting while the image is on the screen. Also, there's no assurance that they will ever find it, although they may come close. Finally, I've had the experience of having an auto-focus projector totally freak out, moving the lens further and further out of focus, and finally chunking the lens completely out of the projector--all of which adds a new dimension to your presentation.

The second thing to be said against the use of flipped slides is that you set up conditions of dissonance and greatly increase the possibility for distraction from your presentation when you have certain elements within the picture itself--words for example--suddenly appear backwards. (e.g. things written on the blackboard in the background of the shot, paste-on name tags on committee members lapels, billboards and street signs, etc.) Other give-aways to a flipped slide are those shots where everybody is wearing their watch on their right wrist, or are all writing with their left hand, or when all of the breast pockets on men's suits appear on the right, instead of the left, side.

The third thing to be said against the use of a flipped slide is that it is redundant. It adds absolutely no new information. (I'm speaking of a flipped dupe slide mentioned earlier.)

Yet another example of the designer's urge toward order and symmetry in assembling the presentation is the use of visual repetition. This is achieved a number of ways. One way is to simply make dupe slides of one shot and spread them across all the screens at the same time. Another is repeating a

particular motif rather than a specific image on all screens (wheels, clock faces, etc.). Another technique is simply repeat a 'color wash' on all screens (by mounting a piece of color gel in a slide mount).

In addition to laying out the slides corresponding to what will be on the screens at any given moment, the designer is also laying them out in terms of whatever effects are to appear on the screens (fade in, fade out, dissolves, supers, alternating, cuts, etc.). Consideration is given to contracting and expanding the visual space through masking of the individual slide mounts, image splits within the slide mounts, and panoramas.

One of the greatest design challenges, and greatest thrills, in putting together a multi-image presentation is the use of simultaneity of the visual arrays. Combined from lists by other writers on the subject and from personal observation the following are the twenty most common uses of simultaneity in multi-image productions currently (not in any order):

1. simultaneous display of a subject from different points of view;
2. simultaneous presentation of different time segments of an event in sequential order;
3. side-by-side comparison of contradictory lines of mood or action;
4. reinforcement of a certain point by showing several similar or mutually supporting visuals;
5. elaboration of a single visual by repeating identical images;
6. panoramas;
7. panoramic titles and graphics;
8. to illustrate development of inter-related concepts;
9. question and answer;
10. action and reaction;
11. alternative courses of action;
12. visual metaphor or simile;

13. representation of two or more events converging and merging into a single event;
14. a single event fragmented into several images;
15. thesis, antithesis, and synthesis achieved on separate screens;
16. the development of a horizontal sequence;
17. variations on a motif;
18. directing attention from one visual to another;
19. holding a static visual on one screen while varying the same theme on the other screens;
20. various forms of comparison such as:
    a. physical characteristics,
    b. geographical characteristics,
    c. environmental characteristics,
    d. dimensional,
    e. spatial,
    f. dichotomies,
    g. alternatives,
    h. differences,
    i. likenesses,
    j. parts to whole,
    k. model to object,
    l. old versus new,
    m. right versus wrong....etc, etc.

Pacing of the presentation is organized so that it is fast enough to maintain interest but slow enough to allow for comprehension. Obviously, the pacing of the show will be determined by the purpose and content of the presentation but

it will also be determined by the talent of the designer and his attitude toward the subject and the audience.

For example, at one end of the spectrum of programming styles is what we might call the F-15 Bombing and Strafing Run. These kind of shows are usually short on content and long on effects: lots of flashy-blinky whiz-bang, smoke pots, strobes, ear-shattering sound track, hundreds--thousands--of slides in frenzied cavalry charges across the screens.

At the opposite pole is the Emeritus Professor Farewell Lecture crammed from basement to attic and from wall to wall with content, proceeding with all the enthusiasm of a mortally wounded elephant lumbering across the dry and dusty Kalahari, as visually interesting as grass growing.

The pacing and rhythm gives life to the presentation. Just as you can expand and contract the visual array moment by moment you can also expand and contract the sequential development of the presentation to enhance the mood and aid in comprehension.

In the programming phase of the production you will also need to consider the timing of any other auxiliary devices which you intend to use in your presentation (e.g. the previously mentioned strobe lights, smoke pots, etc.). Once again, the use of these other devices needs to be evaluated in terms of the overall purpose of the presentation.

Eventually the production will be completed. But unlike film, the design of a multi-image presentation does not end with the production phase. There is still the staging of the presentation to plan.

The staging of the presentation is the last, and in a very large sense, the most critical phase of the project. When all goes well the darkened room and the elimination of extraneous sound cause the viewers to concentrate their two primary sense organs (sight and hearing) on the source of the sensations.

But, all of the effort, energy, time, money, creativity, and enthusiasm expended on the project can be unequivocally and irretrievably FLUSHED AWAY (Faster than Liquid Plumber) by incompetent staging of the presentation.

By incompetent staging I mean anything which can diminish the quality of the presentation during the staging phase of the project such as, but not limited to: distracting ambient light or ambient sound, out-of-focus visual images, incomprehensible or distorted sound track, hardware malfunctions (blown projector lamps or amplifier channels, jammed trays, irregular programming cues), and environmental appendages which interfere with each person's view of the screen (chandeliers, columns, lecturns, potted palms).

Multi-image presentations are very cumbersome and complex programs to stage. An inordinate amount of hardware is required. Each piece of hardware can malfunction. If you rent your hardware the cost is beyond belief. The location for staging is usually not designed for multi-image presentations. Why do we bother?

I think the main reason we bother doing multi-image productions is that it really is the frontier of the audio-visual world. Unlike film and video we are not yet rigidly locked in to a notion of what it should look like. We can experiment, play with different image-sound combinations, and in the process move our audiences to new levels of awareness.

What kind of music should be used? Keep in mind the purpose of the presentation and the kinds of moods you are trying to create in your audience. Don't just use music which you like or that is familiar. In fact, if music is too familiar it can distract from the presentation because the viewer is thinking of the circumstances under which the music was last heard and will drift away from your show.

Most commercial productions which I have seen recently (1978) tend to use upbeat, lively music that's not too far-out or crazy, a sort of over-40's disco music. Educational productions tend to use classical music, film music, vocals with a 'message,' and jazz. (In effect, violating all of the guidelines which I have suggested earlier.) Student productions often use heavy metal, rock and roll, country western, or vocals with 'messages.' There's no accounting for taste.

However, it's generally not a good idea to mix disparate musical styles over too broad a range in a single production. The track will sound patched together without any kind of unity or coherence.

The other important decision to be made with regard to music is when to use it in the production. Many producer/designers choose to use music under the entire production, from beginning to end. Others will use it intermittently to enhance particular segments of the show. There is no right answer. However, multi-image presentations seem to be the only audio-visual format currently which tend to use music under the entire presentation. As I said earlier, many designers choose to use the sound track to hold together the other disparate elements of the production and to give it a sense of timing.

Finally, I'd like to add a word about the quality of the sound track. If you transcribe a scratched or defective record to tape for your sound track you will be guaranteed a poor quality, amateurish, and potentially distracting

sound track for your program. For some peculiar reason (perhaps because they are primarily, if not exclusively, content oriented) many educators who produce and design multi-image shows seem to be deaf to technical imperfections in their sound tracks.

Also, don't forget that the mood of your presentation can be enhanced in various segments by the judicious use of sound effects, either those which you purchase from a 'music library' or those which you record yourself.

These various sound track components of verbal, music, sound effects, and silence must be recorded and mixed together at the proper levels to reduce hiss and other noise in the system. An attentive ear must be tuned to the final mix to check for balance between the various segments, especially to make sure the verbal component is intelligible to someone who will hear it only once.

So far, from what I've seen, there hasn't been much use of music to contrast with the images on the screen. For example, it's not unusual in certain kinds of film to use ominous music under innocent or innocuous scenes to create suspense, anxiety, and foreboding. It may be that because multi-image has not been used to any great extent in a narrative, dramatic role we have not yet had much reason to use music in such a fashion.

Once the visuals are all shot and the sound track is complete the assembly of the presentation begins in earnest. The completed sound track is approved by the client prior to programming. The visuals are laid out horizontally (the visual array which is going to be presented at any given moment in time) and vertically (the sequential replacement of image to image on the individual screen areas) corresponding to the various segments of the production.

Usually at this stage of the process the designer is making final decisions about when and where he wants to have any screen areas go black (i.e. no image being presented). Black screens are achieved either by the use of opaque

REFERENCES

1. Nelson, George. Problems in Design. NY: Whitney Publications, Inc., 1957, p. 11.
2. Benedict, Joel A. and Crane, Douglas A. Producing Multi-Image Presentations. Tempe: Media Research and Development, Arizona State University, 1973, p. 5.
3. Dyer, Palmer E. "Why We Use Multi-Image Presentations," in The Art of Multi-Image, Roger Gordon, ed. Association for Multi-Image, 1978, p. 19.
4. Sutnar, Ladislav. Visual Design in Action. NY: Hastings House, 1961, from the introduction, no page number.

V. USAGE

While I would hope that I have been convincing in presenting the necessity for learning history, theory, and research related to multi-image, the bottom line for most practitioners is "how effective is multi-imagery for me?" Some of the studies cited in Section IV show direct success with this mixed medium in instructional situations; other successes in the corporate world go officially unreported, but are reflected in annual profit sheets. Presentations and seminar testimonials at various conventions have spoken the praises of multi-image in education, promotion, public relations, sales motivation, religious expression, and artistic discovery. In this final section of the book, I wanted to present a mini-documentation of the success of multi-imagery, citing various examples. Thus, we have explanations and discussions from some of the most well-known and respected figures in the differing fields of multi-image: Gerry McVey from the educational world, summarizing the operations of the famous Wisconsin M.I.L.; Richard Fleischer (and others) from commercial cinema, analyzing the ways that multi-image film can follow the theories of Siegler; and Leslie Buckland, one of the giants of corporate multi-imagery, answering specific questions about the commercial use of this new approach to communication. To conclude this section we have some practically-applied testimony from Don Pasquella on one of the finest arts of multi-imagery: budgeting for proper completion (and profit).

Further descriptions of the use and success of multi-image in business, industry, medicine, education, government, entertainment, the arts, and religion may be found in a variety of sources. One place where such information is catalogued is AMI's Archives and Clearinghouse. Many of the hundreds of articles in this collection are available for reproduction at a miminal cost and cover the use of multi-imagery from the 1950s up to the present. Another way to keep

current is to scan magazines such as Audio Visual Communication, Biomedical Communication, Photomethods, Audiovisual Instruction, and of course AMI's quarterly journal, Multi-Images. An even more in-depth updating can be done at major libraries by consulting the listings in the E.R.I.C. data bank (under "audiovisual" and "multimedia instruction"), the annual New York Times Index ("multimedia"), the Education Index and the C.I.J.E. ("audiovisual and "multimedia instruction" for both), and the Reader's Guide ("audiovisual," "multimedia," and "performing arts"). Occasional "Multimedia" listings will also be found in the Art Index and the Index to Business Periodicals. Reference to articles in these and other sources will give the reader a current awareness of what can be done, how well it works, and how much it costs. Further published information on production techniques is available in a variety of manuals, including AMI's textbook, The Art of Multi-Image. Another tool in this textbook (and available through the AMI Clearinghouse on an annual updated basis) is the multi-image bibliography prepared by me and Don Pasquella.

Beyond that, though, the only way to learn more is to observe and participate--at instructional media centers, at in-house corporate and government media centers, at conventions, and at AMI-sponsored festivals, competitions, and workshops. Most of what you read about and observe is not so much the result of trained skill as it is the result of trial and error: experimentation, guessing, playing around, taking chances. Many of these discoveries can then be taught, analyzed, and incorporated into systems of production and presentation techniques, but the most important thing to learn is attitude. Nothing is impossible because there are no specific limits. Any multi-media program will be successful if the content and format are keyed to the budget, the audience's needs, and the producer's abilities. Given the flexibility of these variables, success should be assured. Possibly the motto in multi-imagery should be: never promise more than you can deliver, but never deliver less than you can attempt.

Multimedia Instructional Laboratory

By Gerald F. McVey

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The idea of installing the Multimedia Instructional Laboratory (MIL) at the University of Wisconsin, Madison, originated when John Guy Fowlkes, former dean of the university's School of Education, first saw a demonstration of a similar presentation system at the Agricultural World Fair in New Delhi, India. In 1961--less than one year later--Mr. Fowlkes had set up a similar installation at the University of Wisconsin's School of Education.

An integral part of the School of Education, the MIL functions under the auspices of the Wisconsin Improvement Program directed by Mr. Fowlkes. The laboratory, which has been directed by L. Clinton West who currently is in Northern Nigeria completing a two-year teacher education project, is being supervised during his absence by the author, who is serving as MIL manager.

The MIL has been in continuous operation since January 30, 1961, when Professor Michael B. Petrovich of the university's Department of History pressed a button on the lectern and the title page of the textbook for his Russian history course flashed onto the screen. Frequently revised and supplemented by new visuals, this course has continued to be a regular offering in the Multimedia Instructional Laboratory. In similar fashion, over 200 fully automated programs covering a broad spectrum of academic disciplines have been produced; all production and presentation costs are absorbed by the laboratory. Once completed, the programs are placed on file in the MIL library. All schools of the university are invited to use the MIL.

Reprinted from the February 1966 issue of Audiovisual Instruction with photos and references to them deleted through permission of the Association for Educational Communication and Technology. AMI Archives and Clearinghouse no. CD 66m. Copies available from AMI; consult current ACH catalogue for price and ordering information. Dr. McVey is currently with the Audiovisual Dept., School of Education, Boston University.

Basic Purposes and Primary Activities of the MIL

The Multimedia Instructional Laboratory was established for the purpose of (a) improving the quality of large-group instruction at the university level through the use of an automated system of audiovisual equipment, and (b) providing an instructional laboratory in which the effect of multiscreen rear-projection techniques on learning could be studied. To date, the primary activities of the laboratory have included:

1. Producing automated lecture presentations for use in regularly scheduled university classes, and

2. Conducting research projects related to variations in material and lecture productions, variations in the learning situation, effects of unique or cross-media utilization, analysis of student attitudes toward multi-screen presentations, variations in learning acquisition and retention, and concept identification.

Development and research studies now in progress or planned for the near future include teacher-student utilization of an electronic responding system and comparison of visual and aural stimuli in concept attainment. The MIL also is engaged in a team research project with the university's Environmental Design Center exploring the following topics: color as related to the performance of visual tasks; quality of light spectrum as an influence in visual recognition; light levels as determinants of sustained visual performance; factors affecting reinforcement or loss of meaning from auditory signals; mental task performance as related to various methods of maintaining body temperature; and reductions in performance of tasks caused by conflicts of stimuli.

The production activities of the laboratory are summarized in Table 1. Each completed presentation represents approximately 120 man hours of effort by the production team, exclusive of the planning and coordinating time spent by the

TABLE 1

Summary of Multimedia Production

1961 - 1965

Areas of Instruction	Multimedia Presentations		
	Completed	In Process	Future Plans
Agricultural Journalism	1	0	0
American History	3	10	10
Art Survey	60	10	20
Audiovisual Instruction	13	3	5
Comparative Education	4	0	0
Curriculum and Instruction	12	6	40
Driver Education	1	0	0
Europe and the Modern World	3	0	0
Fundamentals of Nursing	3	0	5
Health Information	9	2	15
History of Motion Pictures	10	5	10
History of the Theater	12	2	10
Home Economics	2	0	5
Human Abilities and Learning	31	5	5
Physiological Chemistry	9	0	6
Russian History	46	5	10
Social Studies	1	1	3
Total	220	49	144

respective professors of the courses being programed. Under present physical, budgetary, and personnel limitations, 18 to 20 programed and/or automated lectures are being presented each week. Allowing for essential preview time, this figure represents approximately 80 percent maximum capacity under present facility limitations. With the staff currently available in the laboratory, an average of two new presentations per week could be prepared.

Development of an Automated Lecture

Six to eight weeks before presentation time, the professor and his teaching assistant will usually join with the program designer for the initial production meeting. The possibilities for translating verbal concepts into visuals are discussed, and arrangements are made for coordinating the production effort. It is the job of the program designer to translate ideas into a series of specific photographs, drawings, charts, titles, film clips, recordings, and the like. At this time the visual designs are discussed with the artist, who then makes up rough sketches of the visuals to come. Meanwhile, the professor's assistant will search for pertinent material to be included in the program, i.e., pictures to be copied, films and kinescopes to rent or edit, etc.

When production is completed, the teaching assistant, aided by the MIL programer, will edit the recorded lecture, place electronic cue pulses on the recording, and program the sequence selector cards. A trial run will reveal any necessary final changes to be made, and once these have been completed, the automated lecture will be ready for presentation. A full-time technician is responsible for the operation of the battery of electronic equipment used to present these programs.

On the 7½' x 14½' screen, the student sees an arresting sequence of images--visually representing the progress of the professor's lecture. Often, the student sees three "visuals" at once: a large one framed in the main panel of the tripart screen and two smaller ones in the two side panels. These images, the professor's words, the room lighting, and, frequently, recorded music are all carefully coordinated to make an integrated impact on the student through his senses of sight and hearing.

While the student has his attention focused on the front of the screen a battery of projectors focus on the back of the screen. Behind this rear-projection screen there are two random-access, remote-focusing, 2" x 2" slide projectors each having a 99-slide capacity; a random-access, 59-slide capacity, 3¼" x 4" slide projector; a 16mm motion picture sound projector (Xenon light source); a television projector; an opaque projector combined with a Teletranslator; playback turntable; and a stereo tape recorder and stereo sound system along with an electronic control system. All of this equipment is concealed from the student's view. Adding versatility to the projection system is an overhead projector which is operated by the instructors during semiautomated presentations.

The instructor has his choice of three modes of operation: fully automated; semiautomated; lectern-controlled (independent). A fully automated program begins with the playback of a tape recording. From one track the narration is heard while the second track channels the prerecorded 60-cycle signal to the sequence selector card reader. This program cueing is, of course, transmitted unnoticed by the audience and brings into operation the various audiovisual equipment. These automatic functions include not only slide changes or the starting and stopping of the 16mm motion picture projector, Teletranslator, and

tape recorder but also the multiplexing of the projection mirror system. The electrical circuits are so wired that it is impossible for the projection lamps to be turned on until the mirrors are brought in or out of the multiplexing pattern.

A semiautomated program operates in a similar fashion with two major exceptions: the narration is usually presented "live" by the instructor, and the sequence selector card reader obeys a cue originating from the lectern when the instructor depresses the telemation button. The rest of the operation follows in the same manner as in the fully automated mode.

A lectern-controlled program allows the instructor to personally operate most of the multimedia equipment. He can start and stop the tape recorder and all of the projectors. He can change and focus slides with the slide projectors' random-access and remote-focus controls; he can call up any combination of visuals he desires.

The stages in the development of a 50-minute fully automated program are recorded in Table 2. This chart not only tabulates the various stages of a program's development but also notes the personnel involved and hours spent on the completion of each stage.

Why Multimedia?

One of the attributes of the MIL is that it offers more consistent control over the presentation of material. A program can be presented at a pace that the instructor feels his students can handle. With the random-access selection system, any combination of visuals can be called by the lecturer at any time.

Program design is flexible since a MIL presentation can be edited by simply removing or replacing a slide or erasing a series of cues from the tape. Three screens are available for fully automated programs and a fourth is present for

TABLE 2

Development of a 50-Minute Fully Automated Multimedia Presentation

	Director	Laboratory Manager And Program Designer	Artist	Photographer	Programmer	Laboratory Technician	Professor	Teaching Assistant	Total
Conference to discuss program	1	1					1	1	4
Conference for program design including development of script		3						3	6
Research for information and materials for program								5	5
Preparation of "trial" artwork including conference and discussion of possible artistic representations of visual concepts		2	2						4
Review of "rough trial" sketches		1	1					1	3
Final Artwork			25						25
Review of artwork and final script		1	1				1	1	4
Discussion of possible photographic themes (outside-inside and copy work)		1 1/2		1 1/2					3
Actual photographic work (outside-inside and copy work); also mounting of slides				35					35
Preview: "final" slides in MIL	1 1/2	1 1/2				1 1/2		1 1/2	6
Programing					4			4	8
Tape recording of script including "cueing" tape					3	3	3		9
Playback and check program	1 1/3	1 1/3			1 1/3	1 1/3	1 1/3	1 1/3	8
Total	3 5/6	12 2/6	29	36 3/6	8 2/6	5 5/6	6 2/6	17 5/6	120

semiautomated lectures. Color and black and white can be used effectively in combination.

Probably one of the best reasons for using the MIL is the control of ambient lighting. Since the MIL utilizes a rear-screen projection system, adequate room lighting can be provided for close, visually centered sustained activities, i.e., note taking, sketching, etc. In the MIL, glare is virtually eliminated, and proper contrast limits are provided.

The MIL is providing a different philosophy for large-group lecturers. With feedback provided by its 100 student-responding units, instructors are able to adjust their presentation pace and level. We now think of the MIL as a facility for initial instruction rather than for large-group one-way lectures.

For Professor Logan, who deals with design, architecture, sculpture, and painting in his course on contemporary arts, the extensive use of visuals was no novelty. The visual was already his subject matter. When his students put sketches in their notebooks, they aren't just doodling; they're taking notes on some of the main points in the presentation. So it was natural for Professor Logan to move into the MIL at the first opportunity. "With the MIL, we get two more images than we've ever been able to have before at any one time," he says. As he explains it, the main screen is generally reserved for representations of the major points in the content outline of his lecture. The smaller side screens display what amount to subpoints in the outline. Professor Logan has been collecting color slides for 15 years. Whenever he can, he takes additional photographs himself to keep his art course truly contemporary. As a result, he has an abundant store of visuals to draw from. "The slides are not an amplification of my lecture," he observes. "The lecture is an amplification of the slides."

It is the other way around in such courses as Professor Klausmeier's Human Abilities and Learning. Although Professor Klausmeier also prospects for pertinent pictures, it is not easy to find illustrations of such concepts as intelligence, motivation, attitude, retention. An artist on the MIL staff has succeeded, however, in rendering some of these concepts into visuals, and Professor Klausmeier says that motion pictures and kinescopes have been effective. He often shows on the large screen 25-minute kinescopes of classroom scenes at Wisconsin High School. After the showings, he and his students analyze the action in terms of the principles of educational psychology.

In terms of creativity, a number of interesting programs have recently been developed with Professor Richard Byrne of the Speech Department. His course, An Introduction to the Theater, has become one of the most popular on the Madison campus. Professor Byrne is also developing a series of automated lectures on the History of Motion Pictures, a course he presently teaches. Although this means a marked increase in his work load, he states:

> Rapid access to multiple visual stimuli in the study of motion pictures as an art form and as a medium of communication makes the MIL a natural for the presentation of my History of Motion Pictures course. The simultaneous presentation of verbal information (names of directors, producers, inventors, and technicians), visual evidence of equipment and techniques combined with large screen representation of frames from selected films is an invaluable aid to my programs.

Future Plans for the MIL

The next few years should prove most interesting for the MIL--with existing programs being revised and new programs being produced, with standards of equipment performance being improved and the reliability of presentation being enhanced. Toward these goals, both the Wisconsin Improvement Program (through grants) and the School of Education (through capital and supply budgets) have

been very generous in their support. The near future will find the Multimedia Instructional Laboratory playing an ever-increasing role in the new School of Education now in the planning stage of construction.

Facts About the Multimedia Instructional Laboratory

A. Cost

1.	Installation cost	$33,000
2.	Remodeling Room 116	17,000
3.	New equipment	30,000
4.	One automated program, 50 minutes	300

B. Multimedia Program Time, 50 Minutes, Automated

1.	Production staff	100 hours
2.	Professor and his assistants	20 hours

C. Personnel

1. Director (on leave)
2. Laboratory manager and program designer
3. Technician for maintenance and program operation
4. Photographer
5. Programers
6. Artists
7. Teaching assistants
8. Clerk-typist

D. Presentation Equipment

1. TelePro 6000 3¼" x 4" slide projector
2. Two RA 100 2" x 2" slide projectors
3. 16mm motion picture sound projector with Xenon light source
4. Opaque projector
5. Overhead projector

6. Television projector
7. 9" television monitor
8. Tape recorder with subaudible cueing
9. Turntable, four speed
10. Tripart screen
11. Lectern with automatic controls (including random-access units)
12. Stereo sound system
13. Electronic cue counter
14. AM-FM tuner
15. Vega wireless microphone
16. Sequence selector and card reader
17. Multiplexing mirror and table
18. Student-responding units
19. Miscellaneous (electric pointer, black lighted chalkboard, etc.)

E. Production Equipment

1. Cameras--35 SLR, 2¼" x 2¼" TLR, 3¼" x 4" Crown Graphic, 4" x 5" View Camera, 8" x 10" View Camera, Polaroid MP3 Industrial Copy Camera
2. Honeywell Repronar
3. Copy stand
4. Mounting press
5. Print dryer
6. Diazo printer and developer
7. Standard photo-darkroom equipment

Symposium: Adding to the Director's Tools

Participants: Richard Fleischer, Norman Jewison, Ralph Nelson

SYMPOSIUM: Adding to the Director's Tools

Participants: Richard Fleischer, Norman Jewison, Ralph Nelson

1. How did you become interested in the multi-image screen?

FLEISCHER: When I was in Prague in 1962, I saw the permanent production of Laterna Magika, which means exactly as it sounds--magic lantern. The Czechs were using a combination of photography and live actors, who walked among the screens and sometimes walked in and out of them, talking to their own images. I was so engrossed with the show that I bought the rights and imported it to New York in 1964. The whole thing was a financial disaster, for reasons that are a story in itself.

I wanted to use the multi-image screen, or Polycran (multiple screen) as the Czechs call it, in Fantastic Voyage, but I couldn't sell anyone on it. I thought The Boston Strangler was a perfect subject for the technique and this time I was able to sell the idea, thanks to its use at Expo 67. I took the producer, Bob Fryer, to the Fair, and he flipped over the idea. I also got a print of A Place to Stand and showed it to Richard Zanuck at the studio. He was equally enthused.

JEWISON: I became intrigued with the multi-image screen when I saw Chris Chapman's A Place to Stand in the Ontario exhibit at Expo 67. I had seen the device used before, but never so well. I arranged for the film to be shown at the Academy, and I was happy when Chris won the Oscar for it. The print that was shown here was in 35mm, and I was anxious to see if it would play as well as

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in the larger size of film. It did. I wanted to see if the technique could be applied to the dramatic form, and so I used it in The Thomas Crown Affair. I found it to be highly effective, and I believe it can be a useful tool for a director.

NELSON: My use of the multi-image screen is obviously derivative of Expo 67. When I was preparing Charly, I came up against a scene that I couldn't resolve in a satisfactory way. It was a part of the story where I wanted to go from one emotional point to another in the briefest possible time. I tried it many ways, and it never seemed right; the scene took too much time, and I knew it would end up being dull on the screen. Then I went to Expo 67 and was profoundly affected by the Ontario exhibit by Chris Chapman, A Place to Stand. I saw that I could use the same technique for my scene. When I had done it, I discovered that I not only succeeded in collapsing the time element, but I also had added elements of excitement that I hadn't expected.

2. What are the advantages?

FLEISCHER: The multi-image screen should not be used for informational purposes. It should be used to get over a mood and atmosphere. The multi-image screen was ideal for The Boston Strangler for three reasons: (1) I wanted to show the mood of Boston during the Strangler terror! by picturing a number of events going on at the same time, you can achieve a result that isn't possible with one image. (2) The Strangler himself was a fragmented personality, and I tried to demonstrate this with two or three different angles of the same scene, projected simultaneously. (3) The element of surprise was lacking, since the audience would know who the Strangler was and would know that he had killed 11 women. So I sought to build up anticipation and suspense rather than surprise.

JEWISON: You have the advantage of being able to show five stories simultaneously, without cutting back and forth. I used it in The Thomas Crown Affair (1) To show the inter-relationships of the characters; and (2) To dramatize the convergence of people coming from different directions.

The device is not only effective in itself; it also helps the picture when you go back to the single-image screen. For example, I used it to demonstrate the action of a polo match, going to 40-50 images, then--wham!--I went to a single closeup of a polo ball. That had much more impact than if I had cut the shots the conventional way.

You can use it in many ways. For instance, you can have five panels and remove them one by one until you end up with a single image upon which you wish to focus attention.

NELSON: The multi-image screen is a new advance in story-telling. It can be used to good effect in collapsing story points and generating excitement. It can also be used in conventional scenes. For instance, I had a sequence in Charly where the boy and girl were talking together. I wanted to avoid the usual method of cutting back and forth between the two faces, so I put both of them on a split-screen. Thus you could see both the action and the reaction; the audience itself does the cutting. Stirling Silliphant, who was the writer, didn't think it would work. But now he says he wouldn't want to go back to the usual way of filming a conversation.

3. What are the limitations?

FLEISCHER: Not every story is suitable for the multi-image screen. If you use the device for cinematic flair, rather than for a story-telling point, then it becomes self-conscious and flashy. It doesn't take you anywhere, just as wild camera angles are pointless unless they have a reason.

Your story should be structured for simultaneous action, not just in one sequence, but all the way through the picture. There must be several places in the script where you need to show what is going on at the same time.

JEWISON: The multi-image screen is an interesting tool to work with, but you must guard against over-use. Only certain subjects are suitable. I am not using the multi-image screen for Gaily, Gaily, for example, because it is a period piece. History becomes kind of hazy, and the effect I am seeking is that of a black-and-white tin-type. This kind of filming would not adapt itself to the multi-image screen.

NELSON: There is liable to be a tendency to over-use the multi-image screen, and that would be a mistake. But it should be employed only if it serves the purpose of the story-telling.

4. What is the effect on audiences?

FLEISCHER: I found the audiences soon lose themselves in the technique. Card after card in the preview tryouts commented, "Photography very unique," or something like that. I noticed that the people in the audience actually leaned forward during the multi-image sequences. They had to work. Some of the cards commented, "I felt I was missing something." That was intentional. We deliberately cut the picture so the viewer would get that feeling--by putting on a sound effect after the image had left the screen.

The eye darts all over the screen, but by judicious cutting, we can direct the viewer's attention where we want it to go. By muting the action in one area and building it up in another, we can pull the audience in the proper direction.

JEWISON: Some people were afraid the audience might get vertigo from having to study so many images. That doesn't happen. The eye is the most adaptable organ in the body. You will be amazed at what the eye can absorb. Five or six or more images can be viewed and retained simultaneously. This is an enormous advantage in the compression of material. For example, A Place to Stand is only 20 minutes long. But people don't realize when they watch it that they have been seeing an hour and a half of film.

Dramatically, the multi-image screen does pull the audience out of the proscenium, and that is a disadvantage. But that may be overcome as audiences become more accustomed to the technique. That happened with the hand-held camera. It was noticeable when it was first used to a large extent. But people are used to seeing camera movement; 90 per cent of TV newsreel are hand-held.

NELSON: I was concerned that the audience might not react well to the multi-image screen, and so I screened it twice, once in rough-cut and once in the final cut, for Arthur Knight's Cinema class at U.S.C. The students were captivated by it. I have found the same reaction among regular audiences. They are able to follow what is going on. They can even grasp single frames.

I got an idea from watching the numerals that mark the beginning of reels. They are single frames, yet they can be read on the screen. So, as a joke, I put in some printed material in one sequence where a character is smoking pot. On a single frame I put the sign: CAUTION: SMOKING MAY BE INJURIOUS TO YOUR HEALTH. An amazing number of viewers were able to read it.

Which proves that the eye is faster than the projector.

5. Is the multi-image screen costly?

FLEISCHER: Yes. On Boston Strangler I shot more than the usual amount of film. After the major shooting ended, I filmed another week of bits and pieces, doing 40 to 50 setups a day. Matte work is always expensive, and the editing problems are enormous. The timing has to be down to the split-second, and I used a stopwatch on many of the scenes. I planned the screen to produce a series of small climaxes, and no two climaxes could arrive at the same time.

JEWISON: The device is expensive, yes. But most of the cost comes in the post-production stage, when expenses aren't as high.

NELSON: Yes, it is. For a minute of montage or collage on the screen, you needed to shoot seven minutes of film. The processing is also quite expensive; it takes an enormous amount of mathematics to make everything come out right.

6. What about the adaptability of the multi-image screen to future showings on television?

FLEISCHER: There's no reason the images won't be visible on TV. Look at the commercials today, especially the Kodak ads. Look at baseball games, which show you the pitcher, plus runners on first and second, all on different cameras. They're using the multi-image screen all the time.

JEWISON: I don't make pictures for television, so I couldn't care whether they will be visible on the home screen or not.

NELSON: I hadn't thought about it. But I see no reason why it couldn't be all right on television. You see some commercials that have three and four images on the screen, and it's certainly done in sports. There might be some

loss in converting a wide screen to the normal ratio; Charly was shot in Techniscope, and so part of the screen would be lost on television.

Technical Aspects of the Multi-Image

By Don W. Weede

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Split screens and multi-panel techniques are, of course, nothing new to the field of special photographic effects. Like the dissolve and montage, they have been used for many years with varying degrees of effectiveness. In the New York World's Fair they reached some sort of prominence when the lay public was exposed to the technique as total concepts in the form of such presentations as The Searching Eye of Eastman Kodak and Dupont's Wonderful World of Chemistry, which added live stage action and mobile screens to the traveling-matte film technique.

Then came Expo '67 with its "films that blitz the mind" as Life magazine extolled them. From Canada, Christopher Chapman came to Hollywood with his multi-panel concept of A Place To Stand and this year took back to Canada the Academy Award for the Best Live Short Subject of the year. Recently, Canada gave him a similar award. So, in this case, the multi-panel split-screen technique achieved a very gratifying result.

Dividing the screen into many panels and moving them about is of course, only a mechanical-optical effect that can be done by any qualified optical house. However, to have the technique become more than just a clever "special effect" is something else again. If the viewing audience is impressed with the multi-panel technique only as a more or less impressive 'gimmick," rather than a subtle means of clarifying, supporting, and otherwise augmenting the pace and story values of the film, the technique would seem ill-used.

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The use of multi-panels to the director and production designer does offer considerable unique possibilities in the form of compressed information and simultaneous presentation of concurrently happening story sequences. It permits the side-by-side comparison of disparate scenes that occur at the same instant of time. A moving panel can impel the audience to look at exactly that portion of the screen you wish them to see next. The juxtaposition of panels can be more dynamic than the familiar montage.

Now, how does the director or production designer convey to the optical house his concept for the use of the multi-panel concept?

In the case of A Place To Stand, we at Film Effects were confronted with the situation of a producer-director who had shot some 35 miles of 35mm footage. Chapman had a well-conceived concept of his general format, but he had no story boards to show us and no orthodox script.

Prior to his photography, we had carefully considered the technical photographic problems involved with his technical director, Barry Gordon, so that the film supplied to us was photographed in such a manner that we could optically enlarge it, reduce it, move the panels to follow his action and otherwise transfer it to the 70mm optical dupe negative.

A form of charts was devised by Chapman and Gordon that gave us a graphic idea of the size and shape of the panels and from these the mathematical layout sheets substituted for the orthodox count sheets familiar to editors and printer operators.

So, as an optical house, we are concerned with the director's wants as far as the general size, shape, character and movement of the panels are concerned. The panels can be sharply defined or with soft edges. They can vary in shape and size and move at will in any direction across the screen. They can be against a black, white or colored background. They can pop-on, wipe-out,

fade-out or dissolve. They can include "oil effects" or color derivations. They can bend to the directors will, so, in short, ours is simply the need to know.

Since Columbia's international release of A Place To Stand, we have been deluged with inquiries from every major studio in Hollywood as well as foreign production interests. The makers of educational films see in the compressed information aspect of the multi-panel technique a means of shortening teaching time--very much as "power reading" is a boon to the student. The medical fraternity is enthused about the prospect of using multiple cameras to photograph, for instance, the various individual duties of a team of doctors performing a heart transplant, which would be difficult to study in a master shot. The multi-panel screen can then present the various close-ups simultaneously on a single screen.

Film Effects is developing its own Dynavision process for photographing a master scene on 70mm, using an 8-hole format that produces a 2 x 2 inch image. This will make it possible for us to optically scan the image in 35mm format, frame any portion of it and still not be confronted with quality degradation, since the end result will be a 1-to-1 35mm reproduction. New optical printers of our own design will soon be ready to add new flexibility and ease to our multi-panel and split-screen work.

Undoubtedly, the multi-panel technique will be well-used and ill-used. Unquestionably, when properly designed and well-used it is a powerful tool to add to Hollywood's long list of technical accomplishments.

So What Else Is New?

By Arthur Knight

So What Else Is New?

By Arthur Knight

When the wide screens appeared, back in the early Fifties, film historians were quick to point out that it had all been done before. There were the Grandeur and the Magna screens of the late Twenties, and CinemaScope itself was based on an anamorphic principle first demonstrated by Professor Henri Chrétien in France as early as 1928. Not only that, but some recalled that the great D. W. Griffith had occasionally masked his frame to something approximating CinemaScopic proportions when his composition seemed to warrant it, as in certain shots of the ride of the Clan from The Birth of a Nation, or of the sweeping hordes of Darius the Persian as they charged the walls of Babylon in his mammoth Intolerance.

Nothing, these historians seemed to say, is really new under the sun--not even in that newest of all the arts, the movies. And now that, following the impact of the New York World's Fair of 1964 and Montreal's Expo 67, multiple images have suddenly come into vogue, this film historian finds himself impelled to suggest that even these eye-dazzling wonders are not altogether without precedent. Like so much else in picture making, it all began with Griffith.

In his invaluable shot analysis of The Birth of a Nation, prepared for the Museum of Modern Art Film Library, the late Theodore Huff listed:

SCENE 267: LONG SHOT (SIDES ROUNDED, TOP VIGNETTED) FROM HILLTOP. Refugees rushing up hill--burning and fire in valley--(second Cameron son being helped up hill in foreground).

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On examination, this shot turns out to be in fact a triple split screen, with the frame twice divided diagonally to accommodate each of the pictorial elements described. Similarly,

SCENE 269: LONG SHOT FROM HILL AS 267 BUT FURTHER BACK--DIAGONAL SPLIT SCREEN. People fleeing below--above the city burning.

What Griffith did, quite simply, was to combine two, or even three, separate shots in a single frame so that, in composite they added up to a single statement, but grander, more sweeping than anything that could possibly have been encompassed from a single camera position. In the finale of Intolerance, where prison walls and rioting convicts melt away into fields of flowers thronged with happy children and strolling lovers, the double exposures are accomplished by a vertically split screen technique that permitted Griffith to freeze the prisoners in a tableau on the right until the crowds had begun to move on the left.

As was so often the case with Griffith, the techniques that he introduced were readily grasped by other film makers, but not the principles behind them. Before long, special effects men were using his matte shots (such as the one in Intolerance where the High Priest of Baal looks through a window at a miniature insert of the city he hopes to destroy) as well as his split screen effects to make their screens look larger and more imposing. Griffith sought something beyond that, however, something very similar to what multi-screen enthusiasts are seeking today--to create a single statement from what are obviously separate elements juxtaposed within a single frame.

Toward the end of the silent era, something more along these lines began to appear as montage sequences, which originated in Europe, began to make their way into American films. Although in the purest sense, a montage is a series of quick cuts that together produce an impression or an idea, during the mid

and late Twenties experimental film makers in Germany and France began building montages by superimposing one image over the other, using double-, triple- and even quadruple exposures. At times, as in the opening of F. W. Murnau's American-made Sunrise, these were handled in a manner not unlike today's multiple screen images.

At the same time, in Europe, Abel Gance--"The Griffith of France"--produced an extraordinary ambitious Napoleon (1926), describing the rise of the Little Corporal through to his generalship of the Italian campaign of 1796. Like Griffith, Gance dreamed big; and in this instance, the dream involved placing three full screens side by side to encompass the vast panoramas of his battle scenes and other spectacular action sequences. Although precious few theaters at the time could accommodate the process, Napoleon was an astonishing preview of things to come some forty years later. As in To be Alive! and other, more recent, multi-screen efforts, the three screens were not necessarily in use all the time, nor did they always add up to a single picture. At one point, for example, the center screen was occupied by a huge close-up of Napoleon himself, flanked on either side by a mirror image of his troops toiling through the Alps. At another, a view of Napoleon's encampment, the images on all three screens were identical, but the picture in the center screen had been "flipped" to give the impression of one vast terrain seething with activity. But there are other times, as when the army sets out on its march into Italy, when each screen contains its own picture, and all three build into one astonishing composite, producing an effect not unlike the early, three-strip Cinerama. Because three projectors had to be switched on manually, synchronization (particularly for the composite shots) was less than perfect, but no one who saw Gance's film in its original Paris presentation failed to be impressed both by the concept and by its execution.

Building along this line, and perhaps even satirizing it, René Clair in Les Deux Timides (1928) introduced a charming triptych effect on a single screen that clearly anticipates (and outdoes) the rather similar notion in Pillow Talk. While the center panel shows a young lawyer in bed with his lady friend, the left panel presents his rival twitching jealously in his bed, and on the right her guardian sleeps gently and undisturbed in his; the camera has been so artfully placed that the headboards seem to unify the three beds into one. Earlier in the film, Clair divided the screen in half to show what the lawyer and his rival, a former client, dream of doing to each other to win the girl they both love.

Despite Clair's ingenuity, which earned vigorous nods of critical approval at the time, his idea of a split-screen image turned up only rarely, and in curiously desultory ways, until the advent of the wide screen. Moviegoers of the Thirties may recall that several of the studios, notably Warners and Paramount, like to recapitulate the casts of their films by running after the end titles brief fragments that showed the leads in action; the stars were generally given a full frame all to themselves, but lesser players were presented on two, or even three panels. In The Sin of Madelon Claudet, directed by Edgar Selwyn in 1931, this device was employed for dramatic effect to illustrate the parallel descent of Madelon (Helen Hayes) into the depths of degradation while simultaneously her brilliant, illegitimate son climbed to the heights of the legal profession; the camera seemed to swing back and forth from one bit of action to the other. And the "coming attractions" people, of course, have always been eager to cram their trailers with multiple shots of the action highlights and "all star casts" of the pictures they were exploiting.

As movie musicals began to abound in the Thirties, the ever-inventive Busby Berkeley created visual effects with the camera and the optical printer that

went far beyond the hundreds of dancing girls and wedding cake sets that Warners and M-G-M unfailingly alloted him. In the Shadow Waltz number from Gold Diggers of 1933, for example, he created a split screen appearance by turning his camera on its side and photographing his chorines reflected in a pool; they seemed to dance down the margins of the frame. For the climax of Twentieth Century-Fox's The Gang's All Here, he offered a kaleidoscope of beautiful girls and shimmering color, all centered about Alice Faye, that segmented the screen into hundreds of sparkling facets, like a reflection in the multi-lensed eye of a fly. Happily, since Berkeley generally worked only on the musical sequences of the films, he was free to explore and experiment unhampered by the stern exigencies of plots and dialogue; but Garson Kanin, it might also be recalled, used a split screen delightfully and imaginatively to help Ginger Rogers choose between her several suitors in Tom, Dick and Harry (1940).

Despite these hints and glimmers, the narrative possibilities of the process were generally overlooked until after the introduction of the ultra-wide screens in the early Fifties. Presumably, the Cinerama people were so self-conscious about the seams in their own triptych that from the outset they did everything in their power to conceal them; not until Grand Prix was there any suggestion of sub-division on the Cinerama screen--and by that time, of course, the original three strips that made up the composite had been reduced to a single 70mm image. In the CinemaScope musical, It's Always Fair Weather, however, directors Stanley Donen and Gene Kelly divided their wide, ungainly rectangle into three parts (each roughly the shape of the old "postage stamp" screen) and developed simultaneously in quick flashes the major events of the past ten years in the lives of three Army buddies--Kelly, Dan Dailey and Michael Kidd--who had agreed to meet again after the War was over. Action in one panel froze as the action in the next began. Films in Review described the technique as "terse, staccato, ingenious and effective . . . a contribution to film grammar."

Contribution it may have been, but it remained pretty much ignored, apart from the oft-repeated bedside telephones in Pillow Talk, until after the joint impacts of the World's Fair and Expo. To Be Alive!, the joint creation of Francis Thompson and Alexander Hammid, was the undisputed hit of the 1964 show. Three separate screens, each with its own projector, served up a heady melange of glorious shots from all over the world celebrating the joy of living. Frequently, the triptych presented three separate images that somehow counterpointed each other, but on occasion (and despite the visible frame that surrounded each of the screens) they would merge to form a single, eye-filling spectacle. So exhilarating was this 17-minute movie that audiences stood in line for hours to see it--and not infrequently would hit the line again to experience it one more time. (The three strips, incidentally, were transposed to a single 70mm print and run as part of the United Nations exhibit at Expo, where it proved equally effective in the new format.)

By the time Expo 67 came along, however, three screens were considered modest indeed. Thompson and Hammid, in their film for the Canadian Pacific-Cominco exhibit, We Are Young!, had expanded to six screens. One section of the National Film Board of Canada's wholly innovative Labyrinth installed five screens in a cruciform pattern; while in another section, two gigantic screens were placed at a 90° angle to each other--one vertical, one horizontal--and audiences viewed the show from four galleries surrounding the screens. In Man and His Planet, one of Expo's "theme" presentations, a vast 70mm screen was installed vertically, like an enormous slit, with the image trisected into three bands to correspond to the three climatic zones; audiences viewed this phenomenon reclining in low-slung chairs. In Man and the Polar Regions, audiences sat on a turntable that revolved slowly past eleven large screens, each with its own projector and film. For Walt Disney's Telephone Associates exhibit, they stood

in the center of a dome surrounded by eleven screens which, together, afforded a frieze-like 360° panorama of Canada at work and play.

Despite such multi-screen wonders, however, one of the most arresting of the presentations at Expo was Ontario's single-screened A Place To Stand. To be sure, the screen was one of the largest ever installed--an eye-filling 60' x 30' expanse that occupied the entire front wall of the auditorium. But what made the film so exciting was not merely the size of the image: It was the dynamic manner in which the area was used. At times, it seemed an enormous mosaic composed of dozens of images; at other times, a single picture occupied the full frame. Images appeared in various portions of the screen, now in squares, now in circles, now in rectangles, now in streaks of light that jetted across the blackness. Through canny combinations of shots seen simultaneously, an entire process was made evident at a glance, such as the digging, sieving and transport of coal; at another point, the screen was filled with a kaleidoscope of impressions of Canada's winter sports, suggesting the wide variety of snowtime activities available to our northern neighbors. To watch it, according to Newsweek's Joseph Morgenstern, "is to learn how to read whole sentences instead of individual words."

The intricate processing of A Place To Stand was handled by Linwood Dunn's Film Effects of Hollywood; and it is indicative of how suddenly and completely this technique has caught on that Eastman Kodak immediately commissioned him to produce the prize-winning, three-minute commercial that appeared on the Academy Award show, that he was asked to provide the multi-screen interludes for the recent Broadway musical, Happy Time, and has just performed a similar chore for Ice-Capades--not to mention such additional, up-coming film assignments as Airport, The Great Bank Robbery, The Secret of Santa Vittoria and Monte Carlo Rally. Recent pictures, not by Dunn, that have divided and subdivided the screen

in exciting ways include Grand Prix, The Thomas Crown Affair, The Boston Strangler and Charly (which eliminated the customary back and forth cutting of a two-people scene by placing both of the principals, Cliff Robertson and Claire Bloom, side by side on a split screen). And in the various "light shows" that are springing up all over the country, the screens are not so much divided as multiplied, with half a dozen projectors or more simultaneously throwing pictures all over the hall--while another battery of balopticons project abstract, mobile patterns of colored oils on still more screens or simply on the bare walls.

The kind of multiple image used in A Place to Stand and its more recent derivatives--multiple images within a standard 70mm, 35mm or even 16mm frame--can be projected in any normal theater (although, of course, the effect generally increased with the size of the screen). But the multi-screen efforts offered at Expo 67, the numerous environmental "light show" installations, the new Hemisphere which is being readied for the Osaka Expo in 1970 (the entire dome will be filled by a single image supplied by five projectors with special, wedge-like lenses)--all of these suggest that the movies are in fact on the threshold of a whole new breakthrough, and one that will affect not only the kinds of pictures we will see, but the very theaters we will see them in.

Such is the nature of this quick changing medium that within a very few years the wonders of Labyrinth may seem as crude when compared to the film of the future as The Jazz Singer compared to the film of today. And no doubt some future film historian, looking back, will explain that it had all been done before--probably by Griffith.

Multiple-Image Technique for

"THE BOSTON STRANGLER"

Multiple-Image Technique for "THE BOSTON STRANGLER"

"THE BOSTON STRANGLER" is an exceptionally well-made film version of Gerold Frank's book dealing with the case history of Albert DeSalvo who, by his own admission, brutally murdered 13 women in and around Boston during the period June, 1962 to January 1964.

As produced by 20th Century Fox in Panavision and subdued color it makes striking and creative use of an intricate technique in which multiple images appear simultaneously in varying configurations upon the wide-screen frame. The technique has been used before--most notably in the 17-minute short, "A PLACE TO STAND," which was one of the cinematic sensations of EXPO 67. It has also been employed sparsely of late, and with no great degree of imagination, in a few feature films, usually as a montage interspersed with titles.

But "THE BOSTON STRANGLER" is the first feature to use it extensively (about 35% of the total footage) and as an integral part of the filmic narrative. Its considerable audience impact and technical excellence has resulted from the dedication and skill of a team of key technicians, which includes: Director Richard Fleischer, Visual Designer Fred Harpman, Director of Photography Richard H. Kline, ASC, Editor Marion Rothman and Special Photographic Effects expert L. B. Abbott, ASC.

In the columns that follow, each of these technicians discusses his own work role in creating the exciting multiple-image sequences that make "THE BOSTON STRANGLER" a most unusual thriller:

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RICHARD FLEISCHER

Director

I have been interested in multi-image and multiple-screen processes for many years, having first seen such presentations in Czechoslovakia in 1942, where they have, in Prague, a theatre called Laterna Magica, and I was so enamored with it that I imported the show to New York and presented it in Carnegie Hall, where it ran, in 1944, for about three weeks. So I had a chance to study it and analyze its values and complications, and when I got back to Hollywood I always looked for a project for which I thought it would be applicable.

It was very difficult to explain what the process was like without demonstrating it. So there was a double problem. One was finding the right subject, a picture that would be suitable for it, and the other problem was, after you found the subject, to convince everybody that this was the way to do it.

EXPO '67 came to the rescue because there it was actually to be seen and it was a great demonstration of all the things I had been lecturing about here. So I convinced the right people that it did have a tremendous value, if the story was right. Then along came "THE BOSTON STRANGLER" and I felt it lent itself very well to all of the possibilities of multiple-image presentation. I felt that the requisites for using it were all present in this story, because one of the main requisites is simultaneous action--many actions, or more than one action, happening simultaneously on the screen, or within the same time in the story so that you don't have to cut back and forth in a conventional manner from one action to the other. You can show them both together.

It is used most obviously in some of the sequences building up to the actual murders, but I also use it in several other places and in several other ways. For example, it is employed in place of a conventional montage to quickly establish a trend of similar, simultaneous occurrences. There are two important

montages in the film. One is a round-up of all known sex offenders in Boston. As a matter of documented fact, this all happened very quickly--and I show it on the screen happening very quickly.

The second montage applies to the treatment of another kind of situation, that in which women are shown being molested by sex offenders. This happened all over the city, to all different types of women. I was able to show these individual actions happening simultaneously.

Then there was a lengthy sequence showing women being terrified at night, taking all sorts of precautions against the strangler. The multiple-image technique was a very effective way to show the mood of terror pervading the entire city. You really got the feeling of the whole city being involved at the same time.

Of course, the secret of making it work is not to put too much information into any one panel or to try to tell a complete story in any one segment.

One great challenge on the project evolved from the fact that the suspense which you normally have in a "murder film" does not exist in "THE BOSTON STRANGLER," because--first of all, you know who did it right from the start and, secondly, you know that there's going to be a series of murders. So there is no great surprise about discovering another murder. Faced with a problem like that, as a director, I concluded that what I would have to play for would be the anticipation and suspense. I used the split screen to enhance both of those elements.

For instance, for anticipation we see, on one side of the screen, a group of innocent people going about their everyday tasks, unaware that in the next room there is a dead body. Then we see, on the other side of the screen, what they are about to discover. So, we are anticipating their discovery of the body, and there is great feeling and great mood built up when you see it that way.

To build suspense, of course, one sequence that comes to mind is where you see the prospective victim going about her daily chores unmindful of the fate that is about to befall her, while on the other side of the screen you see the strangler approaching, and ther's no way to stop it. It's like a juggernaut of fate bearing down upon her. There's no way out.

You have to be very, very well prepared for using such a technique. It's not something that you can just keep in your mind. You have to blue-print it in great detail, because the panels themselves each have a shape and they keep changing their shapes on the screen. Each time they do, the entire composition changes. The panels, even without an image inside of them, have a composition of their own on the screen, so that has to be very carefully planned. You can't change the shape of one panel without balancing everything else to it. And then, the image that goes inside the panel also has to be carefully planned, particularly in terms of timing, so that the climax of the action of one panel doesn't interfere with the climax of the action of another. They don't happen simultaneously; they happen very closely together, but never exactly together.

In planning all this, I had a great deal of help from the Visuals Designer assigned to the film, Fred Harpman. Fred is an extremely clever young man and we collaborated very closely in working out the details for every sequence, so that we would know exactly what our shape was going to be for each panel, and which bit of action would be placed inside of that shape. This took about eight months of pre-planning.

In filming scenes for the various panels, we used not only diagrams but special mattes which were manufactured to fit into the camera's viewfinder, and we framed for the image that was enclosed by the matte. What actually appeared on the film filled the entire frame, but we knew that we were only going to use a certain portion of it, the segment we had lighted to fit the particular

matte we were framing to. The significant action was centered during shooting, and later it was moved optically to its proper position within the frame.

We were very careful to frame each image to its proper size and perspective so that it would not be necessary to blow up or reduce anything in making the final multiple-image composite. We were already suffering with one extra generation and we didn't want to go into more than that. As it turned out, I feel that we ended up with terrific technical quality.

While it might seem that this technique would consume three or four times as much footage as that used in a conventional film, in actuality it required only a little more film. However, it did take more time, because after the main action of the film had been completed, I had to continue on for another week of shooting just the images that would go into panels. They were little tiny bits and pieces, but each one required a separate camera set-up. The length of time each panel-image remains on the screen is very short. They usually run about three feet, and more often about a foot and a half--which means that in order to sustain a sequence that runs for a minute on the screen, you have to shoot a lot of set-ups. Sometimes you have as many as 12 images appearing on the screen simultaneously--each one changing every foot and a half. In that week during which we shot fragmentary scenes for the panels, we averaged about 50 set-ups a day.

In getting a multiple-screen or multi-image technique to work, the critical phase is the editing. I worked very closely with the editor, Marion Rothman, on this, and Fred Harpman was very helpful, too. This was Marion's first feature as an editor and she worked under the most difficult circumstances. It was the most complicated sort of thing to cut, but she came through beautifully. We had graphed each shot so that we could match things by counting the squares on a graph superimposed on a sketch of the scene and then counting them again

through the matte in the viewfinder. This was the method we used to make sure the separate images would end up in the right places within the total wide-screen composition. Marion had to be aware of every shot we made and where it was to go. Then she had to order all this material in print form and get all of the timings right. She had to use a tremendous amount of imagination in ordering all of these materials so that it would come out right, and it did about 90% of the time. She understood exactly what we wanted, and she did a fantastic job.

So did the cameraman Richard Kline. He understood so well what we were after and he was extraordinarily good at getting it onto film. We made a lot of tests before we started shooting and we learned a lot from those tests about the lighting of areas. Dick had to change some of his thinking in regard to how he was going to do it, but he really came up with some wonderful things. Because he is so imaginative, he was exactly the right man to photograph this picture--"perfect casting," I would say.

I feel that the multiple-image technique should be more widely used in feature production, but it must be used cautiously. It has great applicability to some subjects, but not to all subjects. I think it would be a great mistake to use it simply as a gimmick and that's very easy to do, because it's a kind of "show-off" thing in its own way, a means of showing how clever and versatile you are. But if it has no real value to the film other than as a flashy technique, then it can only hurt the film.

As for the ability of the audience to absorb so many images simultaneously, I can only say that the mind and eye have been proved to be capable of tremendous speed and versatility in accepting multiple impressions--to a far greater extent than most people would believe possible. The eyes see everything and the mind takes it all in. Viewers in the audience may feel that they are just

on the verge of missing something, which is fine, but the total effect on the audience is wonderful, because it makes them work. It makes their eyes and ears explore the entire screen and keeps them very conscious of what is happening. So there's an added excitement in trying to follow and keep up with it, which is something you just don't get in a conventional film. We know this technique stimulates the audience, because 90% of the preview cards mentioned the multiple-image effect in a favorable way. The audience loved it. They thought it was smashing.

I think that for "THE BOSTON STRANGLER" it was the best, the most powerful way to tell the story. I don't know of a better way. We could have used conventional filming techniques, certainly, but I'm sure we would have lost a great plus value.

FRED HARPMAN

Visuals Designer

One of the reasons I became so excited about this project from the very beginning was that Dick Fleischer explained to me that we were going to progress three different stories, on three different levels, simultaneously, in such a way that they would eventually come together and overlap--and that we would do it by means of multiple-images appearing in separate panels on a single wide-screen frame.

One story would be that of the murders told from an objective viewpoint, that of the police. It would concern itself with their search, pursuit and apprehension of the killer.

The second story would concentrate on the overall growing terror of the people of Boston, their panic and how it developed.

The third story would focus in on the strange double life of DeSalvo--that of an ordinary family man, on the one hand, and the notorious "Boston Strangler" in his other splinter of personality.

Designing the visuals approach to the multiple-image sequences was a great (and fascinating) challenge. In my area there were two basic problems. One had to do with the design and progression of individual scenes in terms of how people move and travel on the screen--the same problem you encounter in designing an ordinary film. But in addition, there was a much more complex problem of graphics--concerning such things as: in what areas of the frame the panels should appear, their individual sizes and scales, how many there should be on the screen at any given time, when and how panels should pop on or off (or should they do that at all?), in what manner and with what timing should they travel across the frame, etc.

We went up together to EXPO 67 to see the unusual film presentations, and we got all excited over them. However, the one big difference we noted was that none of these formats were used as devices to tell, or progress, an actual story. For that reason they could get much more mechanical purely for effect, much more graphic in the true sense of the word, than we could. We knew that if we were to go that mechanically graphic, purely for the sake of surface decoration or to create visual excitement, we would lose our audience.

We had to concern ourselves, at all times, with how the separate panels inter-related dramatically. Let us say that, at a given moment, there are three separate panels on the screen--two on the right, one on the left. Where is our center of interest? How are the panels tied together so that they don't conflict? Where is the eye? Is it reading all three scenes at once? Two scenes? Or does one scene become so important that it takes over from the other two? Then, too, how do we "lose" these panels when they are no longer significant?

In actual practice we found that we had to simplify. We found that we could not be mechanical just for effect. We started out that way and soon learned that the more mechanical you become with your panels--like animating them across the screen or opening them up--the more the mechanics become the most important thing, and the more your audience grows aware that you are manipulating the panels.

One thing I feel that we achieved successfully is the fact that the audience doesn't become self-consciously aware of the technique, because they are so involved in the story.

In designing the panels for the multiple-image sequences I kept in mind a basic philosophy which Dick Fleischer had expressed. Fundamentally, he doesn't like the anamorphic aspect ratio with its wide, narrow frame. He feels strongly that it is, for many scenes, just too wide--if I may speak for him. He said to me, "Sometimes when you're telling an intimate story of two people, you simply don't need that wide of a screen. It's like with a painting or a picture; you don't take a frame and match the picture to the frame. You match the frame to the picture. Sometimes the painting is small, and that's all the frame has to be. If you have an intimate scene of two people, there's no reason to use the full wide screen."

What he said made sense, and the panel system lent itself perfectly to the expression of that philosophy. Many of our scenes were fragmentary closeups (inserts, actually) that fit quite nicely into a small square frame. Then, when we needed scope in a particular scene, the full wide frame was available. Fleischer's thought was: "Let's make the 'paintings' the size they should be and then frame them properly. Let's not let this wide-screen proportion dictate anything. It's just a field of operation."

It was my job to design a "panel plot" (complete with accurate compositional sketches) for each separate phase of each multiple-image sequence--and this is

where Fleischer and I had to work very closely together. Edward Anhalt, who wrote the screenplay, could not write it the way we would eventually interpret it; this would have been an impossible thing to do. So he said, "I'll just write a straight screenplay and you, in essence, will be orchestrating the picture."

We would take each sequence as written and start to pull it apart into separate elements, which we laid out graphically in terms of individual panels. This was done using a grid that covered the full frame. Then we established mattes of several sizes and shapes that could be fitted into that grid--and designated them as A, B, C, etc. Matching mattes were made to fit into the viewfinders of the reflex cameras that Dick Kline was using.

A compositional sketch was made of each scene as it would fit into its specific panel, and this sketch was used as a reference when the scene was actually set up for shooting. All of the sketches were bound in sequence into a book, which became our production "Bible," and all the key people concerned were given copies of the book.

While each of our panel sketches was set with mathematical precision in advance, we had to allow for a certain amount of flexibility, because some of the scenes had to be sketched before we could know exactly what the location would be. Then there were times when we would get to a location and find that because of weather or the light or an actor commitment you couldn't use that location and would have to shoot the scene somewhere else. In a case like that we would re-sketch the scene according to how it was finally shot, so that editing and special effects would have an accurate blueprint to follow.

RICHARD H. KLINE, ASC

Director of Photography

Using the Panavision format was a great aid in shooting the multiple-image sequences, not only because of the wide-screen configuration, but because of the sophisticated equipment available, especially the lenses. We used zoom lenses almost exclusively, with occasional use of the 35mm (for wide-angle shots) and their macro lens to get in very close for some of the inserts.

We worked inside many very small actual interiors in Boston, where you couldn't possibly use a dolly, so we used the zoom in place of a dolly. We did have a very small ColorTran dolly and that, in conjunction with the zoom lens, worked out very well.

We used the Panafocal lens (which is a short zoom) and the Angenieux 50mm-to-500mm lens, but we rarely used them for zooming. They served more as variable focal-length lenses. There are only a couple of times in the film when we used fast zooms for shock effect.

In order to light the cramped location interiors I eliminated big lights, using no Brutes. We had a 150-amp generator and used quartz lampes and small incandescent lights exclusively. We tried to use source lighting and low-key as much as possible. Keeping most everything in low-key not only enhanced the mood, but made it easier for us to go into the black matted multiple-image sequences without too much of a visual jump.

Because we worked in low-key throughout almost the entire picture, and also because the zoom lens had a maximum aperture of F/4.5, we had to force develop practically everything one stop.

We used reflex cameras exclusively on this picture--Panavision cameras, Mitchell Mark II's and Arriflexes--so that we could get an accurate line-up of our mattes, which were placed in the viewing portion of the reflex system only.

We would, however, shoot full-frame, with the area in dead center that would be matted for a panel later on and moved to the area of the frame where it was designed to be. I would usually light only that area that was to be used in the panel and let the rest fall off. Also, in centering a small area that would eventually appear at the extreme right or left of the frame we would sometimes run off the set at the edges.

This caused a certain amount of consternation back at the studio. People watching our dailies would say, "My God, the scene's too dark!"--not taking into consideration the fact that we were only going to use the perfectly well lighted doorknob in the center of the frame. It also unnerved them to see sound booms and lights and grips hanging in at the edges. Even though they knew very well what we were doing, they could never quite get used to this.

Occasionally, instead of shooting a panel scene framed at dead center, we would position the subject in its precise matte position at the right or left and pan it toward the center--or vice versa. This was in order to avoid having to go to a traveling matte later. It was especially valuable when we would start with a full frame and then narrow down to a fragment of the scene in a small panel, or the other way around.

For example, in a chase sequence we started on a full-frame shot of the strangler running toward the camera with a man pursuing him in the background. The idea was to zoom in on the man pursuing, and then have the matte focus in on a closeup of him as he screams. It was a very tough job to zoom with the matte in the camera and make sure that he would end up in precisely the right spot in the grid--so, in this case, we used a grid made of transparent film and marked on that film the area where he had to end up. It took several

takes and great coordination for the operator to end up with him precisely centered, but we did it over until it was perfect, and all on one continuous piece of film.

One of the things I learned through testing was that it was very easy to lose the matte line, especially in low-key scenes, if I did not light so that all four sides of the matte had some highlight or information to preserve the shape of the panel. Since the matte was black, the edges would blend into any truly dark area in the scene and this really created a problem, especially in the night scenes where it was so dark that there just wasn't any separation between the edges of the matte and the darkest areas of the scene.

For a while, we even thought of using a white matte, but the white matte overpowered the scenes. I just had to find ways to light the edges so that you could determine where the matte stopped and scene began.

In the full-frame scene that was on the screen just before transition to a multiple-image sequence, I would usually set a composition that had a huge, bold framing piece in the foreground, with generally no light on it at all. This framing piece would be positioned to match precisely so that it would become a panel or part of one as we went into the multi-image montage.

In the exteriors, for example, we used the bold trunk of a tree in the foreground, the side of a car, a fire hydrant, a mailbox--whatever form we could find to fill one side of the frame outlining an area that would eventually become a panel.

We used two cameras in shooting most of the location scenes, and on some, as many as five.

Sometimes we would use the linear elements of a full-frame scene as a compositional base for panels coming up in the next scene. For example, there's one sequence that takes place in a lonely Boston park. Positioned behind a

fence, the camera picks up a woman walking along. Then we see a man walking. Suspicious and fearful, she scurries along the minute she passes him. The camera dollies in closer and closer until it arrives so near to the fence that there are five bars filling the frame. These bars become frames for panels showing activity going on in different parts of the city.

This took a bit of care in lighting and matching, for here you have five scenes that have to go into one frame of film side by side eventually. Color values and density values become important, because if one of the five scenes is lighted more brightly than the others, or has more vivid color, your eye will go to that panel and ignore the others. We went by the rule that color values were important throughout the whole show.

MARION ROTHMAN

Editor

"THE BOSTON STRANGLER" is my first feature as an Editor, but I had worked with Richard Fleischer as an Assistant Editor on "FANTASTIC VOYAGE" and "DOCTOR DOLITTLE."

He asked me to cut this film and I started working on it in the very early stages of planning. I was relatively new to editing, but I have a feeling he felt that this would be an advantage, because I did not have fixed ideas and rules limiting me. I have talked to some highly experienced editors who told me, quite frankly, that they would have been floored by the challenge. I probably didn't know enough to be floored by it--which is great, because I wasn't inclined to say, "You can't do that."

The truth is that we can do many things that may not have been done before. With the multiple-image technique, for example, I think that, to a certain extent, you have to set your own rules and conventions.

The pre-planning done by Dick Fleischer, Fred Harpman and Dick Kline was a great advantage to me in the editing phase, because they shot everything to the proper size for the final panel composites. The only problem was the sideways or up and down shifting within the frame.

They would put these dailies through their optical printer according to the sequence plan and give me a very quick black and white composite with the scenes printed in their respective panels.

In effect, they would go through the same procedure that would be necessary to produce the final composite, except that they would not have to go to all the trouble of making separation masters or inter-positives.

In my optical order I would have indicated which particular shot would go into which panel, the size and shape of the matte to be used, the scene's duration on the screen, how it came in and went out, whether it was a direct cut from black or a dissolve or a fade. The black and white composite which they gave me back would tell me if my timing was correct, whether certain scenes looked well together and whether I would have to make any adjustments. Using the dailies in this way made it possible to get these answers practically overnight, instead of having to wait several weeks for a finished color composite.

The sketches which were made ahead of time made it possible to eliminate almost all of the dialogue an editor would ordinarily have to engage in with the Photo Effects department, because they had the same sketches that I had. I did have to give certain instructions, of course, but normally they could tell from the sketches just how each scene should be positioned within the frame.

To me the biggest problem in cutting multiple-image footage has to do with something you can't very well pre-plan. It is not the selection of the significant action, but how to get from one group of panels to the next group of

panels. You cannot simply make direct cuts. You have to achieve a flow of smooth panel transitions. You must preserve a pleasing design, while considering where the eye is going to go within the frame. Laying out the opticals is very much like working a puzzle. You have to enjoy puzzles in order to enjoy working on this kind of film--and luckily I do.

We hit upon an idea that speeded the editing up considerably. It involved using the color daily as a sort of negative to make a trial composite. For example, I would plan out a multiple-image sequence that had several panels working within it. Then I would write out the optical order and give it to the Photo Effects department along with the separate scenes in color daily form. As far as I know, there has never been developed any suitable apparatus for handling several strips of film at once. You have all these strips of film and a Moviola through which you can run only one strip at a time. You also have a synchronizer that you are lucky if you can get more than four strips into.

The truth is that you just can't sit there at the Moviola and imagine twelve, or even seven, scenes on the screen together. You do your best to visualize where the significant action in each panel is and how it will relate to the others. You try to retain it all in your mind, but you're never sure whether it will work until you see it in composite form.

I think that until someone dreams up some sort of more elaborate viewing apparatus, this is the way it will have to work.

L. B. ABBOTT

Special Photographic Effects

Our department became involved with "THE BOSTON STRANGLER" at the onset of the pre-planning stage. The multiple-image approach was a product of Richard Fleischer's thinking and it was backed up with an excellent storyboard by Fred Harpman, who is a very talented designer. He and the director

worked things out so well in advance that we were able to go "by the numbers" in doing our part of it. We manufactured a grid they could put into the viewing tube of the camera in order to line up the shots directly with the panels on the storyboard.

The picture was shot in Panavision which, of course, is an anamorphic system, but for technical reasons many of the multiple-image scenes were shot with spherical lenses. This was all right, because we knew about it in advance and had planned for it. We were able to optically squeeze these scenes and set them in nicely.

We used a double-head optical printer for all of the multiple-image work, which was a great help. It enabled us to carry a matte in the prime head and the subject matter film strip in the aerial image head. This head can zoom and relocate an image in the frame and do everything a normal single-head optical printer can do. You design your mattes to open or close or do whatever you want them to do. This leaves you free to locate the subject matter you are trying to put into a particular panel, in any dimension you may want it.

We did all of our duping with separations, which produces a much better quality of dupe. If, for example, six panels were to appear in the frame at the same time, we would Cinex for color and density each of the six separate scenes, lay them out on a timing board and then go up and down the Cinex strips until we found compatible matches. Then a technician would sit at the optical printer for four hours and put it all together.

There is one multiple-image sequence in the picture which involves several TV screens, some in black and white and others in color. We set up a closed-circuit television chain and photographed the material right off of it. This

closed-circuit system was designed to run at 24 frames per second, instead of the normal 30, so that the phasing problem was eliminated.

One thing that helped very much, especially since editing of the multiple-image sequences was such a problem, was the practice of making what we called "quick and dirty" black and white assemblages of the panels into composites, using the color dailies. We'd throw these together very quickly and everyone would look at them and say, "Let's make this a one-foot dissolve instead of two," or "Let's slip this action eight frames forward, or two feet backward."

This was a really practical way of checking simply for the mechanics of the sequence. We didn't have to get involved with color or balance or anything like that.

The use of the multiple panels, especially in this film, is very effective. It makes possible the progression of several story lines simultaneously and you can tell so much story in such a short space of time. The technique has its own special sense of excitement which seems to exhilarate the audience. What amazes me is the ability of the viewer to scan so many images and absorb so much. I wouldn't have believed it if I hadn't experienced it myself.

I really believe that the success of this multiple-image technique depends mainly upon the designer and the director. Fleischer is marvelous at this sort of thing. He really is a great pre-planner. Once he gets it set he doesn't change his mind. He goes that route. Which means that when we get all the parts, they actually fit together. With such careful preparation, the mechanics at my end--though tedious--become relatively simple.

Communication Not Chaos in Multi-Media

By Leslie Buckland

Reprinted from the November-December 1971 issue of Audio Visual Communication through permission of the author and United Business Publications, Inc. The author was also kind enough to edit the original to improve syntax, clear up possible misunderstandings, and update old references. Illustrations from the original article have been deleted. Mr. Buckland is president of Caribiner Inc., 16 W. 61 St., New York, NY 10023

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Communication Not Chaos in Multi-Media

By Leslie Buckland

Do you think multi-media has been sold well to American business?

It is difficult to estimate the value of multi-media used by business since most companies do not follow-up with a scientific evaluation of the sales effect. However, somewhere in the mixing of the media, through the multiplicity of images, the spatial effect of sound, gimmicks to envelop the audience, there is the potential to inform and motivate those who would otherwise be detached. Multi-media may strike some as a bombardment of the senses leaving them with no sense of direction at all. How is potential chaos turned into a meaningful, coherent communications experience for individuals in the audience? Leslie Buckland, head of the multi-media company Caribiner, and once manager of an Eastman Kodak group devoted to basic motivational research in the production of meetings, gives his answers to this problem and others in an interview with Wendy Bannister, assoc. editor of Audio-Visual Communications.

It's difficult to sell multi-media. If we could describe what we do we wouldn't have to do it. We're not about to mail a script or a bottle of fog. We can only suggest that people see a demonstration.

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And it's hard to tell people about something when they think they know all about it already!

Multi-media has become a buzz-phrase; a term often given to a bunch of unrelated slides on three screens with noisy music and some philosophical statement from the people who put it all together. It's also been associated with light shows and the psychedelic period--the formula was oil and alcohol and food dyes swirling around in a petri dish.

Some commercials are superior to TV programs. Do you think multi-media is showmanship that business should make its own?

Yes, of course some commercials are superior to some TV programs. And of course business should use sophisticated communication techniques to persuade, motivate and educate.

How many times has it been said, "It costs a bloody fortune to gather a group of hundred of more men and women from all over the country and stick them in an expensive resort hotel . . . why the devil do we then bore them to death for three days and make our management look like a bunch of 1920 reactionary communicators?" The most significant thing about gathering all your people together in one place is allowing the meeting to weld the audience together.

Salesmen, for example, have to be highly motivated since their work can mean continual rejection. A meeting gives them the opportunity to recognize and acknowledge that others do and suffer the same things, and a beautiful graphic presentation is a form of approbation from management.

One has to think in terms of the behavioral scientists. If a generic theme is used for the opening audio-visual module which involves the audience and, if the theme song of the module is evocative rather than descriptive; a

mood for the meeting has been created; the audience will then be prepared and receptive to the message.

It is important to remember that they are an audience; they are no longer salesmen or marketing people or dealers. They must be treated as a Broadway audience, entertained, scared, enlightened, involved emotionally, or they will withdraw and "take their money elsewhere."

Wouldn't you agree that this is simply being manipulative . . . making people want the information they're going to get anyway?

I would say it's simply being kind. It's running a meeting based on a sensitivity to a group of people. It isn't being very thoughtful to take three hours telling them what management wants. It's kind to talk to them about their concerns, to show them how they can get more satisfaction in their lives. This is why we ask the client "What is this audience like?", "What is their state of mind?", "What do they want?". Not "What does management want?"

Not many people, in or outside of our business, have a clue as to what really happens to an audience in a meeting situation. Most of us know, for example, that most speeches are boring. Most of us, however, continue to build in, create or accept the inevitability of dull and boring speeches. After all, one can't walk out on the company president!

The average sales or marketing audience knows exactly what's going to happen in any meeting. At the very worst, someone will go up close to the microphone and say "testing, testing." Then someone will welcome them to Cincinnati, Chicago or whatever. Then there's an audio-visual piece. Then comes the key-note speech. It's so predictable that the mind switches off and one doesn't have to think any more.

Now if, instead, we use the techniques that happen to be available . . . if, for instance, without any warning, I were to throw these cigarettes, coffee cup and book that happen to be on my desk onto the floor, your mind will have been opened, really opened, in a very special way. "What on earth is happening" . . . and why?" you would think. Now your mind is open and ready for new information or even the restatement of an old idea, such as "demonstration plus calls equals sales."

You make people want the information they're going to get by involving them, as Christ did with the parable of the fishes or as St. Paul did at Athens. The original scenerio for a multi-media show was a description of hell-fire. At its best multi-media has a Billy Graham quality about it.

How do you avoid a cliche-ridden theme? Once people are attuned to receiving communications in a certain way does the content become more noticeable, overriding factors such as technical excellence?

I think that what you are saying, or assuming, in this question is that (1) Audiences are becoming more sophisticated and know what a multi-media presentation looks like. In general, I don't believe this is true. The vast majority of sales people, dealers and distributors have still not seen very much in the way of high-class, sophisticated, multi-media presentations, and, (b) I think you're also hinting, very strongly, that most of the multi-media presentations that you have seen deal in what you call cliches.

The fact is, that a cliche . . . "something obvious, told in an obvious and dull way" . . . is not the exclusive property of multi-media. Most speeches, like most people, are cliche written.

There are good multi-media presentations and bad ones. The bad ones are filled with cliches, the good ones are not. But I would also like to

emphasize that what an audience of salesmen or dealers "want" or "need" more often than I dare think about, is the re-illumination of an ancient verity or two!

For instance, it's as true now as it ever was that if a salesman plans his work the night before, gets up early and makes more calls than his competitor, he'll almost certainly sell more goods? Cliche? Obvious? Of course! But this point has to be re-made and said in a new, different, exciting and believable ways over and over again. So do many other similar points.

Without being too presumptuous, a very large point of our selling job is an educational one . . . we have to show and tell and teach and explain precisely what a multimedia presentation can and cannot do for a company.

Do you find it difficult to handle a human theme without exploitation of the human condition? What do you consider exploitation?

This is a loaded question that has the quality of "when did you stop beating your wife?"

If an advertisement by, for example, Blue Cross, graphically describes a condition of human suffering and then gives good advice, this is not exploiting the human condition: it's trying to help, it's trying to inform, it's giving an answer.

But no one is going to be informed or helped or be ready for an answer unless their attention is drawn to the problem in the first place. That's what multi-media . . . heck, that's what almost all communications have to do, attract attention and force "readership" . . . only when a communication is "read" or seen or experienced can its message or signal get through.

I'm not too worried about "exploiting" certain conditions if by this you mean the use of gun-shots, pictures of riots, poverty, etc., if they're used in an intelligent, creative and relevant fashion to draw attention to something, to make sure that the audience is awake, alive, looking, listening, interested.

It isn't right, in my opinion, to recreate in an incredibly vivid way the assassination of a president, for instance, if the only and immediate purpose of the re-creation is simply to sell a particular bar of soap--or sell anything for that matter.

It's perfectly valid, again in my opinion, to recreate an assassination if you're trying to make the point that "these are violent and tumultuous times, changes of enormous size are occurring all around us," and you want to say that your company recognizes these changes and is reorganizing its whole structure to cope with them.

Do clients make it clear why they want a multi-media program, what they hope it will achieve?

Occasionally, clients come to us and specifically request a "multi-media presentation" but this is not common. More often clients ask for a "different sales meeting" or "We need a spectacular exhibit."

At one level all clients feel that they know "why they want a multi-media program and what they hope it will achieve." No one says, "We want something, but we don't know why we want it." It is quite common, however, for the stated reason for multi-media to be invalid.

People don't do something because they are intellectually convinced.

People who come to us are people with a problem. The man at the top has said "I want a better meeting next year." Someone has become dissatisfied with the

status quo. It is no small feat for someone to realize that what they have been doing year after year is bad.

Consider, for example, dictation equipment. Dictation equipment is, without any question, the most intelligent and efficient way to write letters. Dictating to a secretary is obviously a tremendous waste of time and thoroughly inefficient. Nevertheless, IBM tells me, that although the overall number of people using dictation equipment is growing rapidly, the percentage of people using dictation equipment hasn't altered over the past ten years! And this is in the face of some of the best selling that I know of by an incredibly efficient team of first-class salesmen!

It seems that multi-media on a tight budget can be an incongruous proposition. How do you advise clients with budget problems?

The problem is that "one-time" sales and similar meetings don't usually have sufficient budget to allow for a complete communication service including executive speech writing, multi-media techniques, custom visualization of executive speeches.

And so one producer will emphasize film, another will emphasize its ability to help executives write their speeches, another will talk of its multi-media capability . . . most producers know that there isn't sufficient budget to do the whole job properly from beginning to end.

Our approach is to produce and have available to clients a stock of Caribiner Meeting Modules. These are multi-media elements on some generic subject like "Change," "Professionalism in Selling," "The Joy of Winning" and a number of basic meeting themes. These modules involve such things as multi-screen, quadriphonic sound, fog, lighting and/or other special effects . . . all pre-programmed. Currently there are 450 separate modules and, since times change

and some material cannot be used indefinitely, the stock is continually changing and growing.

What does this mean in practice?

After working with a client for a couple of weeks deciding what his needs are, we might recommend and build into his three-day meeting half a dozen or more audio-visual modules whose combined original cost to us for production might well be as high as $100,000. On this framework of modules, which might cover both a theme and specific information, (such as management by objectives), we then assist executives with speech writing and other elements of the presentation and illustrate this "custom" material in an extensive fashion.

How have some clients used this Meeting Modules approach?

ABC-TV had a presentation using twenty projectors, involving Caribiner Meeting Modules, plus executive speeches and illustrated parodies of popular songs. Another company opened their meeting with the same Module but followed it by a customized 50-minute program on their line of Christmas toys. While five machines projected Technimated patterns, ten other machines in dissolve configuration superimposed other images. The effect was of a vast wall of constantly dissolving, flashing, rotating images that generated the required excitement. There was no live speaker.

Ayerst Laboratories introduced an actor clad as "The Thinker" at the end of one of our audio-visual modules, emerging through a heavy cloud of fog.

Institutional Investor Systems used a special audio-visual element that involved silver screens (the screens were sprayed with aluminum paint). Two images were projected at the same time but the second image couldn't be seen unless special glasses, which were supplied, were put on. The basic theme was

"More Than Meets the Eye." They also used a Caribiner Module--"Cacophony"--consisting of sounds of foghorns, typewriters, trains, police cars, teletype machines, a baby crying, against a background of abstract images. The sounds became louder and more deafening; then came silence and the picture of a candle, followed by the song "The Sounds of Silence." Finally one line moved across the screen: "You don't have to make a lot of noise to get through to people." The point is that each company used our modules but no meeting was the same.

Would you agree that an attractive box doesn't necessarily make the goods easier to carry away?

Certainly. I think that multi-media should never completely unload the freight (information). We hear and absorb information faster than someone can talk, which means that in less than a minute an executive can make a significant point and additional information can be imparted before he has finished talking.

Do you feel that the all-at-once quality of multi-media puts more emphasis on the overall mood of the presentation than the parts?

Usually, yes, and I believe that all good communications to large groups of people in a meeting situation should concentrate on "the whole" rather than the parts.

How do you decide whether certain effects, such as strobe lights, will improve the presentation or distract?

There are only two possible ways in which you can make a decision about whether and when to use strobe lights or fog or any other multi-media effect. The first is to rely on past experience . . . you've used an effect before and

it's worked, and the other reason is at the heart of what we do. We make creative decisions because we are creative people; it's what we do for a living. You can't make a rule book about it.

Do you have any specific suggestions about conventions?

The exhibit designer and the multi-media exhibitor have to work together. The exhibit designer can come up with a fantastic shape but there's usually too much ambient light for good projection. The ideal exhibit is a soundproof, light-tight, cool, comfortable black box.

What is the potential of multi-media in business? What are the pitfalls? What are the areas of improvement?

The potential for multi-media in business is little short of fantastic. The pitfalls are the same as the pitfalls for any other kind of communication. If it's not done well it can do more harm than good. But . . . so can a book, so can an advertisement, so can anything else. You have to have judgment, taste, maturity, creativity . . . and it's very hard work! The areas for improvement? Every area! There isn't a single thing that's being done today by us or by anybody else that couldn't be done better. The equipment could be improved, the software more tasteful, the meetings better thought-out.

Budgeting Professional Multi-Image Productions

By Donald Pasquella

Budgeting Professional Multi-Image Productions

By

Donald Pasquella

No matter how creative you are, no matter how much you may dislike the more mundane aspects of running a business, if you are trying to do professional multi-image presentations you are in business. You are a business man or woman. Therefore, one of your prime goals is to survive and grow as a business. To do that means that you have to bring in more money than you spend.

To be able to make a profit on each production usually depends upon two considerations. One, you must be able to prepare a reasonably accurate budget so you can predict the costs of each and every item required in that particular production. Two, you must have in your contract with the client a clause which states that any cost overruns will be paid by the client if they are the client's fault.

Obviously, the ability to make a profit on a job, and to survive, means that you must also keep within your own budget restrictions. It is dumb, from a business viewpoint, to pay for part of the client's project out of your own pocket.

A lot of making up a budget for a production is done by educated guesses based on prior experience. If you are just starting out in the business try to learn from your mistakes as quickly as you can. Keep a journal for each project

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and try to understand where and why you have guessed either long or short on each individual budget item.

There are many ways of working out a budget. No matter which way you use, you must ask some key questions at the first meeting with the client. One of the first questions should be: "When is the deadline?" What you're trying to find out by this question is how much overtime of staff and free-lance personnel will be required and how much 'rush' or expedited services will be needed from labs. Some sub-contractors and service facilities will charge anywhere from 50% to 300% more than normal to meet your impossible deadlines.

Another key question to which you should try to find an answer as soon as possible is: "How much money do you have for this project?" This will tell you whether it's feasible for you to get involved with the project or not. This is difficult information to get because clients don't want to inadvertently push the bid up. Sometimes a client will simply tell you that they have such and such money available. All you need to do then is to figure out if you can do the project within their budget and still come out in good shape. Most of the time, however, it is a game of cat and mouse.

This is not a frivolous exercise. Sometimes a client will have big ideas but limited funds. His budget will often determine just what you can and cannot show on that big screen.

The client, on the other hand, will try to get you to commit to a 'ballpark' estimate of the cost of his project at that first meeting. If you guess high, the client will begin to harbor some negative feelings toward you. If you guess low and then appear later with the higher, more realistic budget the client will again feel negative toward you. In other words, I don't think you can win by playing the client's guessing game. Instead, just say that you will get a bid to him as soon as possible.

Preparing the Budget

One logical way to break down the budget categories is like it is done in non-theatrical film production. This includes the pre-production, production, and post-production aspects of the project.

PRE-PRODUCTION

This category includes all the work that goes on with regard to the project prior to the actual photography. In these early stages you are gathering information and getting organized.

I. Meetings With the Client. You can either charge for your time or do it for free. If you charge, the typical rates for such meetings will be in the $15 - 30 per hour range. If many staff members are involved in the meetings you would probably charge in the range of $60 - 100 per hour.

All figures given throughout this article are the average for the Dallas area as of the fourth quarter 1978. They may vary considerably in your area.

II. Preparing the Bid. Most producers don't charge for doing a bid. I charge from $50 to $100 to do a budget because I get a lot of calls from potential clients who would like to do a multi-image presentation but have no idea what it costs to do one. Once they find out, that's often the last I hear of it. That fee is for my service up to that time. If they decide to have me produce their project then that initial budget preparation fee is refunded.

III. Script. Scripting includes both research and writing. Will the client furnish all the research material needed for the script or will you or someone you hire need to do the necessary research for the script? Research fees are in the $15 - 25 per hour range plus all expenses (transportation, hotel, meals, etc.). Writing is paid for three different ways: per hour of the writer's time, per minute of screen time (including those segments which do not have narration),

or a flat fee. Writers will get from $15 - 25 per hour, $80 - 100 per screen minute, or $800 to $2000 on a flat rate basis for a 15 to 20 minute script. Some more highly regarded writers can command higher fees.

IV. Production Coordination. Someone has to coordinate all the aspects of the production of this particular project. If it is a staff person the rate is approximately $25 per hour. Free-lance production coordinators will vary between $150 to $300 per day. If you are a small company you will probably do this job yourself. In that case, the fee for this would become part of either the Creative Design fee or the Producer's fee.

The Creative Design fee is what you charge for the creative conceptualization of the production. You usually charge a flat rate for this, somewhere around $1500 for smaller projects on up to $4000 to $7000 for larger ones.

You normally would not charge both a Creative Design fee and a Producer's fee. The producer, the person in charge of the total project in all its aspects, will often be the same person who does the creative design of the project as well as the person who coordinates all the various jobs. If you decide to charge a Producer's fee instead of a Creative Design fee or Production Coordinator fee the going rate is approximately $600 a week around the home base, $300 a day on location.

V. Casting of Talent and Scouting Locations. If you use other people for these jobs the person who casts the talent for your project will get $25 per hour. The location scouting person will get from $150 to $350 per day plus expenses.

PRODUCTION

This category in the budget includes only the work required to make the pictures and recording sound on location.

I. Still Photography. Even if you do it yourself you should still charge a shooting fee in addition to whatever other fees you are being paid. You may get too busy and will need to hire another photographer to help shoot. Better have it in the budget. The people shooting slides for multi-image presentations in this area seem to occupy three different fee layers: $200 - $350 per day; $400 - $600 per day; or $700 - $900 per day. Some photographers will give a price break on their day rate for more days of shooting. Some photographers insist on working with an assistant. Sometimes an assistant is necessary. The photographer's assistant will get approximately $100 per day. These fees are for the people only.

II. Film Stock and Processing. How much film will you require for this project? Here's one way how to figure it. Determine how many projectors you will be using in the presentation. Multiply that figure times 80 (81 if you use the zero slot). Next, multiply that figure by your personal shooting ratio. Shooting ratio is the number of slides shot to the number of slides used. A 5:1 to 10:1 shooting ratio is common in multi-image work. Now, you have the maximum number of slides you will have to shoot. Divide that figure by 36 (i.e. number of exposures per roll) to get the number of rolls needed. All you need to do now is multiply the total number of rolls by the cost per roll for both the stock and the processing to get the total for this budget item. In our area, to buy and process a 36-exposure roll of Ektachrome is roughly $10. You may want to add 10% for safety.

To get the pictures you need, you may need to rent specialized equipment or facilities. All of those costs go in this budget category.

What should you do about mark-up on these kinds of things? Some producers don't mark up these items. Others mark up 10% - 15%; some 30%. In the larger production houses mark-ups may run between 50% - 100%. The reason for such a

crazy variation in this is that sometimes the mark-up is used to cover overhead costs while in other cases the overhead is figured as a separate budget item.

III. Transportation and Per Diem. This budget item includes all those costs of moving the location unit around. It includes air fares for all personnel involved. These air fares should always be calculated at the highest rate between destinations for the class service you desire and not at any of the 'Shopper's Specials' advertised by the airlines. The reason for this is that you may have to change your reservations at the last minute for whatever reason. If you have budgeted at special fares and then have to fly at regular fares you will have to eat the difference. Bon appetite!

The location unit will usually consist of the photographer, perhaps an assistant, the producer (at least part of the time), and perhaps a location sound recordist.

The location unit will need to rent a car. This budget item will include the day rate for the vehicle, insurance coverage on the vehicle, mileage charges if not included in the day rate, gas and oil, tolls and parking. Will you need any kind of special transportation like a truck, helicopter, or boat?

You and your crew will need hotel rooms and meals while on location. There are a couple of ways of working this out. You can give each crew member a fixed sum as a perdiem allowance or you can pick up all the tabs yourself. You shouldn't try to skimp unnecessarily in this category. You don't want a hungry and grumpy crew. Unless the producer is feeling hearty and magnanimous, the crew members pay for their own alcoholic beverages.

Don't forget to budget for tips. You will be surprised how much money you can go through in a week on location just on tips to taxi drivers, airport baggage handlers, bellboys, food service people, etc.

IV. Graphic Artist and Art Work. Most multi-image presentations use some kind of graphics ranging from simple kodalith titles to complex cel animation techniques. A graphic artist gets $25 - $50 per hour plus expenses (such as the cost of materials, items ordered from a type house, etc.). You can easily spend from $300 to $900 for graphic art in a 15 - 20 minute show before you know what happened.

V. Motion Pictures. Movies, film, cinema . . . whatever you want to call it, can add to your project. The question is: "Is the extra expense worth it for this project?" To go on location with a film crew to shoot sync-sound is no small undertaking. To shoot a small segment requires the same amount of crew and equipment as a long segment. You will add roughly $3000 to $5000 to the budget. How much will you gain?

VI. Permits, Clearances, and Fees. Can you visualize dollar bills with wings on them hurtling from your bank account? That fantasy can become fact if your crew is standing around after you've just been kicked off a location which you thought would be no problem to use. Many locations require the payment of a fee for their use. You may get away without paying this fee if you're fast or shrewd. But the fees generally aren't very much ($5 - $25). Get everything checked out ahead of time. You may want to hire a local contact person to do all of this for you. If so, don't forget to put that person's fee and expenses in the budget.

VII. Travel Time and Stand-By Time. If you are working with a high-powered crew, actors, or models, especially union people, you may be faced with this budget item. They will get paid a half-day for their travel time (in each direction) and full-time while stand-by on location (e.g. you are rained out one day). One way to protect yourself, if you don't include it here in the budget, is to have it covered under Contingency (coming up later). You may want to

charge your client for travel time and stand-by time of your own staff people as well since, at least theoretically, they could be doing something else for you during that time.

VIII. Gigantic Productions! This is when the client pulls out all the stops. He wants two bands, dancing elephants, fountains, fireworks, topless MC's, rotating sets, the works. Well, just be sure that each and every teeny-weenie item is included in the budget.

POST-PRODUCTION

It is this phase of the project when the show really starts coming together. Most multi-image producers who I have talked with say that they finish their sound track before they edit the visuals. So, we'll start with the sound track preparation.

I. Sound Services. You may choose to produce the sound track yourself or hire a free-lance sound producer. A free-lance will get roughly $50 per hour. They also work on day rates of $300 to $600. The sound producer oversees the production of the entire sound track.

Narrators will get from $100 to $400 for the first hour in the recording studio and one-half to two-thirds of that for each subsequent hour. This is no time to re-write your script. If the narrator is union (which most of them are) you will pay an additional 8½% of his fee for Pension and Welfare. You will also pay an additional 10% of his fee to his agent.

Narrators have to record somewhere. A studio, with engineer, will cost roughly $35 per hour. To have the mistakes edited out and the narration track cut together will cost $25 per hour. Don't forget to include tape costs. Some studios will charge for the plastic reel and cardboard box.

Most professional multi-image shows tend to use music under most, if not all, of the presentation to help create mood. Whatever music you use in a professional production you legally must have clearance to use it. If you are caught using uncleared music you will be liable for copyright infringement.

The two most typical ways of getting music for your show are using music from a collection of cleared music or having someone create some original music for you. Original music can be quite expensive by the time you figure composing, arranging, copying, and performance. A producer friend recently paid $15,000 for 6 minutes of original music.

If you use a music library of cleared music, available at most professional sound studios, you will discover that music can be purchased two different ways. One way is on a 'needle drop' basis where you pay from $15 - $40 for each cut of music you request. The other way is based on the running time of your show where you pay a flat fee ranging from $100 to $200 for however much music you'd like to include in each 10 minute segment of your show.

Actually, what you are buying is not the music itself but the rights to use that music in this particular production and no other. If you intend to use a lot of different cuts of music in your production it will be cheaper to go on a flat rate basis.

Don't forget that the studio will charge you to transfer the music from their records or tapes to another roll of tape for you. They'll also charge for the tape, reel, and box.

The assembly of the sound track, editing, and mixing comes next in the process. Most professional mutli-image presentations these days have a stereo sound track. Some use three-tracks. These sound tracks are usually mixed down from 8-track or 16-track machines. The hourly fees for assembling the various segments of narration, music and sound effects in the right places on the tracks

will run $25 to $40 per hour. Mixing, the blending together of these different segments at their proper levels onto a master mix sound track, will run from $35 to $60 per hour. You may want to make a dupe of your stereo master mix for safety's sake. Don't forget the charges for the tape, reels, and boxes.

II. Slide Editing. This is not to be confused with programming. This is the laying out of the slides on a light table and assembling them in some sort of rough order, usually by placing them into see-through plastic slide file pages. People who edit slides charge from $25 - $30 per hour. If you don't have your own facility and light tables you will have to rent them.

III. Copy Stand Photography. You can usually be doing this while the initial slide editing is going on. This is when you shoot your art work. You can send it out and have it shot on a per slide basis which will run from $5 to $25 per slide. If you have beaucoup, it might be cheaper to rent a professional animation stand capable of shooting both top-lit and bottom-lit art for $150 to $200 per day.

IV. Duplication Services. The question here is whether you intend to run originals or dupes in your show. If it is to be a one-time presentation, and if the slides will never be out of your sight until after the show is over, and if the client doesn't care if the show is kept intact or not after the presentation, then you may decide to use the originals in the show. Otherwise, it's a good idea to get everything duped, put the originals away in a safe place, and use the dupes in the presentation. If a tray of dupes gets lost before a presentation you can always pull another set from the originals. But if you lose the originals . . . well, have you ever thought about getting into frozen yogurt as a career? Straight dupes of slides will run approximately 40¢ per slide for one, 25¢ to 30¢ for multiple copies. Show around and check the quality. It is stupid to save 10¢ per slide dupe if they are technically and aesthetically unacceptable.

V. Glass Mounting. Even if the project is going to be presented one time only you should give serious thought to putting all the slides into glass mounts. They don't warp or come apart at inopportune times, the slides don't wiggle around indiscriminately in their mounts, and the heavier weight of the glass is an advantage in gravity-feed projectors such as the Carousel. Glass mounts also protect the slide from getting scratched or dirty. The glass is easily cleaned. It will cost approximately 50¢ per slide to have them mounted in glass.

VI. Programming Services. Who is going to program your show? If you, as producer or designer, do it you should still charge separately for this function. You can base your rates on what free-lance programmers are charging: $200 to $800 per day or $80 to $100 per hour. How much time is included in a 'day' and when does overtime start and at what rate?

You will also need a room in which to program the show and, of course, all of the necessary hardware. Even if you have your own facility you should charge something for it. If you rent such a facility from an audio-visual dealer who offers such producer services you will pay from $500 to $800 per day. If you are a good customer, friend, or family member it might go down to $100 per day.

Clients get curious during the programming phase and like to see run-throughs of segments, usually at the most awkward times. If you don't have your own facility you will need to rent the space and the hardward from your friendly a-v dealer.

STAGING

Show time! This is it! If you have to stage your show away from your home town the key question here is whether you intend to rent everything you

need to present your project from the a-v dealer in the distant town or if you intend to take everything with you from your home base.

The advantage to taking your own equipment with you is that you know what kind of shape it is in. The disadvantage is that you have to send it along on the airplane with you at high rates, you will need to rent a large station wagon or van at the distant airport to get everything to the presentation site, and you may still need to rent something locally. Airlines have been known to send every third case coming down the conveyor belt to random cities around the country.

The advantage to renting locally is that you don't need to carry a ton of equipment hither and yon. You save on transportation costs and vehicle rental fees even though you'll probably still need to rent a car to get around in. The disadvantage is that you have no way of knowing what on earth will be delivered to you. By the way, NEVER let the client assume any responsibility for getting the equipment. It's still your show and your responsibility until the last fade-out. If you don't believe me, see who the client blames if something goes awry before the show.

You will probably need help in staging the presentation. Your helpers will get $25 per hour. If you bring them from home to a distant city you shouldn't forget to include their air fare and per diem expenses.

If you have the good fortune to do a presentation in one of our larger cities with strong unions you will meet some interesting people. This labor factor varies quite a bit around the country. You should always try to visit the site city ahead of time, see the presentation facility, check on the local labor scene, meet with the business managers of the various locals you will be involved with, and make sure everything is organized the way you want it. The survey trip is an extra expense but it will be worth it. Put it in the budget.

If you are doing a show in a hotel ballroom in a large city you will undoubtedly have a teamster unload your truck (or the truck from the a-v house), have the electrician run the power cables to your location, have the stage hands help set up your equipment and screens, and have a union projectionist 'assigned' for the presentation.

How much will this cost? The teamster unloader and the electrician are both, theoretically, already being paid a salary by the hotel. Therefore, theoretically, you don't need to pay them anything else. Try it and see what happens. You may want to boost their motivation by offering special 'incentive bonuses' ($5 to $10 usually is the right incentive).

The International Alliance of Theatrical and Stage Employees (IATSE) includes both the stagehands and the projectionists. It won't be terribly uncommon to be assigned the minimum party of three stage hands to help set up, at $35 per man per hour. If you have a totally automated, slides-only multi-image presentation you will need only one 'projectionist' at $37.50 per hour. However, if you use motion pictures on any screen you will need one 'projectionist' per projector (yes, even if they are cued automatically). All of these rates are based on an 8-hour day. Beyond 8-hours you are in time-and-a-half until midnight when you are suddenly in double time. In addition to these fees you will be charged an additional 30% by the union for such things as Pension and Welfare, payroll handling, etc.

At the staging site you will need to set up, have a rehearsal, do the show, and tear down. How fast can you work? By the way, the clock is ticking while you are all sitting around waiting for the kid from the local a-v rental house to show up with your hardware.

CREATIVE FEE

The key question for this budget item, if you use it, is: "How much are you worth?" You can simply guess ($1000 per week; $200 to $300 per day) or you can use a flat rate system ($1500 for less expensive shows, $700 for more expensive shows). Joan Heimbach suggests the following procedure to determine your hourly worth. Take your last year's salary (self-employed income) and multiply it by a factor of 2.5. Next, take that figure and divide it by the number of hours you worked last year. For example, if you worked 1600 hours and earned $20,000 your time is worth approximately $31 per hour

$$\frac{(20,000 \times 2.5)}{1600} = 31 \text{ approximately).}$$

MISCELLANEOUS EXPENSES

Into this budget category go all those things that don't seem to have a home elsewhere. It may include all your expendables on this project (editing gloves, cans of compressed air, etc.), slide file pages, slide trays, labels, photocopying charges, postage, telephone, messengers, and all the varieties of insurance which you must have or should have. However, all of these expenses could go under General and Administrative if you prefer.

GENERAL AND ADMINISTRATIVE (G & A)

This is the budget category for the overhead of your business. For this project you would figure a percentage of your rent, utilities, office support staff, etc. and it may include optionally, those miscellaneous expenses previously mentioned.

CONTINGENCY

A contingency fee is included in a budget to protect the producer financially from the hazards of weather, equipment failure, client whim, uncooperative local people or locations, etc. You usually figure 10% to 15% of the total budget for this item. If you don't, you'll wish you had.

PROFIT

If you are new to the business this may be a foreign word to you. This is the amount of money left over after you have paid all the expenses on the project, including your own fees. It should more accurately be called pre-tax profit because eventually the IRS will want a piece of the action.

Some clients are aghast that you would want BOTH a creative fee and a profit. Have you no decency? Tell them that the creative fee (or producer's fee) is for you personally as payment for your creative participation in this project. The budget item for profit is the the continued good health and growth of your company. Producers I know seem to charge from 10% to 50% of the total for profit. It seems to depend on what comes out of that profit line, like the previously mentioned G & A expenses for example.

TAX

This budget item refers to the state sales tax which is charged to clients other than tax-exempt institutions and organizations. State sales tax is 5% in Texas. If you don't know what it is in your state you should find out.

In summary, I think you can see the importance of a sound, business-like budget for professional multi-image presentations. Every single item costs money, including your own time. All of these costs, plus a fair profit margin,

should be charged to the client. You should never consciously or willingly go over budget unless the client agrees to pay the difference. You should never pay for any part of a client's project. You are in business to survive, to grow, to make money.

If you are a creative artist who can't stand the thought of money, hire professional business people to help you on a full-time or part-time basis.

Do the best multi-image presentations you can at all times but don't forget that when done professionally for clients multi-image is both an art and a business.

APPENDIX A

A Chronology of Intermedia, Multimedia Programs, and Related Works

By Ken Burke

The following is a listing of major and exotic events concerning electronic multimedia combinations and their predecessors. Events from the history article in this volume are included and marked with an asterisk, but dozens more are noted here as well. As has been discussed earlier, there is too much variety in the combinations of slides, tapes, films, and related technologies to narrow down to any specific group of users. Even if our focus was on multimedia programs alone--beginning with the 1939 Vitarama show--there would still be a need to relate these to concurrent and influential developments in multi-screen films, psychedelic Environments, and Intermedia theatre. There is simply too much overlap in these areas to focus purely on the multi-image multimedia program that is now so widely used.

One area that will not be mentioned much here are composite images in a single frame. Many have tried to identify overlapped, superimposed, or dissolving pictures as being multi-image, but I cannot agree. If a single frame is divided into several sub-frames and image areas--as has been done in film since at least 1903--then this is multi-imagery, just as if several separate frames were used on one large screen or group of screens; however, one frame contains only one image no matter how complex, confusing, or composite that image may be. Thus, I have noted nothing here about single-screen slide and dissolve shows even these have been in use, often with narration or recorded music, since the days of Magic Lantern. Such a Lantern/phonograph combination would be a multimedia program--just as a sound film is a multimedia combination--but it would not be a multi-image multimedia program which is, after all, the

main subject of this study. Single screen slide and dissolve programs, accompanied by audio tape, are certainly multimedia programs, but have more in common technologically and aesthetically with filmstrips than with multi-imagery. What I have tried to concentrate on in this chronology are events that emphasize juxtaposition, simultaneity, and synthesis of diverse elements. Thus there are many references to theatrical and environmental experiments, because these have contributed much to the overall development of wide-screen programmed multi-imagery as we now use it.

A final word is that I have focused on innovators and precursors at the expense of more readily attainable comments on current producers. Further, I have tried to give complete coverage to representative artists--such as Piscator and the USCO group--rather than attempting to survey all noteworthy contributors to the field. A final consideration for inclusions was availability in other sources. The information presented here represents an amalgamation of diverse publications, interviews and recollections not easily attainable, even to the patrons of an excellent library. Detailed accounts of the more recent accomplishments in multi-image multimedia programs (which for simplicity's sake I recommend be called multi-image programs) are available through the AMI Archives and Clearinghouse reproduction service. Catalogues may be obtained from AMI, 947 Old York Road, Abington, PA 19001

Ken Burke

November 1978

1900 Rauol Grimoin-Samson displayed his Cinéorama exhibition at the Paris Exposition; his process was sometimes referred to in Russian literature as Cinecosmorama. The travelogue "balloon ride" was truly grand in scale, taking viewers via film to major sites in Europe and Africa, all on a 360° arrangement of ten 70mm motion picture screens.*

1903 Edwin S. Porter's Life of an American Fireman used what is considered to be the cinema's first split-screen shot--a vignette of the fireman's wife and child in an upper corner of the screen while the rest of the frame showed the sleeping fireman. This film was probably also the first major American use of editing, developed about 1901 in England by G. A. Smith and others.

1904 St. Louis became the first public school system to hire an Audio-Visual Director. Amelia Mussiner became the Curator of the Education Museum at the same time that the school board authorized the purchase of the school's permanent exhibits at the 1904 Louisana Purchase Exhibition, a huge fair held in St. Louis. However, it can be claimed that A. W. Clancey's 1893 position as Education Director of the North American Phonograph Co. constituted his claim to this title. Certainly Clancey was the first salaried proponent of audio for schools whether he dealt with visuals or not.

Films were used as scene transitions in the Japanese Shimpa plays; this introduced film to the stage in Asia.*

1908 Charles Ives, an American composer who was influenced by the writings of Emerson and Thoreau and greatly admired by Schoenberg, wrote The Unanswered Question. This work called for two separate groups of musicians and a soloist to all perform independently of each other, without even rhythm

synchronization; the work was not performed for many years because musicians refused to cooperate with the composer's intentions.

1909 Windsor McKay began his film/actor stage show with Gertie the Dinosaur; this act was, presumably, the beginning of film on the stage in America.*

Filippo Tomasso Marinetti published the "Foundation and Manifesto of Futurism" on February 20th in the Paris paper Le Figaro.

The first use of phonographs in public schools began in Milwaukee.

1910 Early in the year the Futurist poets began their spirited--and often violent--evenings (serate) of readings and audience confrontation. The Futurist painters joined them for the first time on March 8th at the Teatro Ciarella in Turin. Anticipating the Dada soirees, these evenings featured loud, belligerent, obnoxious poetry spiced with noises and musical sounds. The audience usually responded with produce and/or physical attacks on the Futurists. These serate continued until at least 1925.*

Vsevelod Meyerhold advanced the idea of Environmental Theatre with his lively production of Don Juan on Nov. 9th at St. Petersburg.*

1911 Film and actor combinations came to Europe with the German productions of Eine Million and the Rund um die Alster review.*

Max Reinhardt inaugurated total Environmental Theatre with his London production of The Miracle. The Olympia Exhibition Hall made a good setting for transformation into a Gothic cathedral since it had dimensions of 440 feet in length, 250 feet in width, and 100 feet in height.*

In May, the Futurists opened their first major exhibit in Milan. From there the show toured Paris and the other major art centers of Europe, building up support for Futurist ideas.

1913 Luigi Russolo published the Futurist "Art of Noise" manifesto on March 11th, calling for common sounds and new noises to be considered as music. By June 2nd, Rossolo had composed concerts for intonarumori ("noise-intoners"), wooden boxes with megaphones and handles which activated internal motors and mechanisms to produce various noises. Michael Kirby reports that a June 2nd concert was held at Teatro Stocchi in Moderna, but he further credits the first public performance of intonarumori to a concert at Marinetti's Casa Rossa in Milan, August 11th.

Marinetti's "The Variety Theatre" manifesto first appeared on Oct. 1st in the Milan paper Lacerba; it was reprinted in the London Daily Mail as early as Nov. 21st, then widely distributed throughout Europe. It praised the following: (1) "concrete" or alogical performances such as circuses, night clubs, cabarets, and music halls, (2) dissolution of the artificial barrier between stage and audience by actions calculated to bring audience reaction, such as selling two tickets for the same seat, (3) the use of different media--includimg film--and the use of circus-like simultaneity, (4) a revolt against art by things such as playing a Beethoven symphony backwards or different performers acting their roles simultaneously.

1914 March 29th and April 4th were the dates for the first Futurist "evenings of dynamic and synoptic declamation," held in Rome's Sprovieri Gallery. This more refined version of the serate featured a reading of Francesso Canguillo's Piedigrolta by multiple voices, accompanied by Canguilo on piano and others on shell horn, saw fiddle, wooden lyre, etc. Giacomo Balla painted a large backdrop; paintings by Boccioni, Carra, Russolo, Balla, and Severini were hung; and the entire room was encased in paper and lit with red lights.

On May 14th, Francesco Pratella published a composition for intonarumori and traditional instruments.

1915 On January 11th, "The Futurist Synthetic Theatre" manifesto was published by Marinetti, Emilio Settimelli, and Bruno Corra. Among other things, this paper put the official Futurist stamp on types of theatrical productions encouraged by Marinetti's "The Variety Theatre" manifesto of 1913. Brevity and speed were stressed.

Marinetti's play Simultaneity (Simultaneita) put two different locales and actor groups--a coquette and a bourgeois family--on stage at once; for the finish, she enters their living room. Similarly, in 1916 he wrote The Communicating Vases (I Vasi Communicanti) with three groups separated by partitions. In the end, everyone was forced together by soldiers.

D. W. Griffith's Birth of a Nation was released early in the year as the first American film spectacular, pushing the industry into an even more solid position; this film incorporated split- and triple-screen effects, thus strengthening the ideas of multiple imagery begun by Porter.

Alexander Scriabin's Prometheus--a musical work written in 1910 to be performed with colored light projections--was done for the first time as written in Carnegie Hall on March 20th. The critics were not impressed with the light show, and further works of this sort were not performed for many years. A few years before this, Scriabin proposed Mysterium to be performed on a mountaintop in India while the audience watched a film, sniffed incense, and followed certain instructions. Needless to say, this work has not yet been performed.

1916 On Feb. 5th, the Cabaret Voltaire opened in Zurich to handle the antics of Dada stars such as Hugo Ball, Tristan Tzara, Jean Arp, Richard Huelsenback, and Marcel Janco. Only Janco does not have a story attributing the origin of "Dada" to him. The first public reference to the movement came in an article written by Ball in the only issue of Cabaret Voltaire, published in June. The first Dada soiree was held on July 14th at Salle zur Waag; Tzara read the first Dada manifesto on this occasion. Other soirees are described in the text.*

1917 Stravinsky's Fireworks (Feu d'Artifice) was staged on April 12th by Giacomo Balla for Diaghilev's Ballet Russe at the Constanzi Theatre in Rome. The 5-minute piece used no dancers, only large geometric forms and orchestrated lighting in addition to the music.

The Chicago public school system became the first to have a slide library when the volunteer school-aid group, the Chicago Projection Club, grew unwieldy and donated 8,000 slides to the Board of Education. The same year, a film library was begun in Chicago; other film libraries were begun in Newark in 1918, Detroit and Kansas City in 1919, and Los Angeles, Buffalo, and New York City in 1920.

1918 The Inter-Church World Movement (an American-based Protestant group) set up motion picture and slide departments; both of these media had been used by churches since the first years of this century. Dr. H. H. Casselman headed the film department.

In this year and in 1919, Fedele Azori created Futurist Ariel Theatre with airplanes equipped to control the volume of their emissions; the movements were derived from war maneuvers.

1919 Herman Rosse used projected scenery in The Drama of the Nativity and the Massacre of the Innocents, presented at the Chicago Art Institute. This is claimed by Rosse to be the first use of projected scenery in America.

1920 The Dadaists held an exhibition in the back room of a Cologne cafe, accessible only through the public urinal. This April show featured a little girl in a first communion dress who recited obscene poems and an Arp wooden sculpture with an axe attached so that visitors could destroy the work. The police closed the show, but it was reopened when the judges realized that the most objectionable work was Durer's engraving of Adam and Eve.

1921 From June 6 - 30th, the Paris Galarie Montaigne held Solon Dada, Exposition Internationale, the last major Dada show. Marcel Duchamp refused to send his works to the exhibition, so his catalogue numbers were shown instead.

The first known American avant-garde film was made by Charles Sheeler and Paul Strand. Manhatta used well-composed--but rather static--images of Manhatten intercut with passages from Walt Whitman's poem "Manhatta."

Different authors make various claims as to the first abstract film. Two possible claimants are Hans Richter and Viking Eggling who were working together in Germany; during this year Richter made Rhythmus 21, an animation of various paper squares (he showed the negative since the print was badly smeared), and Eggling completed Symphony Diagonale, the animation of a long scroll painting. The previous year, Eggling and Richter had tried unsuccessfully to animate one of their scrolls. Even though Richter and Eggling are usually disputed as the first avant-garde filmmakers, Michael Kirby feels that honor may belong to the Futurist Arnaldo Ginna whose Vita Futurista was made in 1916. Existing frames from this film are inconclusive in proving Kirby's argument.

1922 Vladimir Baranoff-Rossiné, a Russian artist, presented a concert at the Meyerhold Theatre in Moscow where he used his Piano Opto-Phonic, developed

in 1914. A motor "played" by an electric piano projected images painted on a glass disk. A second piano plus a kaleidoscope were also used to change the predominant hues and produce layers of color.

An American, John D. Elms, invented a camera with two lenses to shoot 2-screen 35mm films; his device was unsuccessful, due to projection difficulties. Muybridge had developed multiple lens cameras years earlier for his motion series.

Lee Simonson claims honors as the first to use the Linnebach projector in an American stage play.

1923 Beginning March 4th, Meyerhold did his Environmental Theatre production of The Earth in Turmoil, which utilized filmed titles for the first time in one of his productions.*

In March, at the Proletkult Theatre in Moscow, Sergei Eisenstein directed Alexander Ostrovsky's Enough Simplicity in Every Wise Man, using a short comic film of the protagonist, Glumov, changing into things such as a donkey and a machine gun. This film was a parody of the contemporary Russian newsreel Kino-Pravda. The play was intended to resemble a circus, even to the point of using a tightrope walker.*

Man Ray's La Retour à la Raison, made mostly with Ray-o-grams (outline patterns created by exposing film to light with objects on or near the film) was shown at the Dada festival "Soiree de colar a barbe" (Evening of the Bearded Heart). Although the other elements of the festival included music by Auric, Milhaud, and Stravinsky, films by Hans Richter, and poetry by Tristan Tzara, loud outbursts by Andre Breton forced the cancellation of Man Ray's film and the frequent interruption of the soiree. Thus, it was one of the last of these activities.

The Russian Constructivist, El Lissitsky, designed proto-Environments called Proun (his substitution word for "art") Rooms, which were integrated wall/floor/ceiling units, often designed for the display of the hard-edged Constructivist art.

The first modern planetarium (using projections for astrological effects) was opened on October 21st in the German Museum, Munich. It was developed by Dr. Walther Bauersfeld of Zeiss Optical Works.

1924 Reinhardt's New York production of The Miracle opened on January 15th, enjoying a successful run until Nov. 8th. Afterward, the play toured other large American cities from Cleveland to Los Angeles.*

On May 26th, in Berlin's Volksbuhne, Erwin Piscator presented Alfons Paquet's Fahnen (Flags), in which he used projected titles for the first time.*

In Moscow, Meyerhöld presented Give Us Europe, beginning June 15th. This 17-episode political revue was written by Mikhail Podgaetsky from several novels, chiefly The Give Us Europe Trust by Illya Erenburg. Captions were projected on three screens giving the title and location of each episode, comments on the characters, information relevant to the action, and quotes from Lenin, Trotsky, and Zinoviev.*

Ferdenand Leger's only film Le Ballet Mécanique was released as the first photographic abstract film, as opposed to a film of abstract drawings. Images included pots, pans, and a fat woman climbing stairs. May Ray's film of the previous year represents the midway point between photographic abstraction and the abstract animation of the Germans in 1921.

Eisenstein staged Gas Masks in the Moscow Gas Works as a further extension of Environmental Theatre.

Andre Breton published the first Surrealist Manifesto.

Kurt Schwitters transformed his Hanover home into the first Merzbau.*

Laso Maholy-Nagy designed a "Theatre of Totality" for actors and three screens of film; this theatre, along with other Bauhaus designs for projection/actor theatres, was never built.

The Francis Picabia ballet Relâche (Performance Cancelled) was performed in Paris at the Theatre des Champes-Elysees by the Swedish Ballet. Intermission was devoted to Rene Clair's Dada film Entr'acte (Intermission); this was the first ballet to incorporate a film into the performance.*

1925 On January 29th, Meyerhold presented Bubas the Teacher in Moscow, using movements synchronized to music and projected titles. However, the titles were rendered useless by the technique of "pre-acting" each scene, and Meyerhold apparently discarded projections in his remaining plays.

The Bauhaus moved from Weimar to Dessau, where the school was housed in quarters designed by Walter Gropius; many progressive theatre productions were done at the Bauhaus until Nazi pressure closed the school in 1933.

Sections of Robert Flaherty's film Twenty-Four Dollar Island were used as a projected background for the ballet The Sidewalks of New York, done at New York City's Roxy Theatre.

The first surrealist exhibition was held in the Galerie Pierre in Paris.

Eisenstein released his second film, The Battleship Potemkin, with the fully developed system of conflict editing known as montage, allowing

the rapid presentation of simultaneous viewpoints and the accumulation of visual messages.

Piscator did Trotz Alledem in Berlin during July. This play, with scenery by John Heartfield and music by Edmund Miesel, used a newsreel film collage.*

1926 Able Gance made Napoléon, the first multiple-screen dramatic film. It was released in Paris in April of 1927.*

Piscator presented Strumflut in the Berlin Volksbuhne in Feb.*

Gropius designed Piscator's unrealized Total Theatre, another Bauhaus plan for the merging of performers and projections.

1927 The first feature film with synchronized sound, Don Juan, was released in August. The sound was provided by the Vitaphone process--a 17-inch amplified record. Another Warner Brothers film, The Jazz Singer, was released in October, also with Vitaphone sound. The latter is considered to be the first sound film because the sound was used for song and speech, rather than being used merely for background music and effects.

Claude Autant-Lara developed a 3-screen process known as Hypergonar. There is confusion as to whether this was three separate screens or three images on one frame of film. Whatever the process, it constituted the only continuance of Gance's Polyvision.*

Piscator's production of Hoppla, Wir Leben! opened on Sept. 3rd at the Piscator-Buhne, Berlin.*

Piscator's version of Alexie Tolstoy's Rasputin was done at the Piscator-Buhne, opening on November 10th.*

1928 The Good Soldier Schweyk opened on Jan. 23rd at the Piscator-Buhne.*

Brecht's Three-Penny Opera was his first commercial success, and this play continued the acceptance of Epic Theatre, which had begun with Piscator.

The first all-dialogue sound film, The Lights of New York, opened in New York in July.

Man Ray furthered the use of multiple images on a single frame of film when he used twelve simultaneous images in some segments of his L'Etoile de Mer.

1929 Germany's Walter Ruttman made the film Melody of the World, using animated abstract forms to illustrate the mood created by selections of classical and modern music. While this seems on the surface to be the Intermedia concept of juxtaposing separate entities to make a new, unique whole, it actually amounts to synchronization in reverse--images made to correspond to a given piece of music (as Disney would do years later in Fantasia) rather than music composed to accompany a given length of film.

1930 Clarence Schmidt began his Woodstock habitation Environment.*

In Berlin, Moholy-Nagy, aided by Istvan Sebők, Otto Ball, and the firm A.E.G., built his Light Prop, now known as the Light Space Modulator. This was the first sculpture to depend upon the programmed flashing of electric lights for its intended effect. The complex metal components also rotated, thus setting the pattern for motorized kinetic light machines of the 1950s and 1960s.

In June, in Berlin, Franz Hoerth did his production of Claudel's Christophe Columb, using film to reveal the psychological innerworkings of the characters.*

1932 Oskar Fischinger's Experiments in Hand-Drawn Sound (an experiment in scratching a soundtrack directly onto a film) was first shown.

The Visual Instruction Association of America, The National Academy of Visual Instruction, and the Department of Visual Instruction of the National Education Association merged, retaining the title of the latter organization. This group continues as the primary source of research and information concerning audio-visual usage in American public schools and universities. In 1950 the title of the organization was amended to the Department of Audio Visual Instruction (DAVI) of N.E.A. and is now renamed the Association of Educational Communication and Technology (AECT). In 1969 at the annual AECT convention their first multi-image festival was held; in 1975 the responsibility for this activity was assumed by the newly-formed Association for Multi-Image (AMI).

1933 Marinetti proposed his own Total Theatre, which, like Piscator's, was never built. The Futurist version called for a large central stage, a peripheral stage surrounding the audience, eleven small stages in the auditorium, a large apparatus above the center stage dramatizing the movements of the sun and moon, and revolving chairs from which the audience could see paintings and projected film and television images, hear music, and smell various odors.

Maholy-Nagy made ABC of Sound featuring pictures of the soundtrack.

1935 Len Lye made Color Box, the first film made entirely by drawing and painting directly on the film stock.

Gance made a 1-screen version of Napoleon, onto which he added the first stereo soundtrack.

The Living Newspaper began the first of their 4-year series of Epic Theatre-like productions.*

1936 Mary Ellen Bute and Leon Therme produced Rhythm in Light, the first of a series of abstract color pattern/electronic music films.

Emil Burian did his production of Fruhlings Erwachen, which blended slides, actors, and films into a stageful of activity.*

From December 9th until January 17th of 1937, the New York City Museum of Modern Art held its historic Fantastic Art, Dada, Surrealism show organized by Alfred H. Barr. This was the first major introduction of these new European trends into the American art world. As had been the case with the equally historic 69th Regiment Armory Show in 1913, American critics were stunned by the exhibition and reacted in various ways. As had also been the case with the 1913 show, which introduced Americans to Cubism and Futurism, the new show left its imprint on American art. Surrealism found its way into Abstract Expressionism and the early Happenings, while the Dada spirit is still manifesting itself in all forms of the arts.

1937 The Paris Exposition featured the Palace of Light, where Henri Chretien showed a super wide-screen film (297 feet wide, 33 feet high) using two projectors with anamorphic lenses. There were metal fingers three feet in front of the projectors to blur the frame edges and provide a complete panoramic cinema sweep.

1938 During Jan. and Feb., the Exposition Internationale du Surrealisme was held in Paris.*

In September, the Olson and Johnson review Hellzapoppin opened on Broadway.*

John Cage, influenced by the Futurist Luigi Russalo about the idea of noise as art music, made his first "prepared pianos" by attaching wood, metal, and objects to the piano strings.

Fred Waller developed his first successful version of Vitarama, a multi-screen film format. He and Frank Walker devised a system of eleven screens of 16mm film on a hemispherical surface, which was then proposed as five screens of 35mm film for the 1939 New York World's Fair. The sponsoring oil industry rejected this idea, so Waller prepared "Cavalcade of Color" for the Kodak pavilion. Onto the 11-screen, 22'-high, 187'-long configuration was projected a 12-minute program, combining 2000 slides and a sound film, which also synchronized the advance of the slides. This project would appear to be the first true multimedia program, even though a film soundtrack rather than an audio tape provided the aural component. The 5-screen version of Vitarama continued into the 1940s as a cruciform gunnery training device for the U.S. military.*

1939 Piscator fled from Europe and became a director at the Dramatic Workshop of the New School of Social Research in New York City. He remained there until 1951, spreading Epic Theatre concepts to American playwrights and stage designers.

Norman McLaren made Allegro, probably the first commercial film with the soundtrack drawn directly on the film.

1940 Walt Disney's Fantasia became the first film in America to be shown with stereophonic sound; the New York City showing utilized ninety-nine speakers.

1942 Another major Surrealist show was held in New York City, this one at 451 Madison Ave. The exhibition ran from Oct. 14 - Nov. 7 and featured an environment of miles of twine strung around the gallery by Duchamp.

1945 John Cage and Merce Cunningham collaborated on a ballet that featured the film Visual Variations on Noguchi as a background for the dancers.

1946 The San Francisco Museum of Art held the Art in Cinema festival, the first substantial display of avant-garde films on the West Coast. The

programs were the following: (1) "Some Precursors," (2) "The French Avantgarde," (3) "Continental Avantgarde," (4) "Non-Objective Form Synchronized with Music," (5) "The Animated Film as an Art Form," (6) "Contemporary Avantgarde Film in America," (7) "Fantasy into Documentary," (8) "Experiments in the Fantastic and the Macabre," (9) "Poetry in Cinema," (10) "The Surrealists." Virtually all existing major avant-garde films were shown in these programs.

1947 In the Paris Galerie Maeght during the months of July and August, the last major show of Surrealism as a functioning movement was held. Exposition Internationale du Surrealisme was organized by Breton and Duchamp and featured almost every major artist associated with Surrealism.

Life magazine used a 5-screen Vitarama slide show, called Picturama, to present the concept of a new and better America in a traveling public presentation.*

1948 Seagrams Distillers sent a 5-screen narrated slide show around the country to be shown at sales meetings. This type of presentation became very popular at sales meetings and business conventions in the early 1960s, and has now become a standard corporate event, with large scale automated multi-image, multimedia spectaculars.*

The Living Theatre troupe (one of the finer Off-Broadway groups) was begun by Judith Malina and Julian Beck. This contemporary drama group now gives some of the most exciting theatre presentations (recent example, Frankenstein) to be found anywhere.

1949 Pierre Schaeffer and Pierre Henry wrote Symphone sour un homme seul (Symphony for One Man), one of the earliest landmarks in concrete music. This music was a combination of electronic sounds and taped sounds.

In the San Francisco area Mark Broils did one of the first "wet shows" using overhead projection of colored water-based dyes floating in clear oil. By the late 1960s, this would be a regular feature of the psychedelic discotheques.

1950 The TelePrompTer Corporation began its Telemation system (usually five screens of slides and film plus sound from microphones, phonographs, and/or audio tape). No actual accounts of these Telemation units being installed is reported until the late 1950s.

The first film/actor play by Josef Svoboda and Alfred Radok, The Eleventh Commandment, opened on June 17th at the State Film Theatre in Prague. This included a scene where a detective faced the audience, looked into a mirror so he could see a robber on film about to "shoot" him, then fired toward the screen and "killed" the robber.

1951 Robert Motherwell published The Dada Painters and Posts, a collection of essays written by the originators of the movement; this book had some noticeable influence on the younger New York painters of the time.

Cage and Cunningham composed 16 Dances by methods of chance. Toss of a coin determined the type and order of the dance movements; similar chance choices set the structure of the music.

Cage composed Music of Changes completely by means of coin toss.

Cage composed Imaginary Landscape no. 4 for twelve radios and twenty-four performers--one person for each volume and tuning knob.

3-D films by L. P. Dudley and R. and N. Spottiswoode were a great hit at the TeleKinema festival in London, but commercial producers hesitated at following up on this success. They balked at the inconvenience of the special glasses, but after the novelty of Cinerama made a big hit in 1952, 3-D came into its own limited prominence in the mid-1950s.

1952 The Paris Opera added smells to its production of Les Indes Galantes; a similar feat dated back to 1868 in London's Alhambra Theatre during a dance number in The Fairy Acorn Tree.

Cage composed his famous 4' 33" for silent piano.

Cage held his celebrated "happening" during the summer at North Carolina's Black Mountain College. This is generally accepted as the first true Intermedia performance.*

Vladimar Ussachevsky used audio tape in a concert at Columbia University, the first such use of tape in America.

The theatre version of Cinerama had its first showing when This is Cinerama opened in New York City on September 30th.*

On Nov. 17th, Hollywood premiered Bwana Devil, the first commercially-successful 3-D film.

1953 Cunningham's Collage used fifteen untrained "dancers" to perform simple movements like running and hair combing.

Samuel Becket's Waiting for Godot became the first commercial success of the Theatre of the Absurd.

Early in the year, Charles Eames and George Nelson presented their multimedia lecture on communication, "Sample Lesson," at the Art Dept. of the University of Georgia. This self-contained multimedia program led the way for multi-imagery to become a standard tool in education, just as Vitarama, the Seagrams show, and Telemation brought multi-imagery to business, industry, and government, and the Cage happening brought Intermedia to the arts.*

1954 Varese released Deserts, the first large orchestral composition for instruments and taped electronic music.

Robert Breer made Image by Image I--a 10-second loop of 240 individual frames--and won for himself the distinction of making what was probably the first film with absolutely no continuity. Viewers managed to see patterns in the film anyway.

1955 Robert Rauschenberg made Bed by splashing paint on his quilt and pillow, then hanging these vertically on the wall. This was not his first "combine" of paint and real objects, but it was the earliest one to catch the attention of critics.

Disneyland opened in Anaheim, CA, and contained such attractions as the 360° projection environment Circarama and the McDonnell Douglas Rocket to the Moon. Versions of these multimedia environmental chambers survive at both Disneyland and Disneyworld in Orlando, FL, as well as newer Environments such as the Haunted House with its holograph-like "ghost" projections.*

The Japanese Gutai Group, the originators of Events, gave one of their first public performances at the Ohara Hall in Tokyo in October.

1956 The Texas Baptist minister Howard Moody became pastor of New York City's Judson Memorial Church and steered the church activities toward the 1960s program of avant-garde presentations. Judson Memorial Church was one of the chief locations for development of New Theatre and multimedia programs in the late 1950s and throughout the 1960s.

1957 Allan Kaprow made his first Environment in an unused barn near his New Jersey home.*

Early in the year the Madeleine Renoud and Jean-Louis Barrault Company's staging of Claudel's Christophe Columb, blending drama, music, dance, and film, opened to critical praise at Broadway's Winter Garden.*

Henry Jacobs and Jordan Belson began their series of Vortex concerts in San Francisco's Morrison Planetarium.*

One source reports that Stan VanDerBeek made Vision III, a presentation of three screens of film and slides. It is unclear whether this was ever finished or shown.

On Sunday, December 8th, the Gutai Group received attention on the front page of the art section of The New York Times. Their activities gave further impetus to development of Happenings.

1958 Rauschenberg had his first one-man show, at the Leo Castelli Gallery in New York City, where his combines caught the attention of many artists, writers, and critics.

The Congressionally-approved National Defense Education Act allocated funds for new research into the use of electronic media in the public schools.

In Ann Arbor, Milton Cohen began developing his Space Theatre in which various types of abstract projections were combined with various types of music and audio. Like his unnamed counterparts in San Francisco, Cohen was developing a type of multimedia combination that would later be corrupted and commercialized by rock music discotheques.

Allan Kaprow showed his first Environment at the Hansa Gallery March 11th - 29th; he held his first Happening on April 15th, at Douglass College, Rutgers University, New Brunswick. This first Happening was presumably

considered a private affair by the Happening expert Michael Kirby, because he does not consider the Douglass College performance as the first public example of this art form. Other writers call John Cage's untitled 1952 lecture the first Happening (Intermedia performance, Theatre of Mixed Means performance, etc.), but this is a matter of semantics. Based on its content, Cage's piece was the first Happening, but the name for these activities was not formulated until Kaprow's October 1959 performance.

The English version of Artaud's radical theatre book, The Theatre and Its Double, was published.

The Brussels Universal and International Exposition (a first-category World's Fair) was held on 1,500 acres of Heysel Park in Brussels from April 17th - October 19th. There were well over forty-one million visitors to this Fair. Among the exhibits were Cinerama, Vortex, Laterna Magika, Polyekran, and Vasere's Le Poème électronique.*

1959 Rauschenberg made two of his most memorable combines, Monogram (which featured a stuffed goat with a tire around its middle) and Canyon (which had a stuffed eagle and a pillow projecting from the canvas). This was also the year he did the radio painting, Broadcast.*

Ford Motor Co. sent a 12-minute, 4-screen color presentation called "The Search for Suburbia" to suburban shopping centers. The four screens of 16mm film made a viewing area 31 feet wide; usually four separate images were shown.

The U.S.A. and the U.S.S.R. traded national exhibitions, with the Russian display (including Kinopanorama) in New York June 30th - August 10th. In Moscow, there was an American pavilion with Circarama and Eames' 7-screen

Glimpses of the U.S.A.; there was also a Russian pavilion with another edition of Kinopanorama--the Russian super version of Circarama.*

Svoboda's production of Jejich Den (Their Day) opened on October 4th at the Tyl Theatre in Prague. O. Kreja directed this play which had nine mobile screens; two screens rotated on their horizontal axes, three rotated on vertical axes, one hung free, one could fold up, one could move across the stage, and the last one had curtains on all four sides so its size and shape could be changed.*

At the Galerie Schmela in Dusseldorf, Otto Piene held a performance of his Archaic Light Ballet, one of the first public performances of his new art form. Light was projected through moving stencil screens onto all surfaces of the room, accompanied by taped electronic piano sounds.

Kaprow's 18 Happenings in Six Parts was given for the first time on October 4th at New York City's Reuben Gallery. This work has been designated by Michael Kirby as Kaprow's first public Happening. In addition to performers, the work incorporated slides, audio tape, and records.*

The World Agricultural Fair in New Delhi featured a 5-screen Telemation exhibit for the U.S. Departments of State, Agriculture, and Commerce. This Fair, which ran from November of 1959 through February of 1960, attracted thousands of visitors including Dr. John Guy Fawlkes of the University of Wisconsin's School of Education. His enthusiasm for the exhibit led to the first permanent instructional multimedia facility, at the Univ. of Wisconsin in 1961. It is probable that other automated multi-image programs were used before this New Delhi show, but it is the first to be extensively documented. Thus, it can be seen as the precursor

of innumerable such displays which continue today at conventions, sales meetings, trade shows, and other gatherings intended for some specialized corporate, governmental, medical, religious, or educational audience. Of course, the multi-image program intended for general audiences at commercial exhibitions was begun with the Waller Kodak exhibit in 1939 and revived by the Svoboda Polyekran in Brussels in 1958.*

Charles Weiss used his AromaRama to add smells to Walter Reade Jr.'s China travelogue, Behind the Great Wall, released in December.

1960 In January, Mike Todd, Jr., released Scent of Mystery, with programmed odors known as Smell-O-Vision. Olfactory films were short lived due to the difficulty of clearing the theatres of the odors.

A teaching machine which combined a tape recorder with a slide or film-strip projector was put into use at the University of Wisconsin. The mixed-media machine worked on the reinforcement principle, because it asked a question on tape (and showed a picture to augment the question) and then did not advance to the next question until a correct response had been marked on a special answer sheet. This device was only one example of many teaching machines which used audiovisual aids; all types of these machines were put into experimental use in the early 1960s.

On Feb. 29th - March 2nd, a series of theatre works known as the Ray Gun Specs were presented by Claes Oldenberg and Jim Dine at the Judson Memorial Church. Al Hansen's part in these shows was to project hand-held films around the environment. One example was film of airplanes and parachutists projected on the walls and ceiling.

In April, the Gutai Group sponsored the International Sky Festival on top of the Takashimaya Department Store in Osaka; for this Event paintings were

hung from large balloons. The American painter, Al Leslie, participated in the festival and then informed Kaprow of the activities of the Gutai Group.

In June, the Martha Jackson Galleries held the show "New Media-New Forms" in which there were assemblage sculptures by Schwitters, Arp, Rauschenberg, Jasper Johns, Kaprow, Louise Nevelson, John Chamberlin, and Oldenberg. Sculpture was being considered in a new light since the previous March 17th, when Jean Tinguley's machine, Homage to New York, destroyed itself in the garden of the Museum of Modern Art.

In November and December, the Reuben Gallery in New York hosted Robert Whitman's Happening, The American Moon. This work made especially good use of film as a non-objective element in theatre.*

Standish Lawder made the first version of his kinetic 2-screen slide show, The March of the Garter Snakes. The program began with photographic images but soon moved to pieces of slide glass filled with margarine, lipstick, grass, and other substances which would buckle, bubble, and move under the heat of the projection lamps. Juxtaposition of taped sound with this abstract visual element allows it to be classified as Intermedia. While some might call it multi-image as well, that term is usually reserved for projected combinations which emphasize photographic images.*

1961 In January, the University of Wisconsin opened its Multimedia Instructional Laboratory, built by the TelePrompTer Corporation. This facility was the first of its type in an educational situation (although multi-screen Telemation display systems had been installed in military bases since the late 1950s), and it was also the first audiovisual mix to go by the name of multimedia.*

In March, Purdue University installed film projectors in its foreign language labs, augmenting the tape recorders which already existed in these facilities.

Also in March, the San Francisco Actors' Workshop did a version of King Lear (directed by Herbert Blau) that used taped electronic music by Morton Subotnik during the storm scene.

George Segal and Edward Kienholz both gained public attention for building complete Environmental sculptures from found objects. Segal also added cast-plaster figures to his works, the first of which was Man at a Table. In addition, Claes Oldenberg opened The Store in Manhattan's lower east side, where his sculptures of common objects were sold. While this was a legitimate store, it also served as an Environment.

Rauschenberg executed Pantomime, in which two functioning electric fans were incorporated into the canvas to give the illusion of blowing the spattered paint. The sense of ambiguity between the fans' movement and the paint's solidity was quite striking.

The San Francisco Tape Music Center sponsored avant-garde concerts, which amounted to abstract multimedia programs. Morton Sabotnik and Tony Martin were among the composer/painter teams to combine projections with live and taped music.

Roberts Blossom began presenting his Filmstage series of actor/film/slide/audio tape theatre combinations. Jonas Mekas reports that VanDerBeek was also doing multiple projections at this time at the Fluxus Gallery and the Mailman Playhouse in Manhattan.*

The Italia exhibition, presented during the summer in Turin, used a version of Cinerama that was changed from the original format to a con-

figuration of nine screens and stereophonic sound. Natural sounds, history, modern cities, achievements of Italian industry and technology were the subjects of the film, shot with nine Arriflex cameras each seeing 40° of the environment.

Francis Thompson made his 3-screen film Atom for the Atomic Energy Commission to send on a tour of Latin America.

In October and November, the Museum of Modern Art presented a massive show, "Art of Assemblage," which so effectively summarized the 1950s junk sculpture trend that the movement was virtually dead thereafter. By early 1962, popular culture objects were being treated in a more refined way by the emerging Pop artists.

1962 In April, the Department of Audio Visual Instruction (DAVI) of the National Education Association held a convention in Kansas City at which James D. Finn and Robert O. Hall presented a 3-screen slide/tape/film program, Dimensions of the Audio Visual Revolution, about contemporary audiovisual technology. The show was well received by the convention delegates and furthered the concept of multimedia programs and multi-imagery in education.*

Kenneth Issacs built his "Think Box" educational cube, in which a person was bombarded by twenty-four slide images and four speakers of sound. Accounts of this device indicate that enough juxtapositions of separate ideas were being used for this to be considered an Intermedia Environment; this bombardment detracted from the intended cognitive immersion learning effect though.

Rauschenberg produced Barge, a 6' x 32' horizontal canvas in which he combined organic paint manipulation with silk screen images of satellites,

car keys, trucks, highways, people, birds, diagrams, cities, athletes, and the Velazquez Venus. These multiple photographic images gave the effect of a massive multi-screen slide or film show. Surely works such as this one were influential on the New York electronic media artists who were in contact with Rauschenberg.

The Seattle World's Fair--Century 21--ran from April 21st through October 21st; included among the exhibits were Eames' House of Science and the Spacearium, both described in the text. Other displays included Leonard Nederkorn, Robert Snyder, and Harvey Yale Gross's design for Infinite Horizons, a multimedia look at science photography for the U. S. Science Exhibit, Area 5. As visitors were conveyed past the 30' x 100' screen every four minutes, a blend of two color 16' x 20' films from 35mm Bauer projectors and a monochrome slide from a pair of Kleigl 5000-watt projectors changed subject matter constantly. Eighteen separate slide images were used in each 4-minute cycle. Also, Xerox and the American Library Association joined to present Library 21 in which two copies of a 3-screen film were projected from a central core of a circular theatre, allowing each half of the audience to view the same presentation simultaneously.*

Tom Wesselman began his Great American Nude series of Pop paintings which often employed real objects in a semi-Environmental situation.

Svoboda's production of Romeo, Julie a tina (Romeo, Juliet and the Darkness) was first given on Sept. 14th at the State Theatre in Brno. This play by J. Fischer was directed in Brno by V. Veznik; H. Thein directed the Prague National Theatre version which opened on Oct. 12th. Many mobile cubes with one side covered by a scrim screen were used in this

production; only black and white slides were shown on the scrims. The play had a theme of man being ground down by the mass media of modern civilization.

Pop Art was given its first major introduction to the public in two exhibitions: New Paintings of Common Objects, held in Sept. at the Pasadena Art Museum, and New Realists, held Oct. 31 - Dec. 1st at the Sidney Janis Gallery. Included in these shows were multiple image works by Warhol and juxtaposed images on a huge scale by Rosenquist.

Gerd Stern had his first one-man show of kinetic poetry at Allan Stone's New York gallery in Dec.

1963 Several accounts indicate that 1963 was the year in which public schools began using "multimedia" visual/sound mixes, which had first been developed at the college level. This by no means indicates that public school multimedia usage was widespread before the late 1960s, but it was fast gaining acceptance in the East and Midwest in this earlier period.

Warhol's Sleep, a multihour film of a man sleeping, was originally shown in New York with two transistor radios set on the stage tuned to different rock music stations.

Whitman presented Water in Los Angeles on Sept. 20th and 21st. This Happening made good use of juxtaposition of the filmed and live presence of the same woman.

Stern often presented "Mosaic," a poetry reading accompanied by slides of New York Pop Art.*

On Nov. 12th and 14th, concurrent with the opening of Stern's show at the San Francisco Museum of Art which contained the sculpture/poem "Con-

tact is the Only Love," he and other nucleus members of USCO presented their first multimedia performance. This work, entitled Who R U? and What's Happening? used slides, closed circuit and commercial television broadcasts, audio tapes, and amplified conversation from twenty stage participants.*

1964 USCO's Verbal American Landscape, a combination of slide, films, and audio tapes, was given at the University of British Columbia and at the University of Oregon in January.*

On Feb. 27th, Elaine Summers presented Fantastic Gardens at the Judson Memorial Church. Screens were hung at both ends of the church to catch images from four stationary projectors and one hand-held projector. Single, multiple, and overlapped images were thrown on the screens, walls, columns, and people in attendance. The audience had small mirrors so that the projections could be even further diffused around the building. Unfortunately for the interests of this study, nothing is recorded about the nature or content of the projections.

The XIIIth Triennale in Milan featured the industrial display Environment "Introductory Section--Leisure Time," which made use of massive spaces and eerie darkness to present a weird look at advertising bombardment.* Another display the same year was Victor Wurgler's Polyvision projection dome in the Holiday Pavilion of the Swiss National Tourist Office. Visitors stood on a central platform in the dome where they saw images on 8,000 feet of fifty-seven hexagon and pentagon screens. Wurgler used slides to create tranquil total environments around the spectators, rather than the feeling of motion which was inherent in the related Circarama environment. Since rear projection was used, the room lights

could be left on in the dome giving the effect of an exhibition space rather than a theatre.

In early April, on Easter Sunday, Stern and Michael Callahan (also of USCO) delivered a special sculpture to the nuns at Los Angeles's College of the Immaculate Heart. The work, called Resurrection, was made by modifying a pinball machine to flash words such as "High," "Free," "Safe," and "Resurrection." The trick was that a nickel had to be deposited in order to turn the machine off.

Later in April, USCO's Verbal American Landscape traveled to Salt Lake City, Minnesota's Carleton College, and the University of Wisconsin at Madison. At Madison they introduced the Kodak Carousel projectors into their performance. In May the performance was given at Trenton College, where it was first observed by Steve Durkee, the other major force in USCO in the mid-1960s.*

Kienholz completed The Beanery, a macabre sculpture set inside an actual beanery hut.

Marshall McLuhan's Understanding Media was published.

The New York World's Fair--"Man's Achievements in an Expanding Universe"--ran from April 22nd until Oct. 17th, 1965. Because of the length of the Fair and because the Seattle Fair was supposed to be the only official World's Fair in the U.S.A. in the decade, the New York Fair was refused official sanction by the Paris International Exposition Association. With the Paris Association boycotting the Fair for its thirty member nations, most of the national pavilions at the 1964 Fair were sponsored by private businesses. Among the exhibits of interest to this study were Laterna Magica, To Be Alive, and Eames' Think for IBM.*

In early August, New York City was host to the first American presentation of Laterna Magica, coupled with exerpts from a Svoboda opera presentation, Offenbach's Tales of Hoffman. In the opera Svoboda used three screens of film to show the inner workings of the protagonist, a la Hoerth's 1930 Christophe Columb. Allen Hughes' New York Times review gave more credit to Laterna Magika than the opera. He felt the film and actors were too separate in the opera, and seemed to be working more against than with each other.

LaMont Young first presented his musical piece The Tortoise, His Dreams and Journeys which used heavy incense and Marian Zazeela's contemplative slides in addition to Young's amplified voice and electronic sounds to fully saturate the presentation environment.

In September, Karlheinz Stockhausen's Originale, directed by Allan Kaprow, was presented in New York City's Judson Hall. This chaotic event used live performers, animals, live and taped sound, film, and closed circuit television.*

USCO's Verbal American Landscape was given at the University of Rochester in early October.*

1965 One example of the many unreported multimedia worship services from the mid-1960s was done by David Wood, an art major at Case-Western Reserve University in Cleveland, Ohio.*

Rauschenberg completed Oracle, a five-piece environmental sculpture equipped with radio receivers.*

At the ONCE AGAIN festival in Ann Arbor, the ONCE group did "Unmarked Interchange," incorporating live actors into the same large screen that showed the film Top Hat.*

VanDerBeek published a Manifesto, calling for multiple screen environments (such as his Movie Drome) "both to deal with logical understanding and to penetrate to unconscious levels, to reach for the emotional denominator of all men, the nonverbal basis of human life." (Youngblood, Expanded Cinema, p. 387).

Svoboda presented Intoleranza in Boston during Feb., using film and video tape projection, closed circuit broadcasting, and remote broadcasting.*

James Rosenquist filled the Leo Castelli Gallery with his 10' x 86' painting, F-111. This huge series of panels showed the profile of an F-111 broken by such images as spaghetti, a bomb, a girl under a hair-dryer, a tire, and a cake.

In April, the Howard Wise Gallery in New York City presented the first exhibition of computer art. Reviews were mixed, but encouragement was given to filmmakers to continue development of computer animation films such as had been made by Kenneth Knowlton for the Bell Laboratories.

In April and May, USCO presented "We Are All One" at Brandeis University, adding stroboscopes and an oscilloscope to the previous effects developed for the Verbal Americal Landscape.*

The Dutch Pavilion at the International Exhibition of Transport and Communication in Munich featured a large rectangular exhibition hall where films were shown on three large screens. One of the screens, 20 by 60 feet in size, hung on an end wall of the room and the other screens, circular in shape, were on the long walls above quarter circle ponds which reflected the images. This was designed by Wim Crouwell of Total Design in Amsterdam. Another impressive display from the Munich gathering was the Transport Exhibition of the German Federal Railway. Sixteen screens

were hung in four rows from scaffolding (giving the feeling of a railway station) and sixteen film strips were projected from near the ceiling. The films were loops of different lengths, so the images were not repeated in the same order; the soundtrack had speech and electronic music.

The First Theatre Rally was organized in New York in May by Steve Paxton and Alan Solomon. Included in the performances were Rauschenberg's Spring Training and Whitman's The Night Time Sky. Also at this festival Whitman displayed one of his film/sculptures; "Shower" consisted of a shower stall complete with running water and a filmed, nude, showering woman projected on the door of the stall. Many viewers were fooled by the illusion, even though the woman was being washed by waters of various colors.

Marta Minujin, assisted by the Bell Telephone Laboratories, constructed and exhibited an environmental telephone booth in late June. A person in the booth saw running water on the outer glass and his own image in the closed-circuit television floor, heard wind and echoes and his own voice on instant-replay tape from the receiver, and left with a Polaroid picture of himself which was taken while he was in the booth.

Jim Santandrea of Melandrea, Inc., New York City, introduced Stoplight, a one-projector multi-image display system for business and industry oriented slide shows. Each slide cost about $75 and was made up of any combination of image formats, although the standard format provided one center vertical rectangle, a square topped by a circle on the left, and another circle plus an oval of light for a live speaker on the right. This display could be shown on a regular screen or a portable configuration of screens shaped to the image formats. Of course this single-frame multi-image concept is as old as split-screen cinema, but Santandrea's

version marked a major attempt to capitalize on the concept and find a means of easy portability and distribution for multi-image multimedia programs.

During June and July on Monday nights at New York City's New Theatre on E. 54th St., Timothy Leary and his Castalia Foundation presented a series known as "Psychedelic Theatre," referred to in at least one article by Jonas Mekas as "Psychedelic Explorations." At first the series consisted of readings by Leary and massive media meditation performances by USCO. By the time that Mekas reviewed the evening of July 12th, the program featured Leary, USCO, Jackie Cassen, Don Snyder, Richard Aldcroft, and Edith Stephen. The content of all works reflected mind-expansion through abstract creations and/or juxtapositions of realistic images. Audio varied from electronic music to the complicated USCO collages. Most works in this series were quite impressive technically, although some did seem too random for the un-stoned mind; the most complex types of presentations were created by Snyder and USCO.

On July 23rd, at the New York Philharmonic's French-American Festival Merce Cunningham's Variations V was presented, featuring music by Cage, projections by VanDerBeek, and electronic paraphanalia by Robert Moog.*

In November and December, the New York Filmmakers' Cinematheque ran the New Cinema Festival I featuring such artists as Rauschenberg, VanDerBeek, Whitman, and USCO.*

USCO's Hubbub was given at R.I.S.D., M.I.T., and S.U.N.Y. at Buffalo in December.*

1966 USCO presented Hubbub from Jan. 18th - 23rd at the Filmmakers' Cinematheque in New York City.*

On March 4th and 5th, Michael Kirby staged a Happening named Room 706 in a lecture hall at St. Francis College, Brooklyn. Equipment used included two slide projectors, two film projectors, one overhead projector, colored spotlights, and an audio tape deck for each of three performers. The first segment was the taped conversation between the three performer/planners, with each person's speech coming from a different tape deck. Other scenes had films of rehearsals and of people entering the room, slides of the room's dimensions, projections of the script, and actors replaying the basic scene that had been repeated on audio tape and film. A complete script is given in Kirby's The Art of Time; the conclusion of the piece was applause on audio tape. Later, in 1967, Kirby did other complex works (Expo Alogical, A Television Presentation) using the concept of electronic media--films, slides, and audio tape especially--to repeat, reflect, disarrange, and reassemble the same basic images or actions.

Warhol's rock/light show generally known as "The Exploding Plastic Inevitable" opened at the Dom nightclub in Greenwich Village. This show had been done at showings of Warhol's films before April, but the appearances at the Dom were the real introduction of the light show-night club to the New York area. Following close on the success of Warhol's show were the first permanent psychedelic discotheques, The World (with projections by USCO) and the Cheetah.*

During the summer, Whitman presented a few of his Happenings as a series of weekend Off-Broadway productions at the Martinique Theatre. The performances were generally successful, and they marked the first penetration of Happenings into the legitimate theatre.

In June, an LSD conference was held in San Francisco featuring scholarly discussion and a massive version of USCO's "We Are All One." This was one of USCO's largest performances, covering the floor space and scaffolding of a college gymnasium. While in the area they presented the same show at Hayward College.

On August 26th and 27th in East Hampton, NY, Whitman conducted a Happening at a small swamp. Candlebags lit the path, sheets hung from the trees caught the shadowplay of the environment and the entering participants, and a screen at the south end of the swamp showed the participants and the rising moon on a closed-circuit videocast. Spectators sat on the east side of the swamp, where they watched a color film on the west side, then saw three people take and replace clothes on a line. These performers were then sprayed with phosphorescent paint as phosporescent smoke occasionally rose; then strobe lights blinded everyone and a balloon "creature" appeared on the north side of the swamp. It grew larger and rotated as projections changed its color and shape. As the evening grew later, microphones amplified crickets as a single person rowed across the lake, lit by phosphorescent flashlight and vapors while the evening mist formed.

The EPOCH environmental, multi-image educational facility opened in Berkeley, providing a new means of instructional motivation for children.

On Sept. 10th, Svoboda's production of Maxim Gorki's The Last Ones opened at Prague's Tyl Theatre. Alfred Radok directed this tale of a deteriorating family dominated by a military officer. One large, crumpled screen filled the rear wall of the stage, and huge images that often counterpointed or emphasized the stage action were shown on this screen. Only film was used on this screen, but occasionally performers appeared on a balcony within the screen area, much the same as had been done in "Unmarked

Interchange." Another unusual element in The Last Ones was the use of clusters of actors performing simultaneously, while still other scenes were shown on the textured screen.

Warhol released the multihour, 2-screen film, The Chelsea Girls, at the Filmmakers' Cinematheque on Sept. 15th; this 3-hour, 15-minute 16mm film was the first commercial success of the underground cinema.

On Sunday, Sept. 21st, the USCO Tabernacle Environment was opened to the public for Sunday meditation. Silk-screen hangings and tape loops were the chief elements, rather than projections. It closed in April of 1968 due to an unfortunate influx of curiosity seekers, teeny-boppers, and motorcycle gangs.

Oct. 13th - 23rd marked the dates of the "Nine Evenings of Theatre and Engineering" held at New York's 69th Regiment Armory by the newly founded Experiments in Art and Technology (E.A.T.). Billy Kluver of Bell Laboratories headed the new organization; Rauschenberg was his vice-president. Among the artists participating in the festival were Rauschenberg, Whitman, Cage, and David Tudor.*

On Oct. 24th, Marta Minujin presented her mammoth mass/multimedia Happening, Simultaneity in Simultaneity, in Buenos Aires. This work probably had greater scope in terms of time, complexity, and distance than any work presented before or since. Only Kaprow's Calling (see Tulane Drama Review, Winter 1965) came close to equalling the scale of Minujin's work.*

Psychedelic celebrations were common in New York City late in the year. Two of the many were Death of the Mind and Quasar. Death of the Mind was presented at the New York Village Theatre, using dancers and several projectors of abstract, hand-painted slides by Jackie Cassen and Rudi Stern.

Quasar was done in Dec. at St. Marks-in-the-Bouweire Episcopal Church and used music, slides, lights, and dancers.

Late in the year John Brockman Co. (which consisted solely of John Brockman, a graduate of Columbia's School of Business Administration) put together a show for the Scott Paper Co. that used the talents of Ken Dewey and USCO plus three slide projectors, one film projector, four stereo soundtracks, three screens of Mylar (an aluminum-like vinyl with more image bounce), and $15,000 worth of expenses. The show was designed to be shown to company salesmen in order to stir up more business for one of the company's products, Confidettes. Thus, Confidettes information and statistics were mixed with abstract images, Beatle and guitar music, and bird sounds. Strange as it all sounds, sales did go up 11% so the salesmen must have been greatly inspired. Slightly less extravagant multimedia programs continue to be a staple at business and industry sales meetings, board meetings, product seminars, and conventions.

In Dec., Film Culture published an issue devoted to Expanded Cinema (#43, Winter 1966) which summarized the many facets of the movement.

1967 During the "Angry Arts Against the War in Vietnam Week" (Jan. 19th - Feb. 5th), three performances of American Atrocities in Vietnam were given in New York. This underground play used films, slides, and sound effects in addition to the actors, much like what had been done in Epic Theatre. Another antiwar play of the same year, the New Orleans Group's production of Ionesco's Victims of Duty, used slides, film, and sound to continue the the play after the actors had left.*

Farly in the year USCO did their last unified group presentation of "We Are All One" at the Oberlin College chapel for a National Student

Association drug conference. Strobes, oscilloscopes, and lasers were used in conjunction with large balloons onto which slides and 16mm loop cartridge films were projected. Two films were used, one of oscilloscope patterns and one of a nude couple in the Shiva/Shakti position. Shortly after, the films and balloons--seven of them rotating from a fixed position--were set up in Boston's Institute of Contemporary Arts. Members of USCO did not stay for the showing in Boston and were surprised to read in reviews that one projector showed abstract color images. Actually, the projectionist had been instructed by the directors of the Institute to de-focus the nude figures.

In Feb., Barbara Ruben did Caterpillar Changes each night from the 20th through the 28th. She used multiple film projections in this work, employing different films and projection locations each night. On the night of the 21st, she used reel two of Jonas Mekas' The Brig on the left side of the screen, Guns of the Trees in the center, and Storm de Hirsch's Jonas in the Brig on the right. There was also a small square of The Brig's first reel moving all around the screen; this last effect was done by projecting the film from behind the screen into a small hand-held mirror and from that onto the screen. The films were all run without their soundtracks because sound was provided by taped Mothers of Invention music. Toward the end of the performance all the projectors were cut to silent speed and the music came from a live jazz band behind the screen.

In Feb., the Contemporary Music Society commissioned Alwin Nikolais to do Somniloquy in the Guggenheim Museum auditorium. The 40-minute work used a taped electronic score (which took 150 hours to compose, as did the choreography), two slide projectors (which used 200 slides hand made by Nikolias, and which could cover a projection area of 20' x 20'), four

lekos spotlights, and twelve flashlights equipped with rheostats and gelatin filter globes. A scrim was stretched across the stage to accommodate all the projections which were carefully coordinated to the dancers. The Drama Review of June 1973 (no. T 58) carries a rather full account of this dance work.

Aldo Tambellini opened the Black Gate Theatre, New York's first theatre devoted solely to "electromedia environments." Among the works that were presented were Tambellini's own Black Zero.*

During Feb., the Howard Wise Gallery presented "Lights in Orbit," a lumina show with works by USCO, Piak, Piene, and Thomas Wilfred.

Otto Piene presented his multimedia Happening, The Proliferation of the Sun, at the Black Gate Theatre in New York and the Nuremberg Kunsthalle.*

In the spring in Pittsburgh, Richard Felciano first performed his Pentecost Sunday and Glossalilia, the first electronic music pieces to be written for an English language religious liturgy. Since this time, Felciano, as well as other composers, have added several electronic pieces for worship.

From April through May in New York City, the Jewish Museum featured an exhibition, The Lower East Side Past and Present, combining photographs with projections and audio tape. The electronic media elements, prepared by USCO, consisted of ten Carousel projectors of slides of the Lower East Side and historical scenes, audio tape of typical sounds from the neighborhood, and a film of Zero Mostel reading an advice-to-the-lovelorn column from a turn-of-the-century newspaper. Originally the show was only the photos, arranged by Alan Sherner (who later did a similar photo and electronic media exhibition, Harlem on My Mind, at the NYC Metropolitan Museum in January of 1969); however, the museum trustees liked the media

additions so much that they were retained for the duration of the show. During the same time USCO also set up an Environment for the Purim Ball at the Jewish museum; the simple but effective room alternation was done with a strobe light and reflective Mylar sheets hung to form an octagon. This proved to be the beginning of the 10-foot Fanflashtic for the Intermedia '68 festival.

In July, Cage presented a multimedia Sabbath service at Temple Beth El in Spring Valley, New York. He was joined by fellow avant-garde artists in blending music, dance, lights, slides, film, audio tape, chanting, and readings from McLuhan into a worship experience.*

Cage and Ronald Nameth did Musicircus at the Stock Pavilion in Urbana, Illinois. This was an 8-hour spectacle of sight and sound which utilized some 3,000 participants (including individual musicians, musical groups, orchestras, and audience members). Two jazz groups, a pianist, a vocalist, and Claude Kipnis (a mime) performed simultaneously at one point. Salvatore Martirano, Lejaren Hiller, Herbert Brün, David Tudor, and Gordon Mumma were among the composers who performed works; the audience could also use a device which fed sounds into the amplified mix. Slides, films, balloons, and refreshments completed the festivities.

The Joffery Ballet presented Astarte in NYC's City Center in Sept., using dance, rock music, film, and kinetic scenery in a psychedelic, dramatic setting.*

Jackie Cassen and Rudi Stern provided dazzling, abstract dissolve slides as a background for the Boston Opera Company's production of the Stravinsky opera, The Rake's Progress.*

USCO presented Yin/Yang at the Institute for Contemporary Art in Boston and the Riverside Museum in New York City. This 10-foot revolving balloon served as a projection area for films, slides, and oscilloscope light.

Jerry Schultz produced the Off-Off-Broadway play A Study in Habitation. in which the actors, playing a family, lived on the stage; the audience paid one admission price and returned to the theatre as often as they wished.

John Whitney's children--John Jr., Michael, and Mark--staged several multiscreen shows in 1966 and 1967, particularly in conjunction with the concerts of the San Francisco psychedelic rock group, The Grateful Dead. One of the biggest audiences was the crowd at the Sept. Monterrey Pop festival, where they did a nine-projector show on three screens.

In Boston on Nov. 7th, "An Evening of Beauty of Reverence" was held featuring Dr. Harvey Cox (author of The Secular City), Sister Mary Corita (Kent) who presented a show of slides, film, and music, Fr. Daniel Berrigan who read his poems, and Judy Collins who sang folk songs. This event was a strange combination of a religious service (a communion meal of bread and wine was shared) and an entertainment piece (tickets were $3.50). Its influence on future worship services in the Boston area is subject to question.

On Nov. 17th and 18th, Deborah Hay presented Group One at The School of Visual Arts in New York. This 17-minute avant-garde dance work began with a 6-minute, black and white film of twenty-two people in five different movements in and out of a corner formed by white walls. The dance itself

was done by eight people with white poles and five people in formal attire who moved around in various groupings as a continuous tape of soft conversation and sounds continued throughout the work. This piece was virtually a crystallization of the progressive dance pieces of the 1960s. Kirby's The Art of Time carries a complete account of the work.

On Dec. 7th, some members of USCO--notably Gerd Stern, Michael Callahan, Robert Dacey, and Gunther Weil--joined with faculty members of the Harvard School of Business to create Intermedia Systems Corp. of Cambridge, Mass. This venture of hardware and software sales--everything from a simple dissolve unit to a multimedia Bar-Mitzvah--resulted in one of the very few "multimedia companies" capable of producing both equipment and substantial electronic media displays. Most competitors relied either on equipment alone or on programming multimedia programs for conventions, meetings, etc. The dual system finally proved to be too much for Intermedia, so the hardware aspects were phased out, as were the Harvard Business School partners.

The biggest event in 1967 for multiscreen works, and to some degree for Intermedia, was undoubtedly Expo 67, "Man and His World," which was held in Montreal from April 28th through Oct. 29th. Among the events were Labyrinthe, Diapolyekran, and Stan VanDerBeek and Kenneth Knowlton's computer film made with the BELFLEX language, Man and His World.*

1968 Your Own Thing, a rock-musical revision of Twelfth Night, opened on Broadway in late Jan., followed by Hair in late April. The importance of these plays is hard to indicate, because they do not seem innovative in light of Epic Theatre; surely projections (possibly even film) had been used on the Broadway stage since the late 1920s. Still, projections and rock music were not generally considered to be part of the American

legitimate theatre until these two plays broke down some old walls. Hair especially made use of environmental action and sexual emphasis that had usually been confined to Off-Broadway productions. The international success of Hair did serve to awaken a large general audience to many aspects of Underground Theatre.*

Early in the year, USCO's "Overstimulation Environment" was installed at Albert Einstein Medical Center in Philadelphia. This 8-hour cycle of strobes, 4-channel audio tape, slides, film, and filmstrips was requested by Drs. Harold Persky and Marvin Zuckerman to test physiological responses to electronic media overkill.

During the spring, a collection of presentations and performances known as Intermedia '68 toured college campuses in New York State. Descriptions of the events make most of them sound somewhat superficial or unrelated to the subject of Intermedia. Two exceptions were Carolee Schneeman's antiwar piece, Illinois Central Transposed, and the USCO exhibit, Ten-Foot Fanflashtic.*

In March, VanDerBeek turned Colgate University art building into a total projection environment for a day.

Eight artists made Environments incorporating industrial technology for Kansas City's Nelson Gallery. Among them was Terry Riley's Time-Lag Accumulator, an octagonal arrangement of glass chambers with nine microphones and nine speakers. Three of the mikes led to direct amplification of spectator's voices, but the other six mikes fed into two tape recorders, which recorded and played back the voices on a 2-minute delay pattern. Thus, a spectator would hear his recorded voice in a different chamber than it was recorded in.

Piene and Tambellini did Black Gate Cologne as a 50-minute multimedia Environment which was videotaped and broadcast by WDR-TV in Cologne early in 1969. Basically the television studio was transformed into a replica of Tambellini's Black Gate Theatre, with multiple images and sounds. Within this media immersion, the audience manuevered Piene's polyethelene tubing. Another version in Duesseldorf had projections on a mile-long section of tubing.

At California's College of Arts and Crafts at Oakland, Phillip Makana directed a production of King Lear which used rear projected film, actors on video tape, actors on closed circuit television, and live actors. While this seems no different from Svoboda's Intoleranza (1965), it does seem to be one of the very few reported stage works that employed video.

In late March or early April, the Los Angeles Philharmonic performed William Kraft's Contextures, conducted by Zubin Mehta. In addition to the musical work there was a large front screen film consisting of scratches, painted areas, black and white still photos of the 1967 race riots, and shots of Reginald Pollack's paintings of segregation and violence.

The Fillmore East opened in March, thus completing the triad of major NYC rock music-light show clubs. The other two, the Cheetah and The Electric Circus, had opened in 1966 and 1967 respectively. San Francisco's Fillmore West was a contemporary of the Cheetah; both opened in the spring of 1966.

"The Confluence of Civilizations in the Americas"--better known as Hemisfair--ran from April 6th through October 6th in San Antonio, helping bring an awareness of multi-imagery and Intermedia to other segments of the

American public. Of particular interest were Laterna Magika and the Institute of Texan Cultures.*

Ron Globus, along with his brothers Richard and Stephen and technician John Bollinger, opened Museum of the Media on 14th Street in NYC. Their idea was to make multimedia programs that could be circulated to other museums. They have received little publicity since the start of the venture, and their current status is unknown to this author.

In May, the Seattle Opera House was the site of a psychedelic opera called Mantra, written by Peter Phillips and conducted by Henry Holt. While this work was not greatly different from similar ones in the East in 1967, it is one of the few reported from other areas of the country.

During June and July, the Whitney Museum displayed "Imagimotion"--an information column of rotating steel which projected color slides shot from distorted television images of presidential candidates. This 6' x 2' column with eighteen projectors was the last major kinetic sculpture made by the members of the former USCO group.

During the summer, a series of avant-garde music presentations--known as the "Electric Ear" series--were presented at NYC's Electric Circus.*

During August, Svoboda presented Carl Orff's opera Prometheus in Munich. The setting was a huge staircase from which a metal trapezoid extended; Prometheus was chained to the trapezoid, which also served as a textured projection surface for large closed-circuit television images of the actor. At the climax of the play, the shaft was slowly withdrawn and bright lights reflected off its surface to blind the audience. When they recovered their vision, they saw only the empty staircase.

In Oct., the University of Michigan Episcopal student center conducted a multimedia worship service; this event was one of the few examples of this form of worship to be described in print.*

M. Macourek's Hra Na Zuzauku (The Suzanna Play) opened at the Municipal Theatre in Frankfort on Nov. 5th. Svoboda was the sceneographer for this play, which was directed by J. Pleskat and concerned an absurd story of a doll-like female of the modern consumer world. Diapolyekran cubes were used, forty-eight of them stacked in six rows of eight cubes. Each cube had eighty slides which were cued in the form of musical notes and "played" from a piano keyboard. Images in this satire were usually of mechanical and commercial objects.

During the year various Intermedia video experiments were done under the auspices of public television including the Environments of Nam June Piak and Aldo Tambellini and the video/performer/audience interactions of Richard Felciano.* Another of these works, done as part of WGBH-TV's "The Medium is the Medium" series in Boston was Fred Barzyk's work in which he programmed two videotapes side-by-side and asked viewers to use two TV sets to receive the 2-channel audio/video result.

Beginning in Nov. and continuing through Feb. of 1969, NYC's Museum of Modern Art presented a show called "The Machine," which featured Rauschenberg's Pantomime and Oracle,* plus other art/technology works from E.A.T. and machine-oriented works by Futurists, Dadaists, Surrealists, Duchamp, and Piak.

1969 In Feb., the "Crosstalk" festival was held in Tokyo, with Events, Theatre Pieces, and multiple projection Environments by Japanese and American artists, including VanDerBeek.*

In London, Mark Boyle presented various displays combining slides, films, and videotapes of such subjects as insects and microorganisms with lights, dancers and/or rock musicians. Two representative pieces were Liquid Line Projection and Journey to the Surface of the Earth.

Frank Gillette and Ira Schneider constructed Wipe Cycle, a video sculpture with a camera, nine monitors, and two VTR playback decks. The center screen alternated broadcast TV and live feedback, the four corner monitors were delayed closed-circuit shots of the viewers, and the other four monitors showed videotape images. Images alternated among the monitors and were periodically interrupted by a rapid "wipe cycle."

In 1965 Jud Yalkut had become resident filmmaker for USCO; in March 1969, at Oneonta, New York, he presented Dream Reel on Yukihisa Isobe's 50-foot diameter, floating, parachute screen. The presentation was divided into three sections: (1) Piakpieces featured films of video distortions done by Yalkut and Piak; this section ran fifteen minutes with five 16mm projectors (one with sound on film), four Carousel slide projectors, and a stereo tape of Takehisa Kosugi's Dharma No. 8, (2) Festival Mix used three 16mm projectors, four slide projectors, and a 4-track tape called "Festival Mix Tape" by Andy Joseph and Jeni Engel; this section was a remixed replay of an 11-channel presentation, which was originally given at the 1968 University of Cincinnati Spring Arts Festival, and images and sounds came from all aspects of the avant-garde world, (3) Mix-manifestations utilized five 16mm projectors, two 8mm projectors, four slide projectors, and two 4-track audio tape systems. The images and sounds were a collage of widely diverse realistic and abstract images.

Svoboda's production of L. J. Werle's The Journey opened at the State Opera in Hamburg on March 2nd. This play concerned Nazi occupation of

Bohemia and tragedies which resulted from this occupation. Stationary rear projection cubes were used in this presentation, with each cube using four slide projectors to show just one large, composite image. This projection method was used to preserve maximum image brightness and clarity in each large slide image.

On March 23rd, Svoboda's production of The Soldiers opened at the State Opera in Munich; this play used fifteen projection boxes.*

NEA's Department of Audio Visual Instruction (DAVI) held a convention in Portland at which they had their first Multi-Image Festival; these programs (mostly done by U.S.C. students) were well received by the convention delegates and have remained a regular DAVI (now AECT) feature, being taken over in 1975 at the convention by the Association for Multi-Image (AMI).

In March or early April, Richard Glendening, a teacher at Harry H. Gunn Senior High in Palo Alto, California, helped students coordinate a multi-media presentation on Man and Power; this show used films, slides, overhead projections, audio tape, and dancers.*

In May, the Howard Wise Gallery in NYC presented "Television as a Creative Medium," the first show of television and video tape as art. The highlight of the exhibition was Nam June Piak's TV Bra for Living Sculpture, in which Charlotte Moorman (nude except for two tiny Sony television sets on her breasts) played a cello which interferred with the images of Dick Cavett on her breast sets.

Milton Cohen, of the ONCE group in Ann Arbor, presented Centers: A Ritual of Alignments in his Space Theatre. This work, similar to many of Cohen's pieces which have been developed and presented in Ann Arbor since about 1958, used film, slides, and strobe projectors to throw abstract circu-

lar images on the walls of the room and on eight revolving triangular screens.

On the 16th of May, Cage presented his 5-hour marathon of sights and sounds, HPSCHD, at the University of Illinois. Later, variously modified versions of this work were done in Albany, San Francisco, Berlin, and London, with the most recent performance on May 31, 1975, at the Brooklyn Academy of Music, with six harpsichords, forty slide and six film projectors, sixteen channels of tape, and 6,000 slides.*

1970 Rudi Stern and John Reilly opened the Global Village--a Video Environment for experimental works--in NYC.*

Expo 70 was held in Osaka from March 15th - Sept. 13th featuring such technical wonders as the Fuji Air Dome, the "Astrorama" projection Environment, and multi-screen displays in several of the pavilions.*

In the Soviet Union, the 20-minute Our March was made under the direction of Alexander Shein and Alexander Svetlov. This 70mm spectacle made grand use of multiple imagery in varying sizes, numbers, and formats, combining new color footage with color and monochrome footage from older films. While multiple imagery has been used in several recent American films, only Woodstock (1970) and Let the Good Times Roll (1973) matched the complex visual montage of Our March.

Bing Crosby Enterprises and TransLux Theatres opened the first of the permanent commercial multimedia theatres, the San Francisco Experience. Using over two dozen slide and film projectors, special effects projectors, and quadraphonic sound, these theatres have been able to provide an entertaining use of multimedia programs for residents and tourists of San Francisco, New York, Honolulu, Chicago, New Orleans, and Boston. Sen-

sual stimulation is emphasized in these presentations, while the content is Chamber of Commerce rhetoric.*

In addition to the DAVI Multi-Image Festival held at the annual convention in Detroit, there were also examples of Environmental learning areas. Everett McDonald and Harry Dinlocker presented a room with projection surfaces on all sides of the learning environment; Creative Center Inc. showed a plastic, inflatable room with rubber floors, polyethelene tubular devices that contained seven projection areas, twenty-one slide projectors, an air compressor to keep the room up, and a multi-track recorder/programmer to provide sound and operate the projectors. Construction costs of the latter room were $3,500-$4,000, with an extra $2,500 for the programmer. Popularity of these inflatable projection environments was quite high during this period, but soon waned. Some permanent facilities survived, though, including "The Egg," a 26-projector, quad-sound octagon at the School of Communication, University of Texas at Austin.

The mammoth exhibit of the history of Caracas, "Imagen de Caracas," was held in that Venezuelan city. Thousands of slides, films, and photographs were contained in the huge building.*

1971 In Jan., Stephen Beck and Richard Felciano made Point of Inflection, a color abstract video tape. This represented the first coherent audio-visual work in which both the images and sounds were produced with direct electronic synthesizers. The video synthesizer used was Beck's invention.

In April, Svoboda presented Paul Dessau's opera Lancelot. Many front and rear projections were shown on an ugly machine which also held the actors.

Also in April, Svoboda's exhibit Noricama was presented in the Nuremberg Castle to honor the 500th anniversary of Albrecht Durer's birth. Svoboda's 10-minute, 10-screen show was on the history of Nuremberg and featured five rectangular panels that together comprised a screen 13' x 36'. Any or all of these panels could move up to twelve yards forward, retaining their images. In front of these screens were four horizontal screens that could flip up to receive an image. Each panel in the display could show a separate image or part of one large one; 4-channel audio accompanied the presentation.

In June, Radiz Cincera premiered a 4-screen film, The Sound Story, at the "Man and His World" fairground on the Expo '67 site in Montreal. This short film used simultaneous visuals of people in different situations all sharing the same stereo sound track.

Composer David Rosenbloom presented the concert Ecology of the Skin, in which alternating groups of ten people were "plugged in" to a system in which brain waves were read by a computer, fed into an audio synthesizer, amplified, and broadcast to provide a constantly-changing symphony of celebral tones.

During the summer, Eric Salzman and his wife toured South America presenting multimedia programs with film, slides, audio tape, live musicians, and live performers recruited at each stop. Mostly they were using Salzman's Feedback, which contained film and slides from VanDerBeek.

1972 In Jan., the Experiment Theatre opened in Austin, Texas, as the first attempt to present multimedia programs in the context of dramatic narrative. The locally-produced programs were not too good, neither was public reaction, and this fine idea soon gave way to being a second-run movie house.

In Feb., the Brooklyn Chelsea Theatre Center began a production of Kaddish, adapted by Robert Kalfin from a poem by Allan Ginsberg eulogizing his mother. This tremendously powerful work about Naomi Ginsberg's gradual madness and death is made even more powerful with the addition of video tape images prepared by Video Free America.

Also in Feb., a group of twenty-six women artists from the California Institute of the Arts turned an existing house in Los Angeles into the Environment "Womanhouse." Through the arrangement of mannequin figures and household objects, the artists dramatized the dilemma of the contemporary woman locked in her social role.

During the summer in Hartford the Wadsworth Atheneum museum operated a Tactile Gallery for the blind. Designed by Gregory Kepes of M.I.T.'s Center for Advanced Visual Studies, the room provided smells, sounds, and textures. One of the most intriguing exhibits was the sound floor, in which there were sixty-two boxes, thirty-four of which produced electronic music sounds when stepped on.

On May 4th, Gerd Stern, Michael Callahan, and others presented "One-Two-Three-Fourever" at Harvard's Carpenter Center. This slide/tape/film mixture of approximately one hour served as a retrospective summary of the USCO projects of the past decade.

In early Nov., Intermedia Systems completed work on a large underground Environmental room and visitor center for the New England Power Company at Rowe, Mass. on the Deerfield River. Other Environmental rooms were done by Intermedia Systems for the Sea Pines Plantation, Hilton Head Island, South Carolina, and the Underwater Explorers Society in Freeport, Bahamas.

1973 N. V. Philips' Gloeulampenfabrieken, in conjunction with L. C. Kalff, L. L. J. deBaver, James Gardner, and J. Kleiboer, constructed a mammoth flying saucer-shaped exhibition hall in Eindhoven, Holland. Technology and its impact on society were the main themes of the hundreds of displays honeycombed through the building, most enhanced in some way by audiovisual devices and some multi-imagery.

On Sept. 21st and 22nd, in NYC's Museum of Modern Art sculpture garden the Elaine Summers Dance and Film Co. performed Energy Changes, a 3-hour program of music, dance, and film.*

1974 In Portland, Walter Landor Associates unveiled their Ecosphere at the General Electric Visitor Information Center of the Trojan Power Plant. Housed in a quarter hemisphere is a 70mm film projected onto a triangular screen. Mirrors on the sides and floor give a feeling of complete spherical film involvement to spectators, who stand on a ramp rimming the screen.

On May 1st, Expo 74, "Man and His Environment," opened in Spokane, Washington, and ran until Nov. 4th. The U.S. had the largest pavilion, housing an 850-seat theatre for Paramount's huge projection of a 70mm documentary, Man Belongs to the Earth. Other major media pavilions were: Washington State, where the 70mm film About Time (featuring a large tree and a woman who grows from infancy to maturity in twenty minutes) was rear-projected for 300 people at a time on a 23' x 50' screen with 40' mirrors on the side walls to create infinity effects when their covering black curtains were removed; Republic of China, featuring Electrovision's 20-minute "The Taiwan Experience" with twenty-eight Ektagraphic slide projectors in seven quad matrices, and three 16mm Pageants giving a 3:1 panorama on a 70-foot 180° screen; Soviet Union, with four 70mm multi-

image panoramic ecology films; Union Pacific's 360° slide show about its train territory; Burlington Northern's documentary Portrait of a Railroad; Czechoslovakia's Kino-Automat; Kodak's 12' x 36' multi-image slide show of American landscapes; British Columbia's entrance tunnel of mirrors followed by five rooms of double- and single-image slide projections, real and mirrored views of the fair, ceiling film and slide projections onto floors and table tops, and the final 7-screen theatre; Australia's 24-screen slide, film, and video ecology show seen from a revolving platform; the Iranian multi-screen show "The Great Harmony," about Iran; Ford's semi-documentary film; Montana's 3-screen slide panoramas of natural beauties; Japan's 3-screen Land and Man; Pacific Northwest Bell's 5-screen slide show on "Movement"; West Germany's 18-image "You We Us"; the Republic of the Philippines' 9-screen show done from eighteen suspended slide projectors; and the U.S. Environmental Action Center's 18-screen show on government action to protect the environment.

During the summer the Association for Multi-Image was formed as an affiliate of AECT. AMI's Board of Directors is composed of multi-image experts from education, business, and industry; the purpose of the organization is to define, expand, promote, and share knowledge and achievements in the full scope of multi-image activity, thus providing the vital need for direction in this field. Accomplishments of AMI have included direction of national Multi-Image Festivals and workshops, publication of books and a quarterly journal, sponsorship of a national convention, and work toward achieving technical and presentational standards.

1975 On Feb. 21st and 22nd at Manhatt.n's Kitchen (a video theatre), Alvin Lucier presented his "Still and Moving Lines of Silence in Families of Hyperbolas," featuring Lucier producing synthesizer music, Joan LaBarbara

singing with and counterpointing the electronic sounds, and Viola Farber and her seven dancers moving through the space, seeking the aural valleys of the audio from the circle of speakers. Assistants also tuned snare drums to capture resonance from the speaker sound. This work, and other performer/electronic interfaces done by such artists as Joan Jonas, represent a limited but recurrent extension into the 1970s of such experiments in electronic performance as the Electric Ear series of 1968.

1976 For the U.S. Bicentennial, Alexander Nesbitt designed and Richard Wayne Dirkson composed music for "The American Adventure," a 50-minute capsule of 350 years of American history. Using sixty-four slide projectors, four film projectors, 5200 images, a 70' x 12' curved screen, and 112 speakers of quadraphonic sound, the show utilized much original material from the U.S. Patent Office, the Library of Congress, and the National Archives. Housed in the National Heritage Theatre, this gigantic production is important to students of multi-imagery because it is a permanent, noncommercial display available for public viewing.

APPENDIX B

Multimedia Programmers and Dissolvers

By Leendert Drukker and David Steigman

Multimedia Programmers & Dissolvers

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Multimedia projection combines impact with flexibility. Even the simplest setup avoids the pedestrian slide/black-out/slide pace that has hypnotized too many viewers into deep sleep. Long shots and closeups and different aspects can be presented simultaneously: their sum is actually greater than the parts. And unlike film, one is not tied to an inflexible ribbon: slides can be switched, shows can be tightened and updated. With the proper equipment and talent, cuts, pops, fades, dissolves, flashes, multiscreen panoramas with wipes all across will keep any audience awake, and their senses sharpened.

In this survey of the multimedia programmers and dissolvers that make such effects possible, we've tried to derive some order out of a chaotic picture. The potential user can't possibly know all that's available--and even if, miraculously, he did, the various units would be difficult to compare. The information on the following pages is limited to the basics, trimmed of frills. The data has been obtained from the suppliers themselves, and in many cases it must have been difficult for them to whittle down their complex specifications to such an inflexible format. The check marks show that the supplier reports that the unit has the indicated feature; a blank, that he hasn't said so.

We've strictly limited ourselves to multimedia programmers, not single-projector synchronizers, which are legion and readily obtained from consumer outlets. We've been quite rigid about this, even leaving out one that could trip three projectors, but only simultaneously.

The basic information includes whether or not the unit has a built-in program recorder, and the signal source--magnetic tape cassette, 8-track cartridge, per-

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forated paper tape, perforated card, or whatever. Both magnetic tape and perforated tape or cards allow for a change of mind, updating, or corrections. With the magnetic medium, signals can be erased or added by recording, while perforations can be patched up or subsequently punched in.

A memory allows one to store cues and build up a program piecemeal, rather that in real time, which often proves to be a hectic undertaking. However, perforated tape--or cards--serve in a sense as their own memory. The cues can easily be read visually.

For magnetic tape, we also list the number and frequency of signals, and whether or not they are digitally encoded. The latter feature helps avoid slip-ups with the more complex multipulse machines. Without digital coding, a slight variation in tape speed might confuse one frequency pulse for another, causing one projector to advance where another should have.

Of course, we also list the number of projectors that can be individually controlled, their maximum power, and the functions that can be activated: slide advance (obviously), reverse, lamp on-off, and program on-off. In some cases, machines have auxiliary controls, that may be used to dim lights, open the screen curtain, start and stop a movie projector, etc. Also given are the weight and price, though the latter may vary greatly with options. The last, right-hand column shows whether or not the unit has a built-in dissolver. If it has, the details appear in the dissolver table.

The latter, again, shows the numbers of projectors handled, their maximum power, and the number of dissolves and their ranges. The function column shows whether the dissolver can produce such effects as animation, flashing, alternating and dissolves to superimpose and/or black. Again, weight and price are given, and the final column indicates whether a programmer is built-in, as a double cross-reference. Prices have been rounded to the nearest dollar, weights to the

nearest larger pound, and sizes to the nearest larger inch. Listings in the column "Unusual features" are those provided by suppliers; features listed for one unit are not necessarily lacking in another. The addresses of the suppliers are listed in the tables.

Obviously, these tables can only serve as an introduction, permitting the reader to make a logical selection of those models that are most likely to fill his or her needs.

PROGRAMMERS

Supplier	Model	Program recorder built in	Program carrier	Pulse(s) (Hz)	Digitally encoded	Memory provision	Projectors: No.	Projectors: Max. power each (W or A)	Functions: Adv.	Functions: Rev.	Functions: Lamp on-off	Functions: Prog. on-off	Special features	Wt. (lb)	Price ($)	Dissolver built-in
Arion Corp. 825 Boone Ave. No. Minneapolis, MN 55427	903	✔	Electronic memory	None	✔		3	1200	✔	✔	✔			12	1845	✔
	832		Micro type	None	✔	✔	32	1200	✔	✔	✔			12	5020	
	909		Electronic memory	None	✔	✔	9	1200	✔	✔	✔		24 auxiliaries	15	1900	
Audio-Sine, Inc. 3415 48 Ave. No Minneapolis, MN 55429	Pro-Show Commander 6DS-200	✔	8-track cartridge	None	✔		6	500	✔		✔	✔	Built-in stereo recorder/ player, individual fade/ dissolves, 2 speakers, case	31	3975	
Audio-Visual Dynamics 92 Stuyvesant Ave. Newark, NJ 07106	Son A Mate SM-3	✔	Nat. Assoc. Broadcasters standard broadcast cartridge	1000 1350			2	750	✔	✔	✔		Built-in stereo player	16	695	
	Son A Mate SM-4	✔	Same as above	1000 1350			4	750	✔	✔	✔		Built-in stereo player	16	795	
	Audio Sell 2001	✔	8-track cartridge	1000 1350			2	500	✔		✔		Audio player mounts below projector optional accessory dissolve	11	330	
Audio-Visual Labs., Inc. 500 Hillside Ave. Atl. Highlands, NJ 07716	PD 2				✔		2	1500	✔	✔	✔	✔	Requires tape recorder		995	✔
	PD 3				✔		3	1500	✔	✔	✔	✔	As above		1495	✔
	Show Pro V	✔	Micro computer		✔	4000 cues	15	1500	✔	✔	✔	✔	Built-in dissolver, reverse; with Mark VII power packs	22	8995	✔
	Show Pro III	✔	Micro computer		✔	1000 cues	6	1500	✔	✔	✔	✔	Same as above; with 3 Mark IV power packs	20	4895	✔
	Show Pro II	✔	Perforated paper tape				15	1500	✔	✔	✔	✔		25	2695	
	MP 10	✔	Micro computer		✔	1000 cues	10	1500	✔			✔		13	1195	
	Acuetone			200 400 800 1600 3200			12	1500	✔					8	795	
Audio Visual Svces., Inc. 2 West 45 St. New York, NY 10036	AVS-316		Stereo tape recorder	330 640 1240 2400 3120			5		✔	✔	✔	✔	Can be pulsed in any combination simultaneously; remote programming; relays for 1 amp	5	525	
	AVS-450-24		Perforated paper tape or magnetic tape		✔		24	1200	✔	✔	✔	✔	Preview punch; 15 auxiliary channels		7200	
	AVS-435		Optical or magnetic tape recorder	(300-3000)			2	1200								✔

PROGRAMMERS

Supplier	Model	Program recorder built in	Program carrier	Pulse(s) (Hz)	Digitally encoded	Memory provision	Projectors: No.	Projectors: Max. power each (W or A)	Functions: Adv.	Functions: Rev.	Functions: Lamp on-off	Functions: Prog. on-off	Special features	Wt. (lb)	Price ($)	Dissolver built-in
Buhl, Inc. 5 Paul Kohner Pl. Elmwood Pk., NJ 07407	Programma-Buhl 1400	✔	Tape cassette	150 1000	✔	✔	2	3A	✔			✔	Monaural recorder resume button, remote resume	4	207	
Clear Light Prods., Inc. PO Box 391 Newton, MA 02158	Diamond Memory	✔	Electronic memory		✔	✔	6	300	✔		✔	✔	Automatic timing, electronic editing; handles modified 1200 W projectors; controls 3 auxiliaries	5	975	
	Diamond Programmer		Cassette or reel tape recorder		✔	✔	2	300	✔		✔	✔	Triggers two advance only projectors (not incl.); can hold, change, reverse dissolves in progress	7	1175	✔
Columbia Scient. Indust. PO Box 9908 Austin, TX 78766	Media Master 375 R		Stereo tape recorder	200 400 800 1600 3200			5		✔			Opt.	Relays for projector control	6	330	
	Media Master 395		Stereo tape recorder	as above			19		✔			Opt.	Relays for projector control; adjustable simultaneous functions	9	1090	
Comm. Control Co. Box 707 Laguna Beach, CA 92651	Comcon II	✔	Tape cassette		✔	✔	6	300	✔	✔	✔	✔	Preview before encoding	18	3575	✔
Dukane Corp. 2900 Dukane Dr. St. Charles, IL 60174	Electronic Programmer 9A1070		Perf. paper tape				8	300	✔	✔	✔	✔		58	800	
EEG Enterprises, Inc. 82 Rome St. Farmingdale, NY 11735	Cue Commander C 104	✔	Tape cassette 8-track cartridge	1500 1800 2200 2700			4	1500	✔					3	369	
	Cue Commander II C 204	✔	Tape cassette 8-track cartridge	3900 4700 5600 6800			4	1500	✔					3	369	
Electronic Designers, Inc. 372 Vanderbilt Mot. Pkwy. Hauppauge, NY 11787	MMP-10	✔	Tape cassette 8-track cartridge	100 550 3000			3	5A						5	199	
	MMP-20B	✔	Tape cassette 8-track cartridge	1200 1500 1900 2300			4	5A					Expandable to 12 channels by using optional Models A and C; optional alternating switch PS-11	7	345	

PROGRAMMERS

Supplier	Model	Program recorder built in	Program carrier	Pulse(s) (Hz)	Digitally encoded	Memory provision	Projectors No.	Projectors Max. power each (W or A)	Functions Adv.	Functions Rev.	Functions Lamp on-off	Functions Prog. on-off	Special features	Wt. (lb)	Price ($)	Dissolver built-in
Electrosonic Systs., Inc. 4575 West 77 St. Minneapolis, MN 55435	ES 88	✔	Tape cassette 8-track cartridge		✔		16		Depends on dissolve units				Push buttons generating time division; can record or replay real- or half real-time cue track	14	975	
	ES 361		8-track cartridge	150 1000			2		Same as above				Monaural audio player, stereo optional	18	550	
	ES 3681				✔		16		Same as above				Monaural audio player, stereo optional; auto present unit with built-in 8-function program decode; automatic control of system reset and power shut-down control.	21	17,850	
The Klitten Company 1221 Ocean Ave. Santa Monica, CA 90401	Dual Cue Slide Model D 2205		Any stereo tape recorder	From 60 to 3200			2	500	✔	✔	✔	✔	By using 2 dissolvers (not included), 4 projectors can be handled		190	
Mackenzie Labs., Inc. 5507 Peck Rd. Arcadia, CA 91006	Tri-Tone TT-1			100 400 1600			6	1200	✔					7	369	
The Millers/Sountage 1896 Maywood Rd. South Euclid, OH 44121	Sountage Multiprojector Tape-Slide Synchronizer		Any stereo tape recorder	60/120 2 kHz 5 kHz			3		✔				4 projectors optional; 10 kHz pulse optional	3	150	
	Sountage Lap-Dissolve Unit		As above	60/120					✔		✔					✔
	Sountage Auto Dissolve Unit		As above	60/120 2 kHz 5 kHz					✔		✔					✔
Modern Media Rte 3, Box 748 Apache Junct., AZ 85220	Super Nova		Perforated paper tape			✔	12-32	400	✔				Expandable projector capacity in increments of four	7		
	Nova		Perforated paper tape				8	400	✔				Manual-sync, radio remote (optional)	7		
Optisonics HEC Corp. 1802 West Grant Rd. 101 Tucson, AZ 85705	Sound-O-Matic Universal 10-6401-01	✔	Tape cassette recorder	150 400 1000			2	500	✔				Monaural audio recorder/ player	5	299	
Oregon Images PO Box 3122 Eugene, OR 97403	Entré Dissolve-Programmer 7600		Any stereo tape recorder	1000 1500			2	500	✔		✔		Single-dial function control; built-in dissolver	4	275	✔
RMF Products, Inc. PO Box 413 Batavia, IL 60510	275 Image Blender			1500 to 4500					✔	✔						✔
	325 Image Blender			1000					✔							✔

PROGRAMMERS

Supplier	Model	Program recorder built in	Program carrier	Pulse(s) (Hz)	Digitally encoded	Memory provision	Projectors: No.	Projectors: Max. power each (W or A)	Functions: Adv.	Functions: Rev.	Functions: Lamp on-off	Functions: Prog. on-off	Special features	Wt. (lb)	Price ($)	Dissolver built-in
Spindler and Sauppé 13034 Saticoy St. No. Hollywood, CA 91605	Mini-Q 2031			1200 1500 1850 2250			4	Any	✔	✔	✔	✔		3	350	
	Media Mix 780	✔	Perforated paper tape	1000			18	Any	✔	✔	✔	✔		10	1695	
	Quadra Que I 2021			1200 1500 1850 2250			4	Any	✔	✔	✔	✔	Built-in power relay	9	550	
	Director 24 System	✔	Data tape cartridge	1000	✔	✔	48	Any	✔	✔	✔	✔	Control console only	20	4500	✔
	Selectro-Q Dissolve 1042 Dynamic Que Dissolve772Q			850 1000 1200 1500 1850 2250			2	1200	✔	✔	✔					✔ ✔
Spiratone, Inc. 135-06 Northern Blvd. Flushing, NY 11354	Pro/Show Sight 'N Sound Director Model 500		Any stereo tape recorder/player	1000			2	650	✔		✔		Dissolve cue is recorded on stereo track on playback; manual reverse		200	✔
T.A.G. Photographic, Inc. 800 Shames Dr. Westbury, NY 11590	Varidia 9 Channel Programmer			320 to 4000			18	500	✔	✔	✔	✔		2	1295	
Teaching Dynamics, Inc. 4441 Main St. Philadelphia, PA 19127	TD 201 Record/ Playback	✔	Tape cassette	120			2	500	✔			✔	Monaural audio recorder/ player; projector mounts on top; contains microphone and pulser	11	355	
	TD 101 Record/ Playback	✔	Closed-loop cartridge (4 track)	150			2	500	✔			✔	Monaural audio recorder/ player; projector mounts on top	11	329	
Technamics Company 2232 Gardner Station St. Louis, MO 63109	Intensicoder Programmer IC-75-A		Tape cassette; 8-track cartridge; tape reel	250 500 2500 5000			2	1200	✔	✔	✔	✔	Internal dimmer circuits; manual override for advance and reverse	2	485	
Telex Commun., Inc. 9600 Aldrich Ave. South Minneapolis, MN 55420	Audio-vue Controller 828	✔	Tape cassette recorder				2	Total of 1500	✔	✔	✔		Wireless push-button remote	10	490	

PROGRAMMERS

Supplier	Model	Program recorder built in	Program carrier	Pulse(s) (Hz)	Digitally encoded	Memory provision	Projectors: No.	Projectors: Max. power each (W or A)	Functions: Adv	Functions: Rev.	Functions: Lamp on-off	Functions: Prog. on-off	Special features	Wt. (lb)	Price ($)	Dissolver built-in
Tempo Audivision, Inc. 290 Larkin St. Buffalo, NY 14210	AV 600 Multivision		Perforated paper tape			✔			✔	✔	✔	✔	Expandable system; number of projectors variable; can read, store up to 800 channels of information per sec. Optional accessories include cartridge sound control units, dissolvers	40		
Tiffen Mfg. Corp. 71 Jane St. Roslyn Hghts., NY 11577	711	✔	Tape cassette	150 1000			2		✔			✔	Audio player; with stop tone, 1 projector advance	6	170	
	7300	✔	Tape cassette	50 150 1000			3		✔			✔	Monaural audio recorder/player; with stop tone, 2 projector advance	6	225	
Trius Corp. 1016 Morse Ave. Sunnyvale, CA 94086	Slide-Glide Mark IV-B (Dissolver)			480	✔		2	500	✔							✔
United Audio Visual Corp. 1730 Mojave Rd. Las Vegas, NV 89104	UAV Audio Cuemaster Q-20		8-track cartridge; tape cassette or reel	3,000 to 4,000	✔		1200	Any	✔	✔	✔	✔	Interfaces to U.A.V. Mark 60-40	24	1600	
	UAV Cuemaster Mark 60-40		Perforated paper tape	960		✔	1200	Any	✔	✔	✔	✔	Capable of cueing 600 devices per second	34	3900	
	Q-4 Dissolver		Tape cassette; 8-track cartridge; reel-to-reel	1,000 1,200 1,500 1,850			2	750	✔	✔	✔	✔	Part of dissolver system			✔
Video Specialties Box 136 Solana Beach, CA 92075	Multi-Media Automation System MMA-32		Computer control operated by time sequence			✔	32		✔	✔	✔	✔	Computer control of 256 events; remote control of 36 machines with TTL interface; and 32 variable or selectable devices; long-storage memory	50	about 10,000	
Visual Horizons 208 Westfall Rd. Rochester, NY 14620	Visual Horizons Dissolve Control 320/VR		Remote			3 memory	2	500	✔	✔	✔	✔		7		✔
Wollensak 3M Corp. PO Box 33600 St. Paul, MN 55133	Wollensak Sync II 2573 AV	✔	Tape cassette	150 1000			2	600	✔				Monaural audio recorder/player; with AV-33 dissolver can program 3 dissolve rates	18	540	
	Wollensak Micro-Pro 40		8-track cartridge, tape cassette or reel		✔	✔	32	600	✔				8 auxiliary channels; programmable time intervals; editing; manual remote	10	2870	
	Wollensak Digi-Cue Pro-6Q		8-track cartridge, tape cassette or reel					600	✔	✔			Stereo recorder/player; with dissolvers (not included) can handle 12 projectors	5	830	
	Wollensak Digi-Cue Pro-9Q		8-track cartridge, tape cassette or reel		✔		9	600	✔	✔			Stereo recorder/player; with dissolvers (not included) can handle 18 projectors	5	1100	

DISSOLVERS

Supplier	Model	Projectors: No.	Projectors: Max. power ea. (W)	Dissolve rates: Settings	Dissolve rates: Ranges (sec)	Functions: Animation	Functions: Flashing	Functions: Alternating	Functions: Dissolve to superimposure	Functions: Dissolve to black	Special features	Size (in.) WxDxH	Wt. (lb)	Price ($)	Programmer built-in
Arion Corp. 825 Boone Ave. No. Minneapolis, MN 55427	903	3	1200	5	Cut, 1, 2, 4, 8	✔	✔	✔	✔	✔	Built-in electronic memory; plug-in mini key board	12x10x12	12	1845	✔
	904	2-4	1200	5	Cut, 2, 4, 8, 16	✔	✔	✔	✔	✔	Modular	11x9x7	11	1072	
Audio-Sine, Inc. 3415 48 Ave. No. Minneapolis, MN 55429	Pro-Show Commander 6DS-200	6	500	3	⅛, 2, 4		✔	✔	✔	✔			31	3975	✔
Audio-Visual Dynamics 92 Stuyvesant Ave. Newark, NJ 07106	Dynamic Dissolve	2	500	2	Cut, 2 to 20		✔				1000 Hz programmer $100 extra	11x11x6	11	349	Optional
Audio Visual Labs., Inc. 500 Hillside Ave. Atl. Highlands, NJ 07716	PD 2	2	1500	4	Cut, 2, 4, 8	✔	✔	✔	✔	✔	Microcomputer controlled			995	✔
	PD 3	3	1500	8	Cut, 1, 2, 4, 8, 16, 32	✔	✔	✔	✔	✔	Microcomputer controlled			1495	✔
	Mark II	2	1500	2	Cut, 2 to 60	✔		✔				11x11x3	10	365	
	Mark IV	2	1500	4	Cut, 2, 4, 8 to 60	✔	✔	✔	✔	✔	Independent projector control	11x9x3	19	795	
	Mark VII	3	1500	4	Cut, 2, 4, 8 to 60	✔	✔	✔	✔	✔	Independent projector control	17x9x3	22	1295	
Audio Visual Svces., Inc. 2 West 45 St. New York, NY 10036	AVS 450-1215	12	1200	6	Cut to 60	✔	✔	✔	✔	✔	Lamp switching modules			5400	
	AVS 425	2	1200	3	Cut, 3, 3-10		✔	✔				10x10x4	5	525	
	AVS 435	2	1200	5	Cut to 30	✔	✔	✔	✔	✔	2 lamp switching modules	12x12x4	9	950	✔
	AVS 440	2	1200	8	Cut to 60	✔	✔	✔	✔	✔	Lamp switching modules for each projector, two included	12x11x4	5	650	
Clear Light Prods., Inc. PO Box 391 Newton, MA 02158	Diamond Dissolve	2	1200	5	Cut, 1, 2, 4, 8	✔	✔	✔	✔		Can hold, change, and reverse dissolves in progress	7x12x4	4	385	
	Pocket Diamond	2	300	5	Cut, 1, 2, 4, 8	✔	✔	✔	✔		Built-in dissolve; 2 Pocket Carousel projectors; cassette tape deck; screen; speaker; amplifier	21x14x9	40	1495	
Columbia Scient. Indust. PO Box 9908 Austin, TX 78766	Media Master 400	2	500	2	Cut, ¼ to 10						2 rates can be programmed with a single tone cue; setup and standby modes	9x9x3	8	335	
	Media Master 405	2	500	1	¼ to 12						Integral timer	8x8x3	4	275	
	Media Master 410	2	1200	4	Cut, 2, 4, 8-32	✔	✔	✔	✔	✔	Memory of up to 3 program cues	11x16x5	9	895	
Eastman Kodak Company 343 State St. Rochester, NY 14650	Kodak EC-K Dissolve Control	2	600	Variable	¼ to 5						Fits one slide tray; automatic timer, 6-18 sec.	10x7x3	4	350	✔

DISSOLVERS

Supplier	Model	Projectors: No.	Projectors: Max. power ea. (W)	Dissolve rates: Settings	Dissolve rates: Ranges (sec)	Functions: Animation	Functions: Flashing	Functions: Alternating	Functions: Dissolve to superimpose	Functions: Dissolve to black	Special features	Size (in.) WxDxH	Wt. (lb)	Price ($)	Programmer built-in
EEG Enterprises, Inc. 82 Rome St. Farmingdale, NY 11735	Dissolve Director D 102	2	1200	4	Cut, 2, 4, 8	✔	✔	✔	✔		Requires 4 channels of control, 7 different performance functions	9x7x4	4	479	
Electrosonic Systs., Inc. 4575 West 77 St. Minneapolis, MN 55435	Multivision Processor	1	1200	8	Cut to 30	✔	✔	✔	✔	✔	For Carousel Ektagraphic; microprocessor built into each unit	9x2x6	5	575	
	ES 3609 Presentation Unit	2	1200		Inf.	✔	✔	✔	✔		Two cases; includes audio cassette deck (A/V), amplifier, speaker dissolve	32x15x8	60	1850	✔
	ES 69 Q Slide Dissolve Unit	2	1200		Inf.	✔	✔	✔	✔		Infinite dissolve speeds controllable by operator; repeatable if recorded on magnetic tape	13x13x4	14	580	✔
	ES 3004 2-Projector Dissolve Unit	2	1200	6	Cut to 12	✔	✔	✔	✔		Reverse and reverse dissolve	13x12x4	13	715	
E. Leitz, Inc. Rockleigh, NJ 07647	Animatic Convar-Mark IV 98830	2	1000	Inf.	Variable		✔	✔	✔	✔	Unlimited rate of dissolves and fades	10x10x3	4	519	
Mackenzie Labs., Inc. 5507 Peck Rd. Arcadia, CA 91006	Adjusto-Dissolve AD-2/ADX-3	2	1200	3	Cut to 10	✔	✔	✔	✔		Separately adjustable on-off rates	6x9x10	8	524	
The Millers/Sountage 1896 Maywood Rd. South Euclid, OH 44121	Sountage Lap-Dissolve Unit	2	500	3	Cut to 10		✔		✔		Slide sync with stereo tape recorder	8x10x4	4	250	
	Sountage Auto-Dissolve Unit	2	500	3	Cut to 8				✔		Operates with stereo tape recorder	6x10x4	4	450	
Modern Media Rte. 3, Box 748 Apache Junct., AZ 85220	Super Nova	2	400	5	Cut to 10	✔	✔	✔	✔	✔	3 preset dissolve rates; 2 available rates	9x7x4	5		
	Nova	2	400	1	Cut to 10						Combination cut or dissolve in same unit	9x7x4	5		
Optical Radiation Corp. 6352 No. Irwindale Ave. Azusa, CA 91702	Xenographic 512	2	5500	Variable	¼ to 6				✔	✔	Single xenon high-intensity light source for both projectors. Includes two projectors, lamphouse, external power supply	18x41x20	180	5995	
Optisonics HEC Corp. 1802 West Grant Rd., 101 Tucson, AZ 85705	Dissolve "Pro" 10-5801-05	2	600	2	½ to 10		✔	✔						275	
Oregon Images PO Box 3122 Eugene, OR 97403	Entré Dissolve-Programmer 7600	2	500	Inf.	½ to inf.	✔		✔	✔	✔	Infinitely variable dissolve rate combined with analog programmer	5x8x3	4	275	✔
RMF Products, Inc. PO Box 413 Batavia, IL 60510	225 Image Blender	2	500	Variable	½ to inf.	✔	✔	✔	✔		Manually operated, any rate of dissolve	7x6x3		140	
	275 Image Blender	2	500	Variable	½ to inf.	✔	✔	✔	✔		Remote control has sliding control for any rate of fade	12x13x4	10	470	✔
	325 Image Blender	2	500	Variable	½ to 10	✔	✔	✔				7x8x3	4	200	✔

DISSOLVERS

Supplier	Model	Projectors: No.	Projectors: Max. power ea. (W)	Dissolve rates: Settings	Dissolve rates: Ranges (sec)	Functions: Animation	Functions: Flashing	Functions: Alternating	Functions: Dissolve to superimposure	Functions: Dissolve to black	Special features	Size (in.) WxDxH	Wt. (lb)	Price ($)	Programmer built-in
Geo. R. Snell Assoc., Inc. 155 US Rte. 22, East Springfield, NJ 07081	Telefader Twin 93-00-02	2 Xe or HMI	2500	3	Cut to 7		✔	✔	✔	✔	External dissolve for HMI or xenon high-intensity projectors	12x6x6	8	1225	
	Telefader Multiple 93-00-03	Any in groups of five	2500	3	Cut to 7		✔	✔	✔	✔	Same as above	12x5x6	8	1064	
Spindler and Sauppé 13034 Saticoy St. No. Hollywood, CA 91605	Director 24 System	4	Any	33	Cut to 31	✔	✔	✔	✔	✔					
	Selectro Dissolve 1032	2	1200	2	2½ to 4½	✔	✔	✔		✔	Sequential reverse	7x9x3	5	385	
	Selectro-Q Dissolve 1042	2	1200	2	2 to 4	✔	✔	✔		✔	Pulse frequencies 850 and 1000 Hz; automates cut, medium dissolve, alternate remote reverse	7x9x3	4	525	✔
	Dynamic Que Dissolve 772Q	2	1200	3	2, 4, variable	✔	✔	✔		✔	Sequential reverse	12x9x5	10	985	✔
	Dynamic Dissolve	2	1200	3	2, 4, variable	✔	✔	✔		✔		12x9x5	10	695	
Spiratone, Inc. 135-06 Northern Blvd. Flushing, NY 11354	Pro/Show Sight'N Sound Director 500	2	650	Inf.	Cut to 10	✔	✔	✔	✔	✔	Signal LED for setting level of cue playback full manual override	7x6x3	3	200	✔
	Pro/Show Director	2	300	Inf.		✔	✔	✔	✔	✔	Manually controlled variable dissolve; automatic slide advance after dissolve	7x6x3	3	100	
T.A.G. Photographic, Inc. 800 Shames Dr. Westbury, N.Y. 11590	302 Varidia	2		Variable	½ to 20	✔	✔	✔	✔	✔		11x6x3	5	482	✔
Technamics Company 2232 Gardner Station St. Louis, MO 63109	Master Dissolve Control MD-75-A	2	1200	Variable	½ to 30		✔	✔	✔	✔	Independent dimming and indexing control; auto or manual	7x6x4	2	385	
Trius Corp. 1016 Morse Ave. Sunnyvale, CA 94086	Slide-Glide Mark IV-B	2	500	Variable	Cut to 18	✔			✔		Dissolver and programmer in single box	8x5x3	3	390	✔
United Audio Visual Corp. 1730 Mojave Rd. Las Vegas, NV 89104	UAV Integra-Tone Q-4 Programmed Dissolve	2	750	4	Cut, 2, 4-15	✔	✔	✔		✔	Built-in programmer allows auto homing of slide trays	11x9x3	15	690	✔
	UAV Screenmaster Q-3	2	750	4	Cut, 2, 4-15	✔	✔	✔		✔	Cue-to-cue time of 1 sec	11x9x3	15	475	
	UAV Screenmaster Q-11	2	1500	5	Cut, 2, 4, 8-60	✔	✔	✔	✔	✔	Independent control of each projector lamp and slide tray advance; can control stage lighting	11x9x4	22	895	
Visual Horizons 208 Westfall Rd. Rochester, NY 14620	Visual Horizons Dissolve Control 320/VR	2	500	3	1 to 30				✔	✔	Remote control	12x6x3	7	500	✔
Wollensak 3M Corp. PO Box 33600 St Paul, MN 55133	Wollensak AV-33	2	600	3	0.5 to 6.8			✔			Three dissolve rates may be controlled by two programmer channels	10x7x3	5	410	
	Wollensak AV-32	2	600	2	0.5 to 2.6			✔			Maintains sync if cues spaced closer than dissolve time	10x7x3	5	350	
	Wollensak Exhibitor XR-100	2	600	3	0.5 to 6.8			✔		✔	Auto or button-activated operation; built-in cassette player, decoder, power control	17x9x9	18	1795	

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An Incredible Epic

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