

Robert Rauschenberg and Lucinda Childs discussing the capabilities of the theatre electronic environmental modulator (TEEM) system with Herb Schneider, L. J. Robinson, Per Biorn, and Billy Klüver. This is the first system of its kind ever developed for theatre use. TEEM is the most ambitious of the technical projects undertaken in connection with 9 Evenings.

9 evenings: theatre & engineering

Presented under the auspices of
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In cooperation with
EXPERIMENTS IN ART AND TECHNOLOGY, INC.

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9 evenings: theatre & engineering

Billy Klüver

One of the problems faced by the contemporary artist is that everyone knows what art is. The scientist, by comparison, has it easy; nobody, not even fellow scientists, would dare to claim total knowledge about science. A scientist is, in fact, trained to balance between having no preconceived ideas and accepting reality.

Today it seems incredible that only 50 years ago there existed a "right" science and a "wrong" science. Battles were fought and lost that now seem inconsequential. At a recent APS meeting I heard Feynman talk about the reversibility of time while he was playing bongo drums on the view-graph machine in front of an audience of 5,000. In the next room, another scientist was explaining that he had found a statistical correlation between the menstrual cycle in women and the period of the moon. His audience was 10.

Contemporary art is in somewhat the same position as science was during the explosive years between 1900 and 1910. Millions of people have become aware of contemporary art. For some art is an argument, an insult, a joke, a toy, a pastime or a sacred object. Art has become something to practically everybody. With the result that the artist must spend hours justifying himself and what he is doing. The end result is the undernourishing of one of the great resources of this country—the dedicated artist. We are too hard on the artist.

It is wrong, I feel, to make the withdrawal of the artist into his ivory tower a virtue. There are those who are interested in menstrual cycles. By the very fact of their participation in this project, the ten artists involved demonstrate a commitment not only to art but also to the presence of a general audience. Also, the involvement with professional technology is not only a logical extension of their previous work, but

an approach towards the real world.

Nine months ago when a group of artists and engineers met for the first time this was not so clear as it is today. That first meeting on January 14th with a group of personally interested engineers from Bell Labs might well have been a flop. Everyone seemed to be scared of everyone else. Nobody knew quite what to say until one of the engineers suggested to another: "Let's tell them about something they can use." The ice was broken. About a dozen bull sessions followed during which the artists made suggestions of what they wanted and the engineers made counter suggestions. Many of the suggestions were wild and beautiful and unrealizable. By May we started to build equipment and tonight you will be able to see the results.

It has not been as easy as it sounds. The artists had to show an extraordinary amount of patience with the slow rate at which the engineer proceeds. And the engineer had to deal with the vagueness of the artist brought on by the fact that the artist had nothing to lay his hands on and work with. It was like lifting yourself by the hair: if you don't do it all at once it does not work.

The technical equipment built for "Nine Evenings" has cost over 30,000 dollars not counting invaluable help and advice given by specialists. It would, however, be foolish and irresponsible to describe this equipment as terribly extraordinary in technical terms. Compared to the missiles at Cape Kennedy and the large computers it is peanuts. This is rightly so. The artist cannot be expected to make use of the most sophisticated aspects of technology, even if he have access to these, since he is confronted with a new material. What gives our equipment its unique value is that it was built for no other function but to be part of the performances. The

equipment is built from scratch and is a result of the direct interaction between artists and engineers.

But there is another side to the equipment—commercial potential of discoveries made as a result of its development. While working with Bob Whitman, we rediscovered a phosphor that has already become an important tool in infrared laser research. Another example is the small power amplifier which has also attracted commercial interest. The feedback to industry from the interaction between artists and engineers is very important. A direct involvement by industry is absolutely essential for any meaningful use of the potentials of professional technology by the artists. As a result the artists will help open new doors for the engineers and the engineers will give a fresh license to be poetic. Technology has, I believe, vast untapped possibilities to give pleasure and to make life more enjoyable. The Chinese fireworks 3,000 years ago were maybe the first use of advanced technology to give poetry, mystery and pleasure. I feel that our 9 Evenings performances will have some affinity to these long forgotten fireworks.



9 Evenings is a truly cooperative venture. All participants had an equal voice in the direction and all responsibility was shared jointly. While no one individual is responsible for 9 Evenings, certain people deserve special recognition and thanks:

Walter Gutman—our first contributor and friend;

Vera List—to whom goes great thanks for giving this Festival her generous personal attention and support;

Mr. and Mrs. Seymour Schweber—who gave us help at a critical time and furnished invaluable connections in the electronics industry;

Mrs. Marie Christophe Thurman—a generous and enthusiastic supporter;

Engineers who devoted their time freely:

Cecil Coker—equipment design;

Fred Waldhauer—proportional control system;

Robby Robinson—equipment design, building and coordination;

Herb Schneider—systems plan;

Stretch Winslow—chemical problems;

Peter Hirsch—Doppler sonar;

Joe Chislow and A. V. Robinett—for their help in getting our FCC license;

AMP, Inc.—who donated the use of essential patchboard and card reader equipment for our systems planning;

Alice Schwebke and Alphonse Schilling of the production staff for their dedication;

Jill Jakes and Jasper Johns for their benevolent cooperation;

Sue Hartnett for keeping Lafayette Street in order.

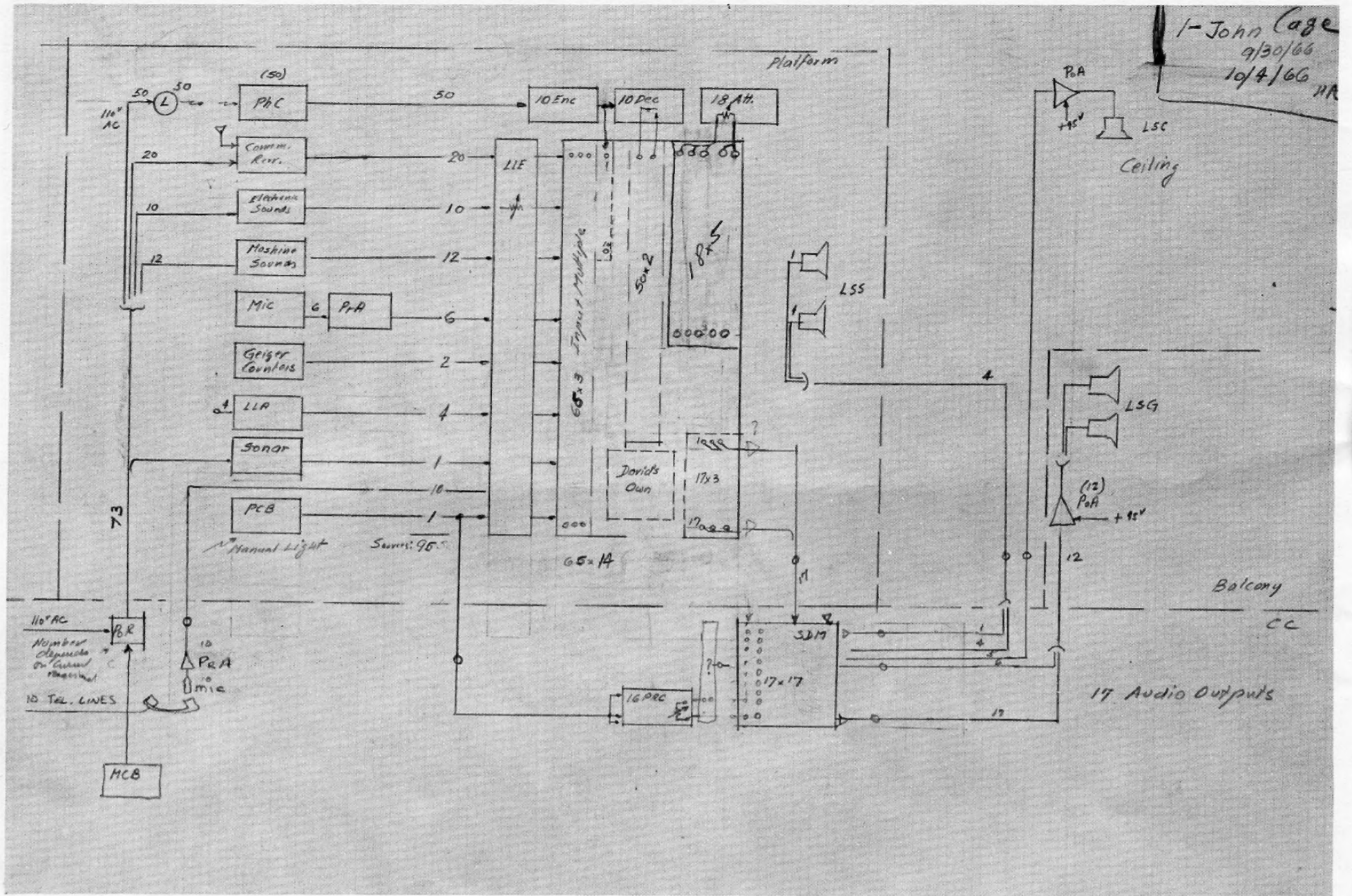
Frank Königsberg—for his advice and unstinting help from the start of the project and for sympathetically seeing us through it all;

John Pierce and Marion Javits for their friendly support;

Bob Rauschenberg—who deserves more than anyone else the credit for the development, growth and achievement of the project. His amazing intuition has given us a language and tipped many of the decisions in favor of what now seems obvious. For all of us it has been a great pleasure to work with him.



The objectives of 9 Evenings will be continued by Experiments in Art and Technology, Inc. This foundation will further the creative interaction between industry, engineers and artists. 9 Evenings is an experiment in the true sense of the word: its results are open for the future.



variations VII

by: John Cage

performance engineer: Cecil Coker

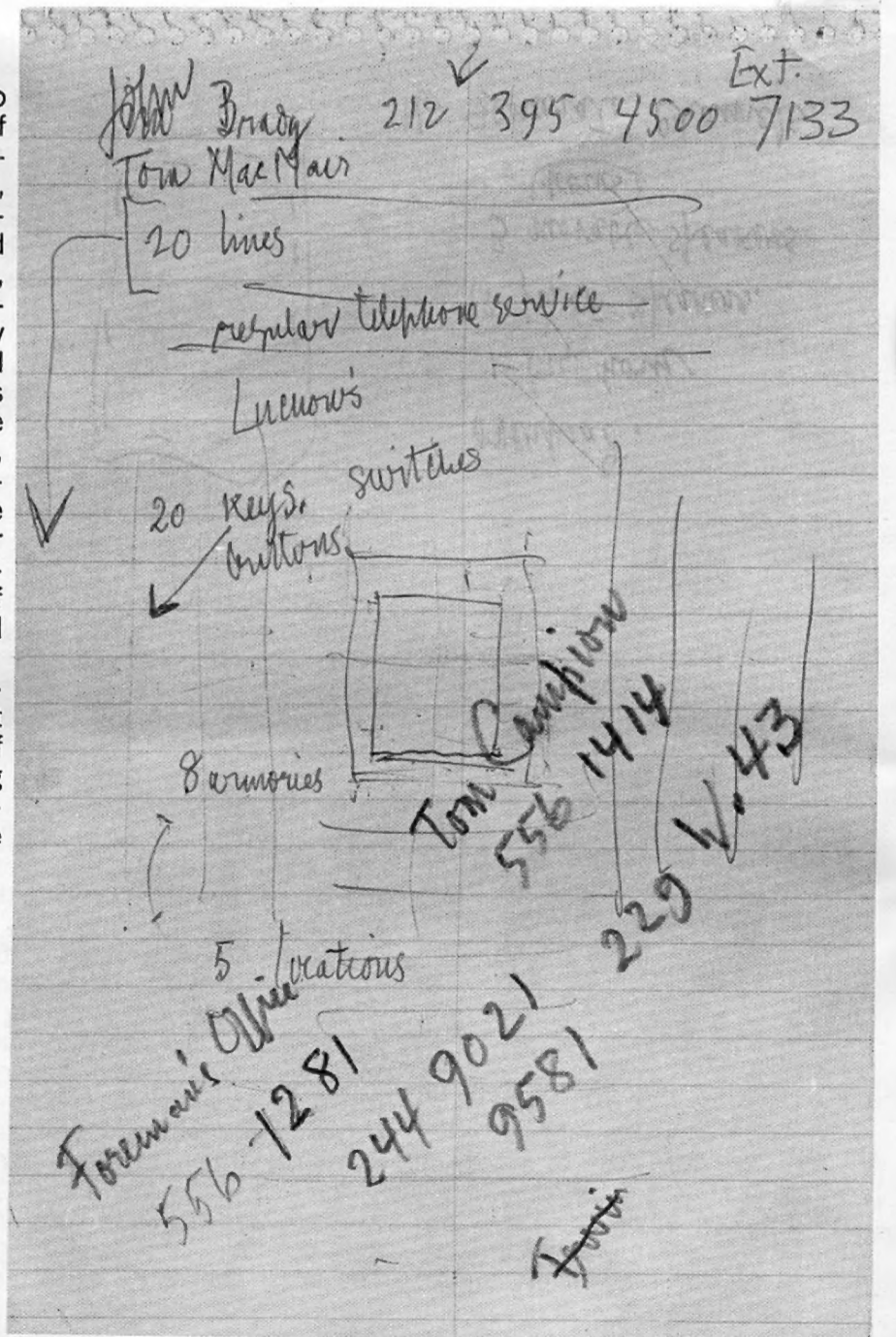
performers: David Tudor
David Behrman
Antony Gnazzo
Lowell Cross

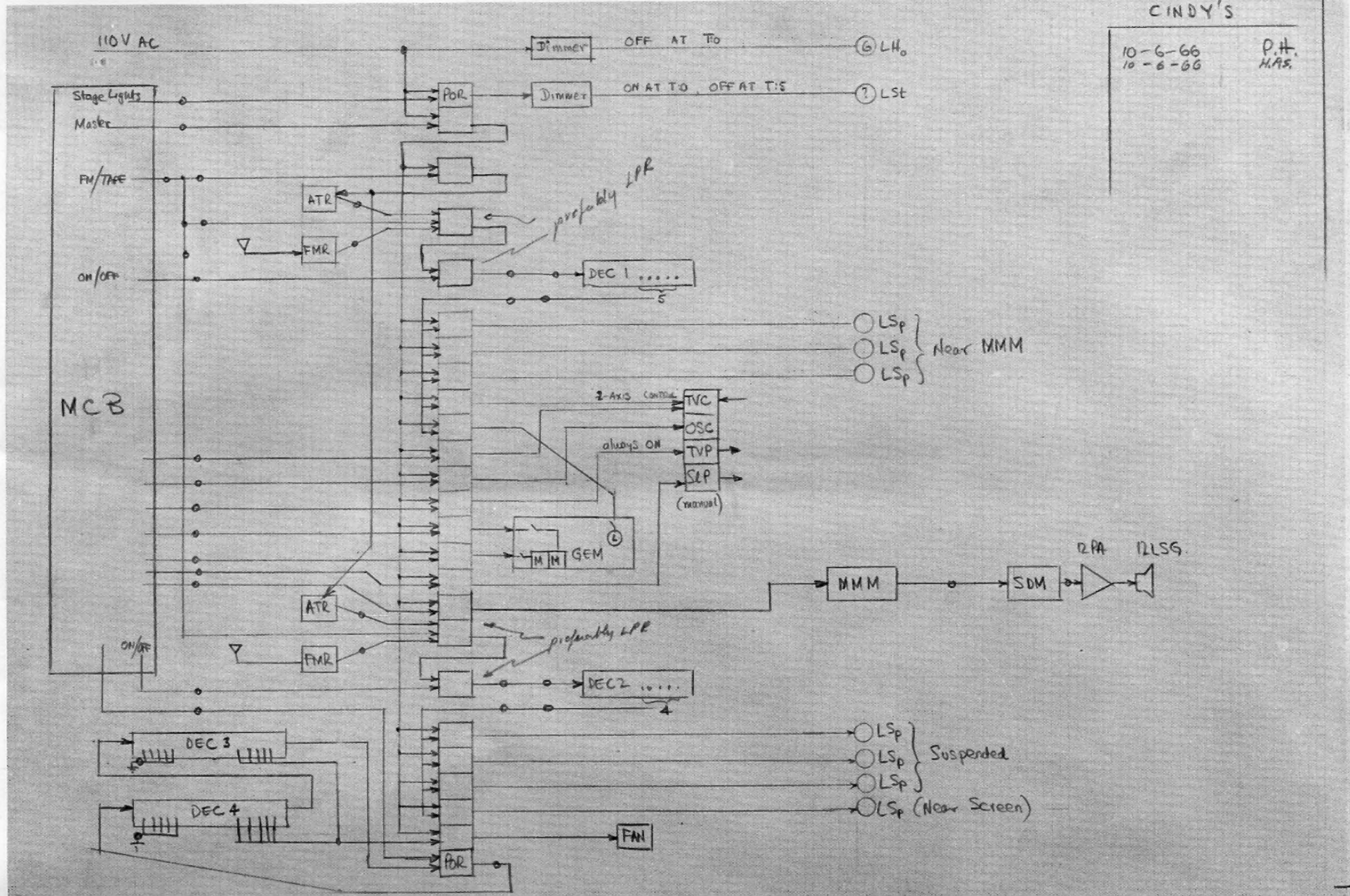
grateful acknowledgement is made
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The City of N. Y.
Terry Riley
Robert Wood
Richard Hennessy
Rubin Gorowitz

My project is simple to describe. It is a piece of music, Variation VII, indeterminate in form and detail, making use of the sound system which has been devised collectively for this festival, further making use of modulation means organized by David Tudor, using as sound sources only those sounds which are in the air at the moment of performance, picked up via the communication bands, telephone lines, microphones, together with, instead of musical instruments, a variety of household appliances and frequency generators.

The technical problems involved in any single project tend to reduce the impact of the original idea, but in being solved they produce a situation different than anyone could have pre-imagined.





vehicle

by: **Lucinda Childs**

performance engineer: **Peter Hirsch**

cast: William Davis
Alex Hay
slides by: Les Levine

Vehicle consists of materials animate, inanimate, air-supported (in one instance), which can exist in a non-static state and be observed in increased dimension as they come in contact with light and sound sources made available consistently or intermittently by radio signals through-out the dance.

The Doppler sonar has ultrasonic beam sources and a receiver. The beam emits frequencies at a level which is greater than our hearing capacity. A moving figure or object passing in front of the beam interrupts it and sends frequencies back to the receiver of the sonar at a level determined by the velocity of the figure or object. What we hear is the proportional difference between the frequencies sent out and those returned through interruption of the beam, and the resulting reduction in the frequency level is what makes the sonar audible. Middle C (as we know it in music) is supposed to occur at approximately three feet per second of movement. This device,

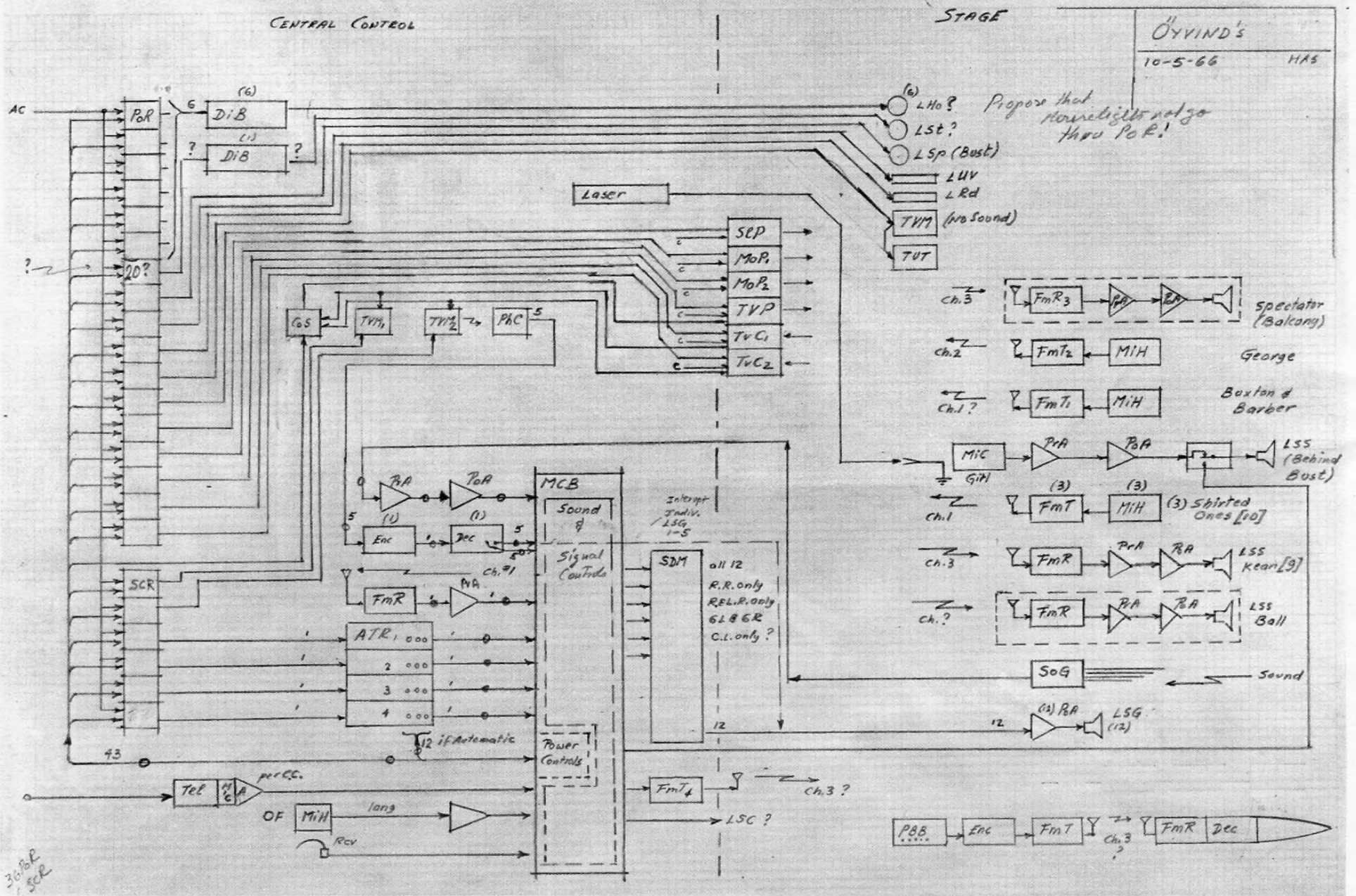
however, picks up movement of any duration or speed at the exact time that it begins or ends.

The ground effect machine is made from a General Motors refrigerator part which is designed as a platform to raise the 440 lb. weight of a refrigerator a fraction of an inch off the ground by the intake of air from a vacuum cleaner, thus making it possible to move the 440 lbs. with ease. The engineer, Per Biorn, installed two vacuum cleaner motors onto this platform so that I am in effect on a cushion of air when I use it.

I intend to utilize these devices in a set of circumstances as instruments which may or may not be efficient to the notion of completing anything. I do not feel that dance should be limited to the display of physical exertion alone; anything that can exist in a non-static state for a certain duration of time is of interest to me. My ideas are generally derived from the laws which govern the materials themselves and I attempt to allow the qualities and limitations of materials to be exposed in different situations.



Alex Hay and Lucinda Childs with ground effect machine at Berkeley Heights School rehearsal.



kisses sweeter than wine

by: Oyvind Fahlstrom

performance engineer: Harold Hodges

**direction: Soren Brunes
Oyvind Fahlstrom**

**production assistants:
Letty Lou Eisenhauer
Ulla Lyttkens**

props: Alfonse Schilling

**performers: Bob Breer
Frances Breer
Letty Lou Eisenhauer
Bruce Glushakow
John Glover
Tom Gormley
Jim Hardy
Ed Iverson
Kosugi
Larry Leitch
Les Levine
Marjorie Strider
Bob Schuler
Ulla Wiggen**

**tapes: Sveriges Radios, Stockholm
WBAI-NYC**

**films: "Creation of the Humanoids"
courtesy W. Barry, Genie
Productions Inc. and
Medallion Pictures;
"Acqua Sangemini"
courtesy Ditta Agrippa,
Rome;
Educational Films
courtesy AT&T NYC**

**chemicals: Nuclear Research Associates
Associates**

In my piece, I approach the new technology on several levels. Chemicals developed by the new technology permit me to use elements formerly not possible—an object gradually changing color, "snow bubbles" rising from the ground, people enveloped by "clouds." By utilizing our internal broadcasting system, I can have pillows sing out while they are bounced on the floor or thrown in the air. By utilizing our remote control system, I can have an actor pursued by an airborne object or direct the same object to approach floating targets.

On another level, my piece deals with machine-like qualities in people: robot-like people capable of memorizing enormous amounts of data or of making multi-digit calculations in their heads (as found in psychiatric literature); the risk of putting "robots" (narrow minds) in situations for which they are not "programmed"—i.e., crisis situations—and machines getting out of control. Juxtaposed with this are glimpses of everyday events and characters of the world of today. Bob Hope and Mao Tse Tung appear in New York city street demonstrations, for example. For this we will use films of an actual demonstration along with tapes of the reactions of the people who see it. Tape and film become a part of the piece. New York, China, Indonesia, the bottom of the sea, space, the world of the future (as seen in a science fiction movie) all are interwoven into a triptych of slide, movie, and television screens. There is no explanation. The spectator draws conclusions or not, as he chooses.

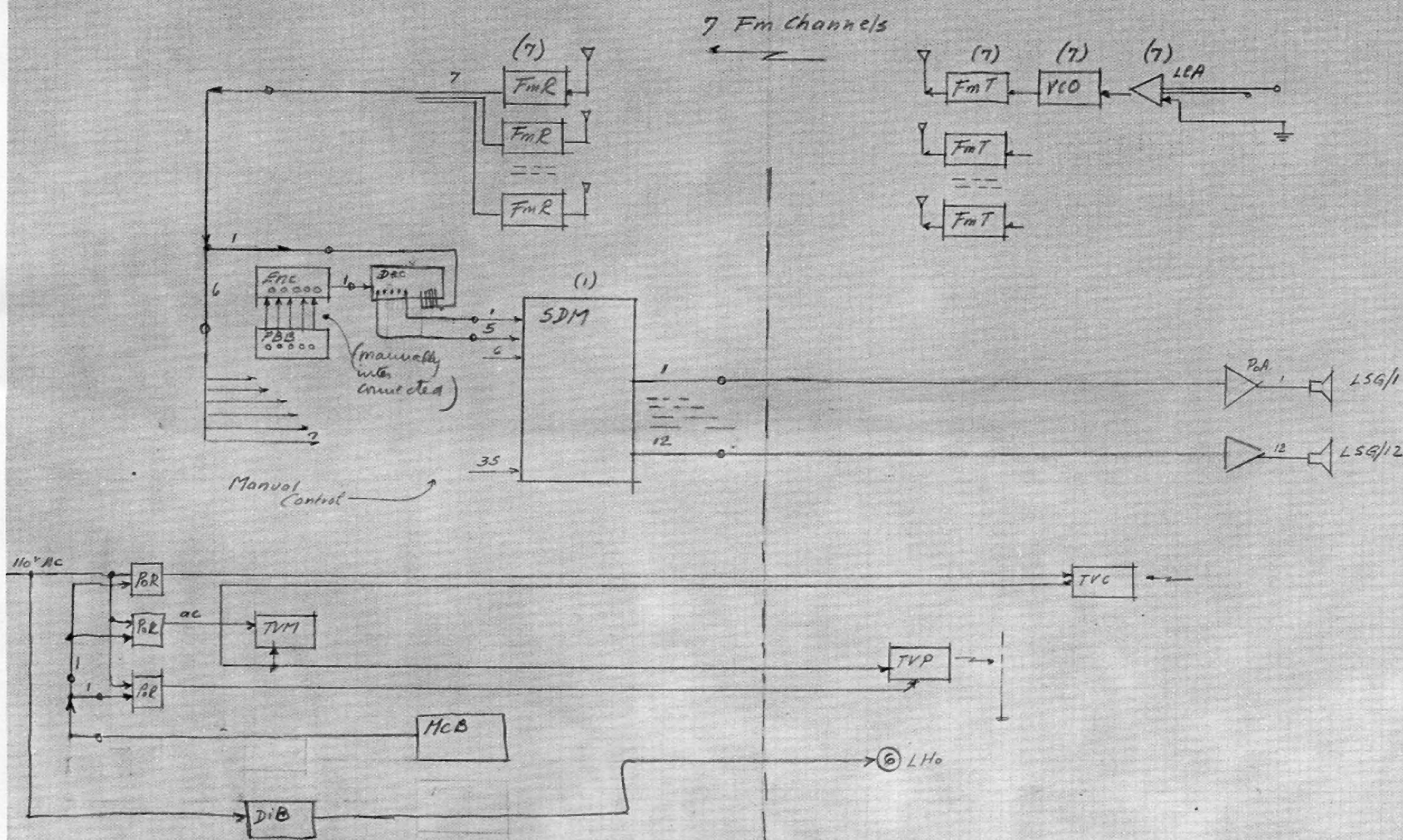
I think of it as initiation rites for a new medium, Total Theater.



Peter Hirsch and Oyvind Fahlstrom with ball designed to carry bouncing sound source. Photo William Rivelli

CENTRAL CONTROL

ON STAGE

ALEX'S
10/5/66 HAS

grass field

by: Alex Hay

performance engineer: Herb Schneider

sound distributor: David Tudor

cast: Steve Paxton
Robert Rauschenberg

credits: Schwebel Electronics
for integrated circuits;
Mount Sinai Laboratory
for technical information

A work built around three elements divided into parts equal in time.

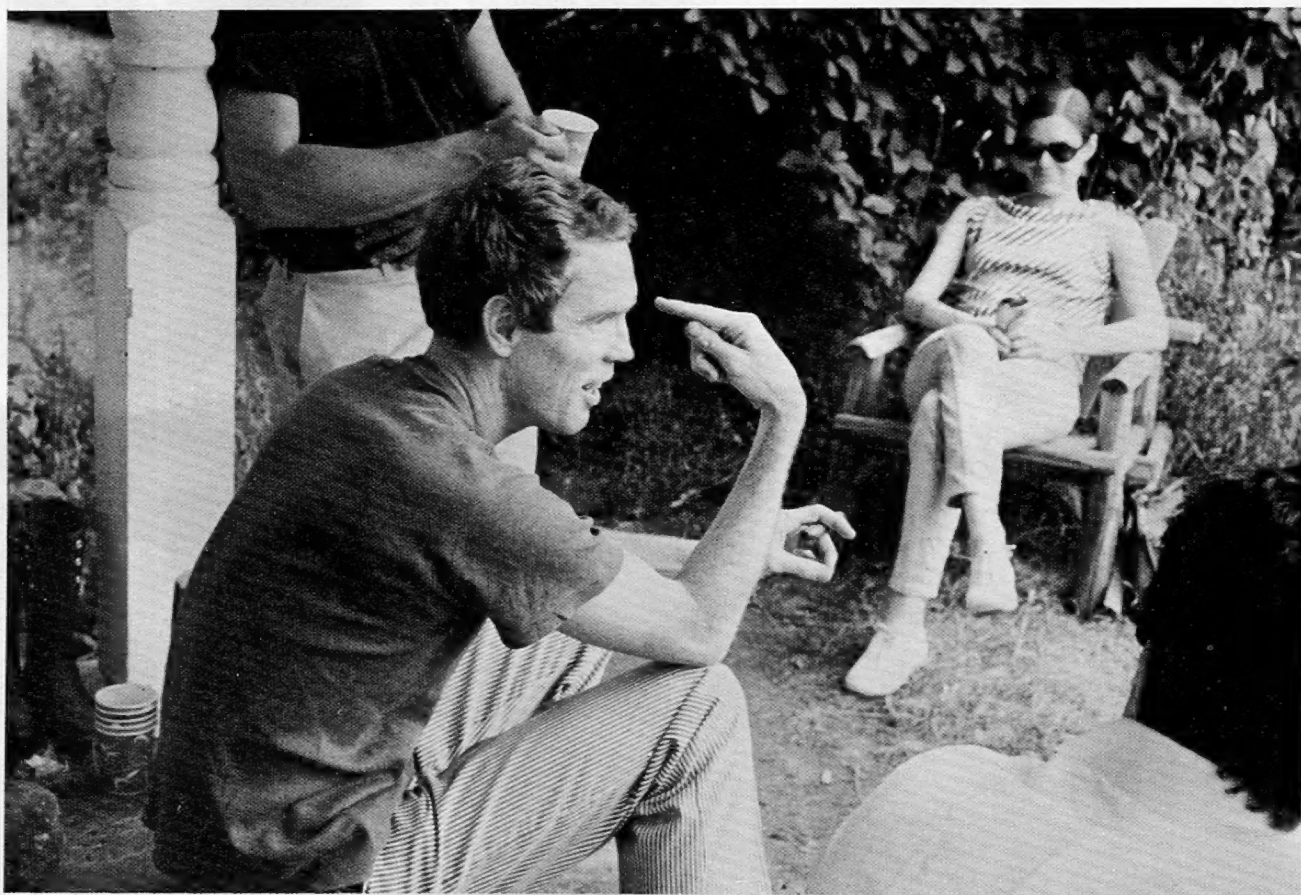
Three elements:

1. Internal sound potentials of the body
2. External body color
3. A singular work activity

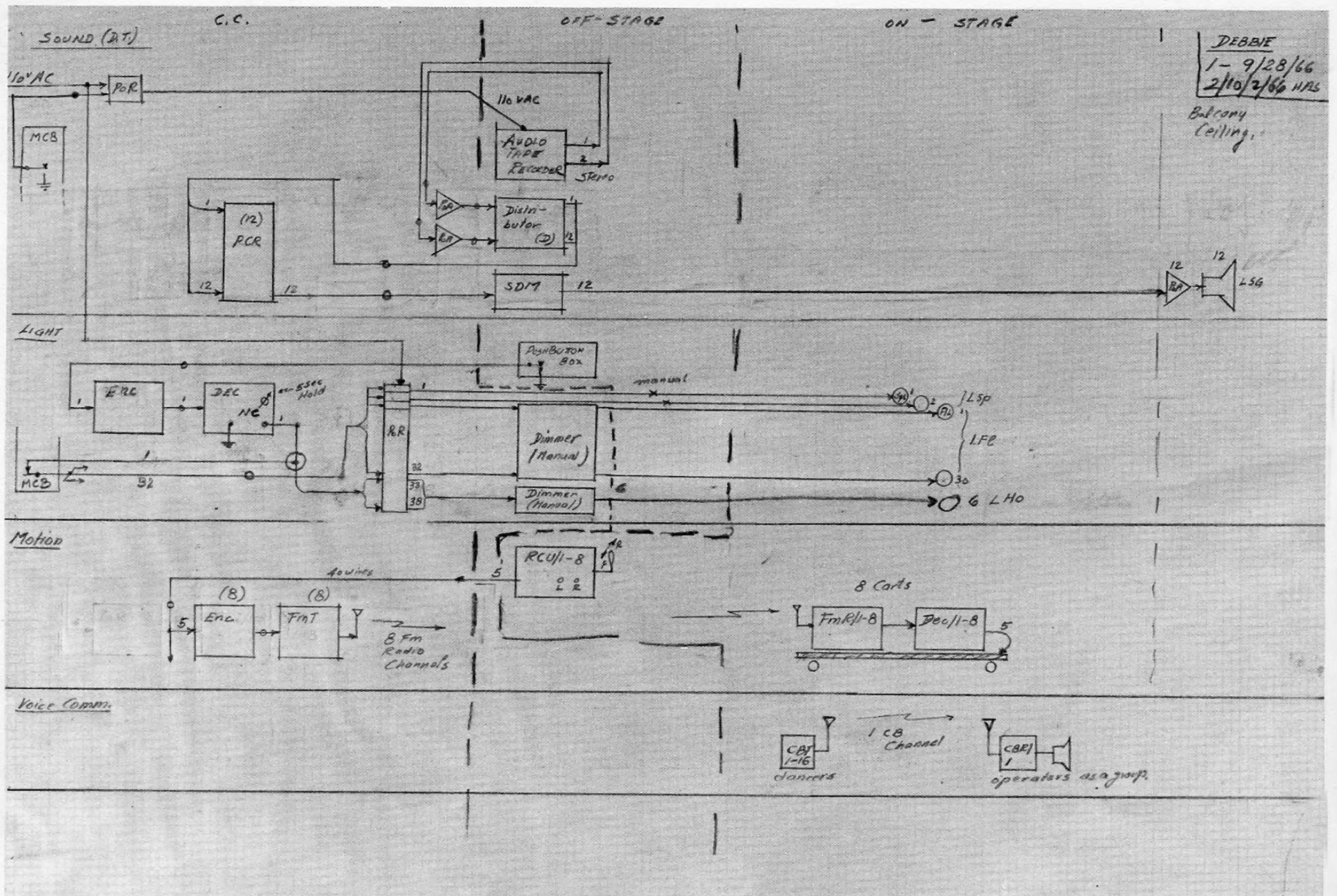
The body sounds, example: brain waves, muscle movement, eye movement, will be picked up by differential amplifiers and transmitted to the central control stations to be distributed by the sound person.

All properties and dress will have the color identity of the skin of the performers.

The work activity is the random placement of 100 numbered six foot squares of duck in a ten by ten modular pattern and then retrieved in a correct arithmetic progression and placed centrally. The placement and retrieving of the squares will be a designation of the two parts.



Alex Hay and Lucinda Childs
during the discussions at
Stony Point, N. Y., Summer
1966.
Photo Franny Breer



solo

by: Deborah Hay
performance engineer: Larry Heilos

performers: Franny Breer
Lucinda Childs
William Davis
Jim Jardy
Alex Hay
Deborah Hay
Margaret Hecht
Ed Iverson
Kathy Iverson
Julie Judd
Olga Klüber
Vernon Lobb
Fujiko Kakaya
Steve Paxton
Bob Rauschenberg
Joe Schlichter
Bob Schuler
Marjorie Strider
Carol Summers
James Tenny

music: "Funakakushi"
by Toshi Ichiyanagi

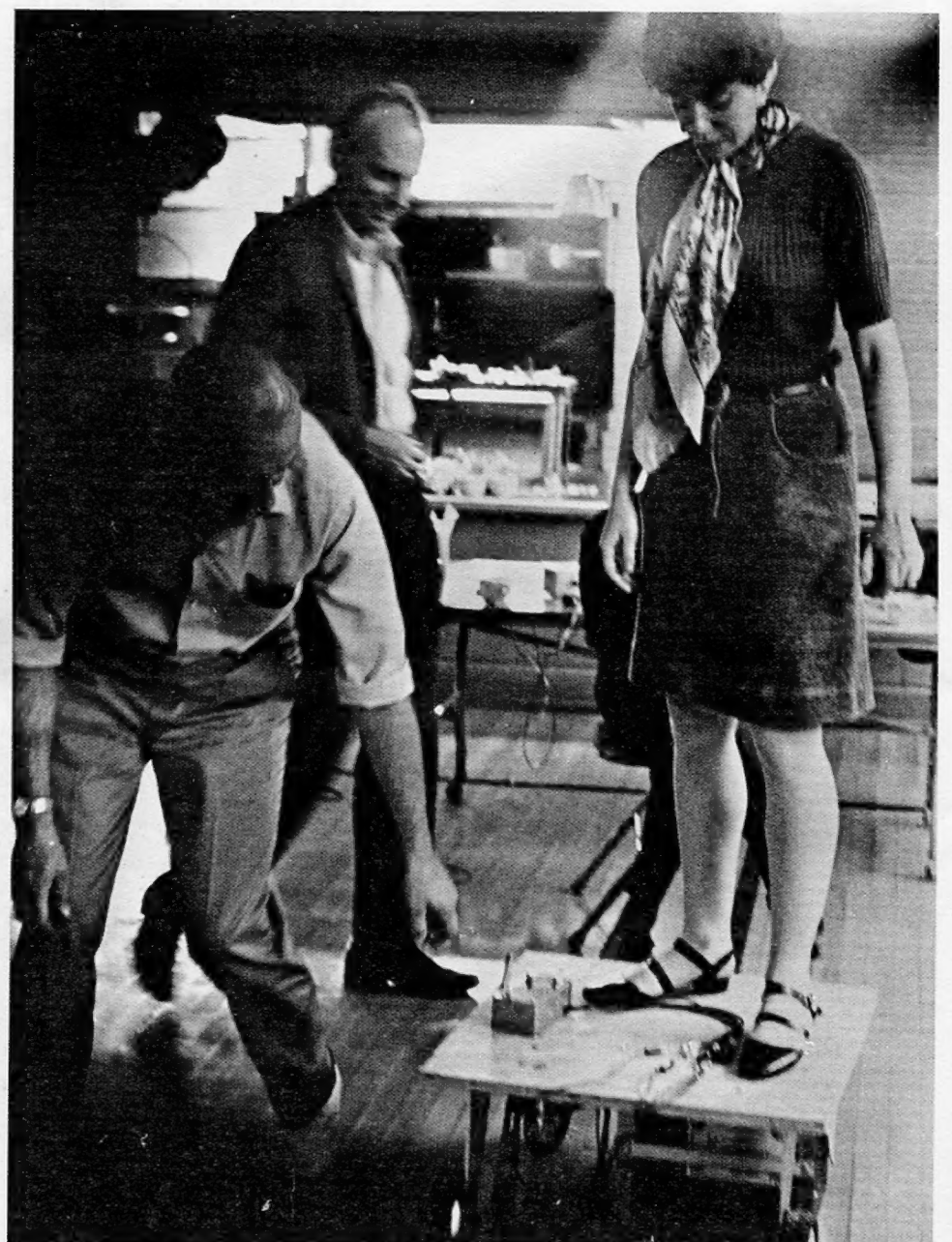
men's costumes by
Letty Lou Eisenhauer

times on the platforms. Bright lights around the stage area are strongly reflected by the white costumes of the 16 moving performers. The extreme intensity of light bouncing off the costumes modifies the lines of the human body. At times there are no lights. I am interested in creating a middle ground between seeing and not seeing. The principal visual elements of the piece are moving performers, lights, darkness, remote control platforms, and movement. It is my main intention to make all these elements equal in energy and visibility.

Solo is a white, even, clear event in space. The performers are part of the space and light. They continue the quality of the area — a white environment. All movement is with the intention of maintaining a balance of order and evenness.

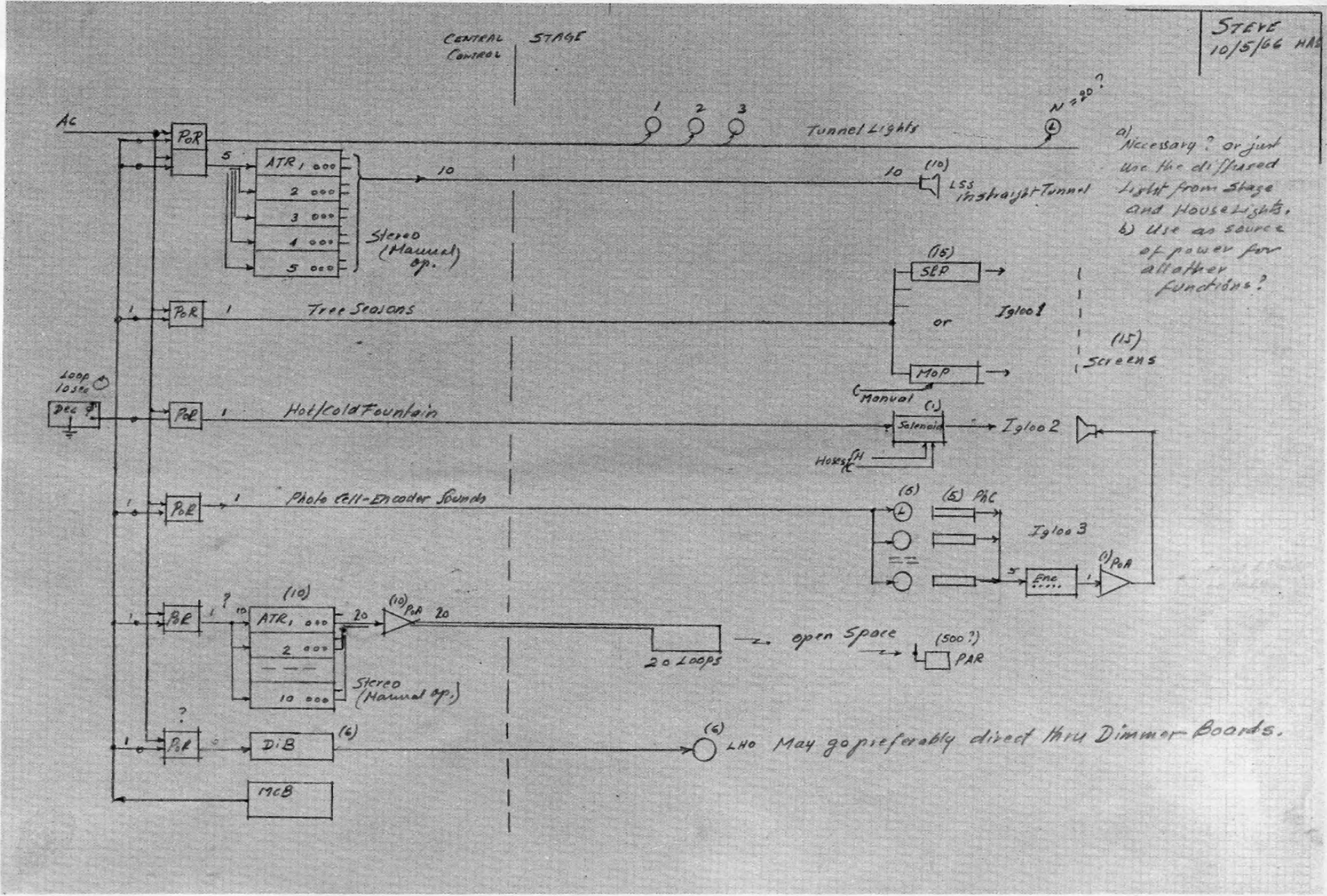
Solo is cumulative, gradually accumulating more light, more platforms, more performers, more activity — yet remaining as still and composed as in the beginning.

There are 24 performers. Eight of the performers remain stationary. Formally dressed, they are seated as a musical ensemble. From this position they operate eight remote control platforms, which move in and around the space. Sixteen of the performers also move in and around the space, some-



Larry Heilos, Billy Klüber and Debbie Hay on a remote control platform, Berkeley Heights School gymnasium. Photo Franny Breer

STEVE
10/5/66 HAA



a) Necessary? or just use the diffused light from stage and house lights.
b) Use as source of power for all other functions?

(15) screens

physical things

by: Steve Paxton

performance engineer: Dick Wolff

cast: Karen Bacon
Sue Hartnett
Margaret Hecht
Michael Kirby

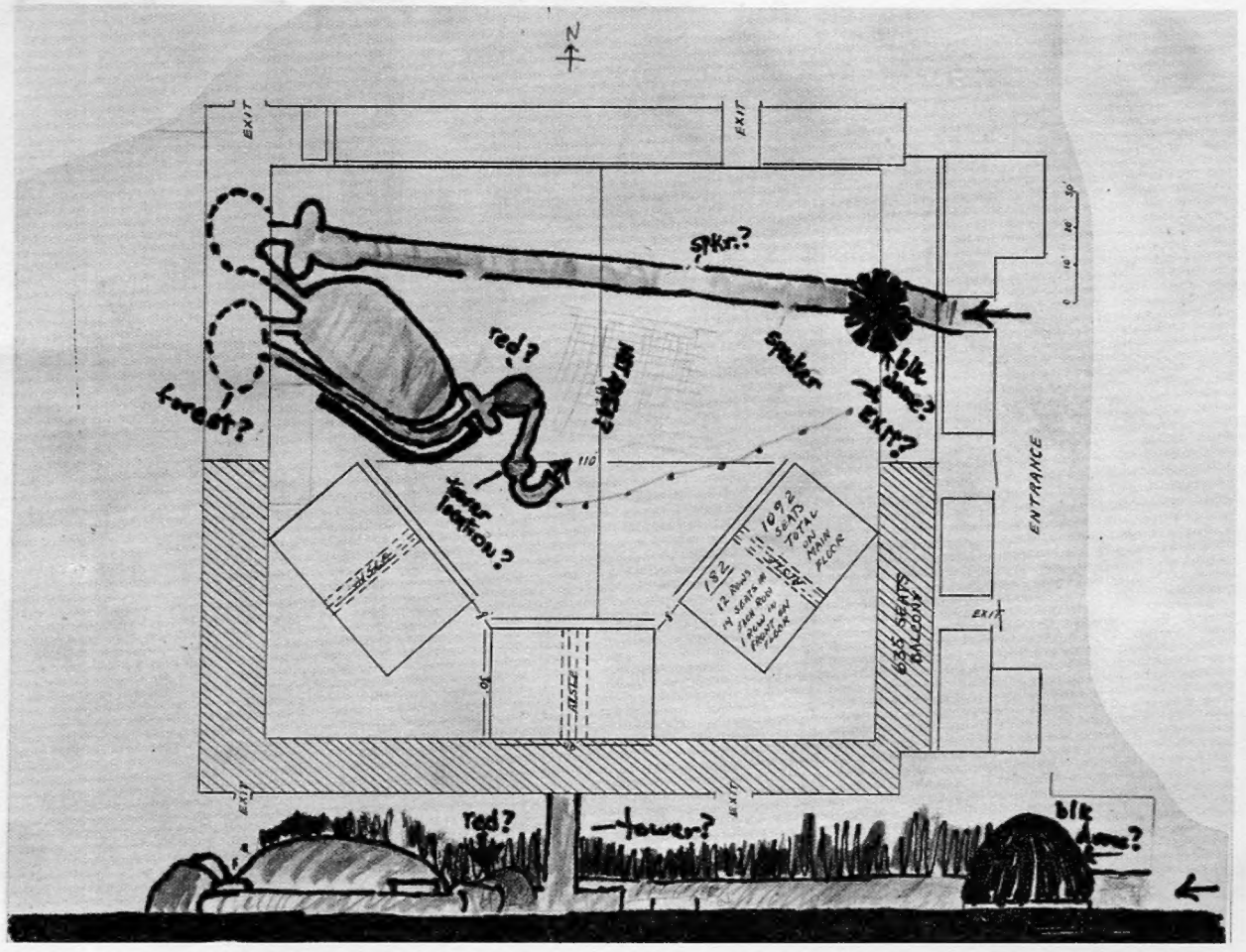
Ted Kirby
Clark Poling
Elaine Sturtevant
David White
and others

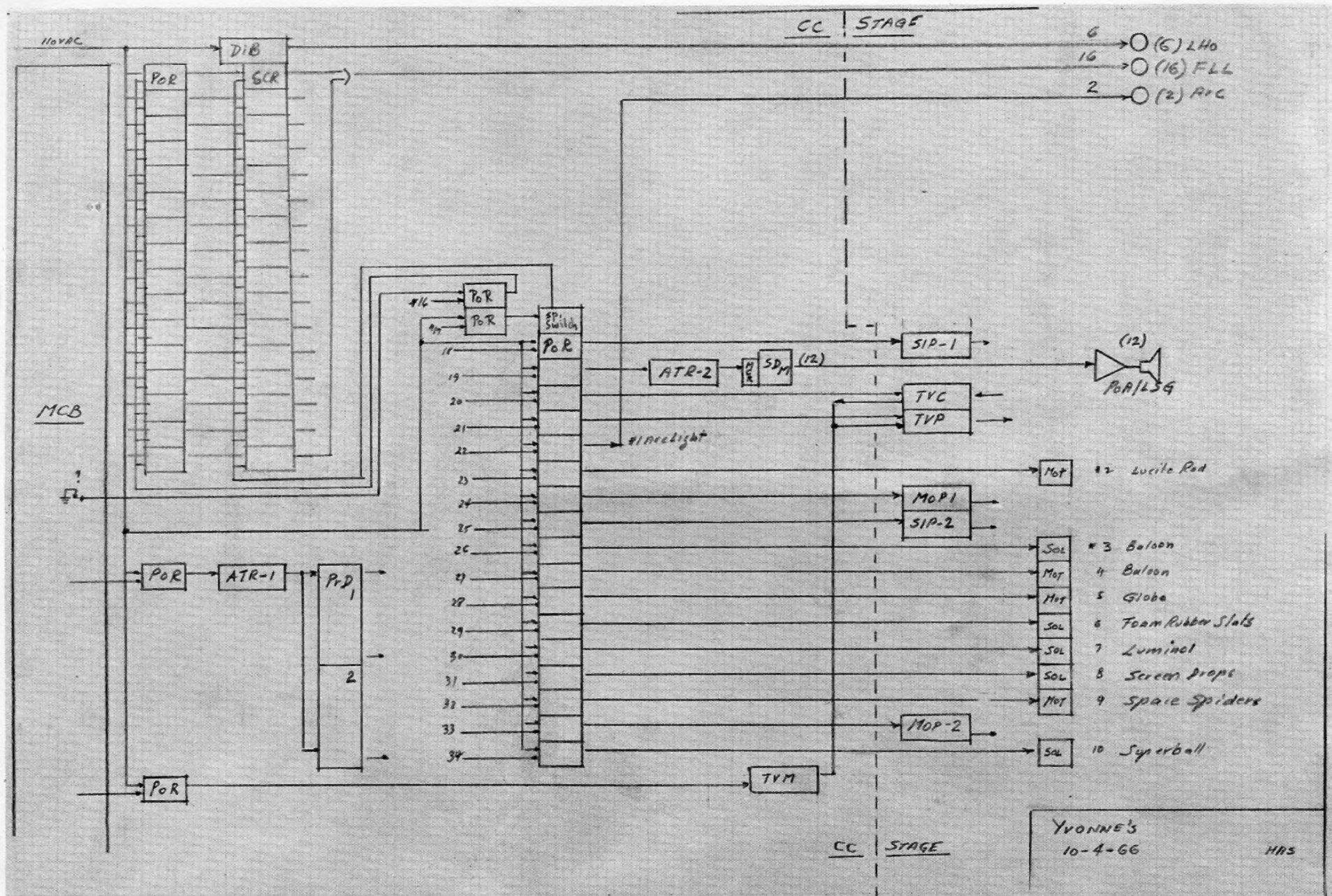
technicians and help:
Karen Bacon
Margaret Hecht

Tony Holder
Walter Gebb
Larry Leitch

sound: disparate sources

This piece is a dance with a set. It is cast not only by those chosen as permanent population (for the duration of the piece) but by those who have chosen to come to see it, and it is presumed that they will observe each other. With regards to air pressure and topography this piece is not an airplane, is pretty much the opposite of an airplane, but much of the rest of it is analogous.





carriage discreteness

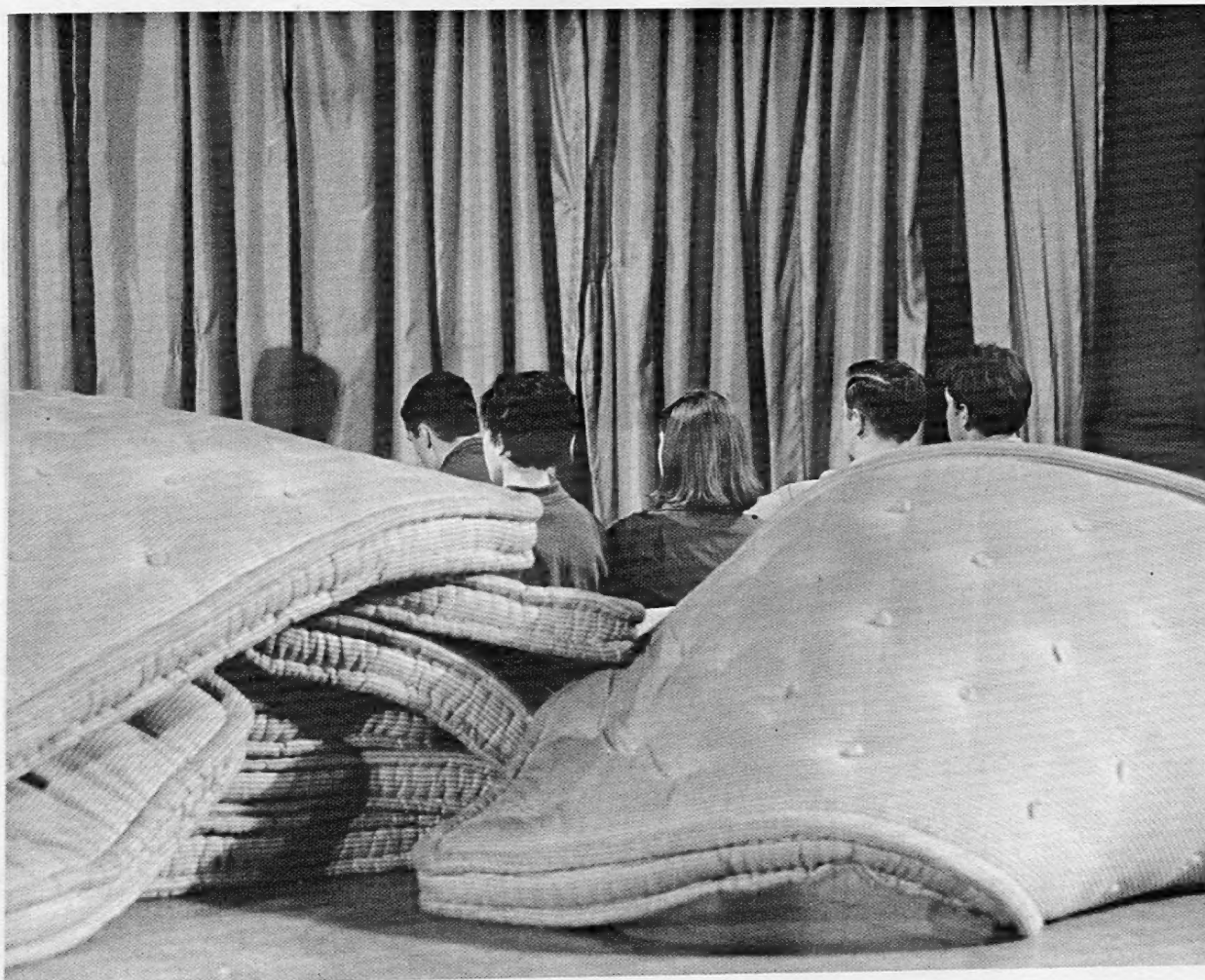
by: Yvonne Ranier

performance engineer: Per Biorn

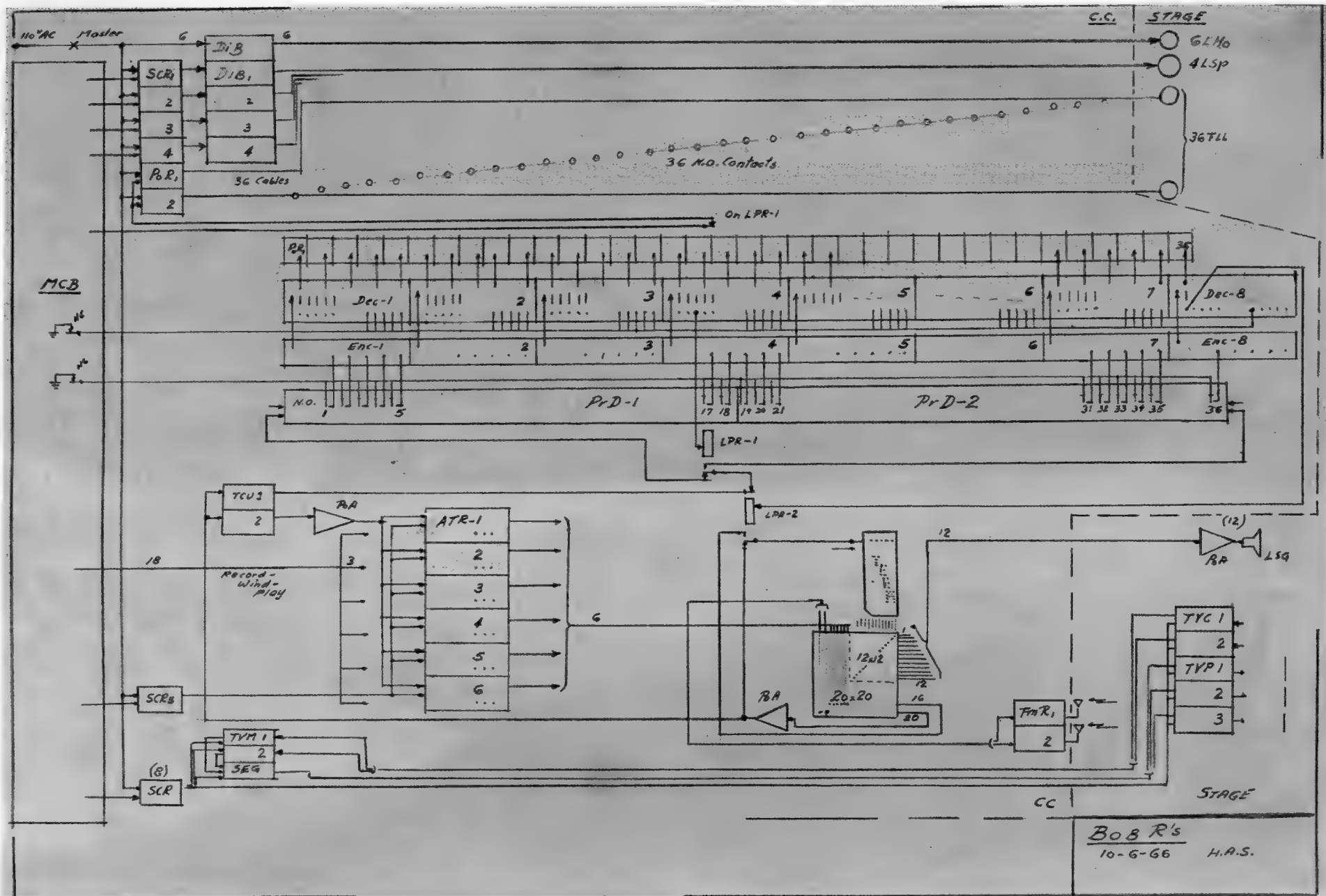
performed by: Carl Andre	Letty Lou Eisenhower	Julie Judd	Lewis Lloyd
Becky Arnold	June Ekman	Michael Kirby	Meredith Monk
Rosemarie Castoro	Ed Iverson	Alfred Kurchin	Steve Paxton
William Davis	Kathy Iverson	Benjamin Lloyd	Carol Summers

stage manager: Rudy Perez

A dance consisting of two separate but parallel (simultaneous) continuities and two separate (but equal) control systems. 1. Performer continuity controlled by me from a remote "plotting" table where I will spontaneously choose the actions and placement of people and objects (from a pre-determined list of possibilities) and communicate those decisions to the 10-odd performers via walkie-talkie. 2. Event continuity to be controlled by TEEM (theatre electronic environment modular system) in its memory capacity. This part will consist of sequential events that will include movie fragments, slide projections, light changes, TV-monitored close-ups of details in the dance-proper, tape recorded monologues and dialogues, and various photo-chemical phenomena, several involving ultra-violet light.



Yvonne Rainer surrounded by, left, Steve Paxton and Debbie Hay, right, Bob Rauschenberg and Barbro Fahlstrom. Photo Phil MacMullan



open score

by: Robert Rauschenberg

performance engineer: Jim McGee

cast: Frank Stella
Mimi Kanarek
a group of 500 people.

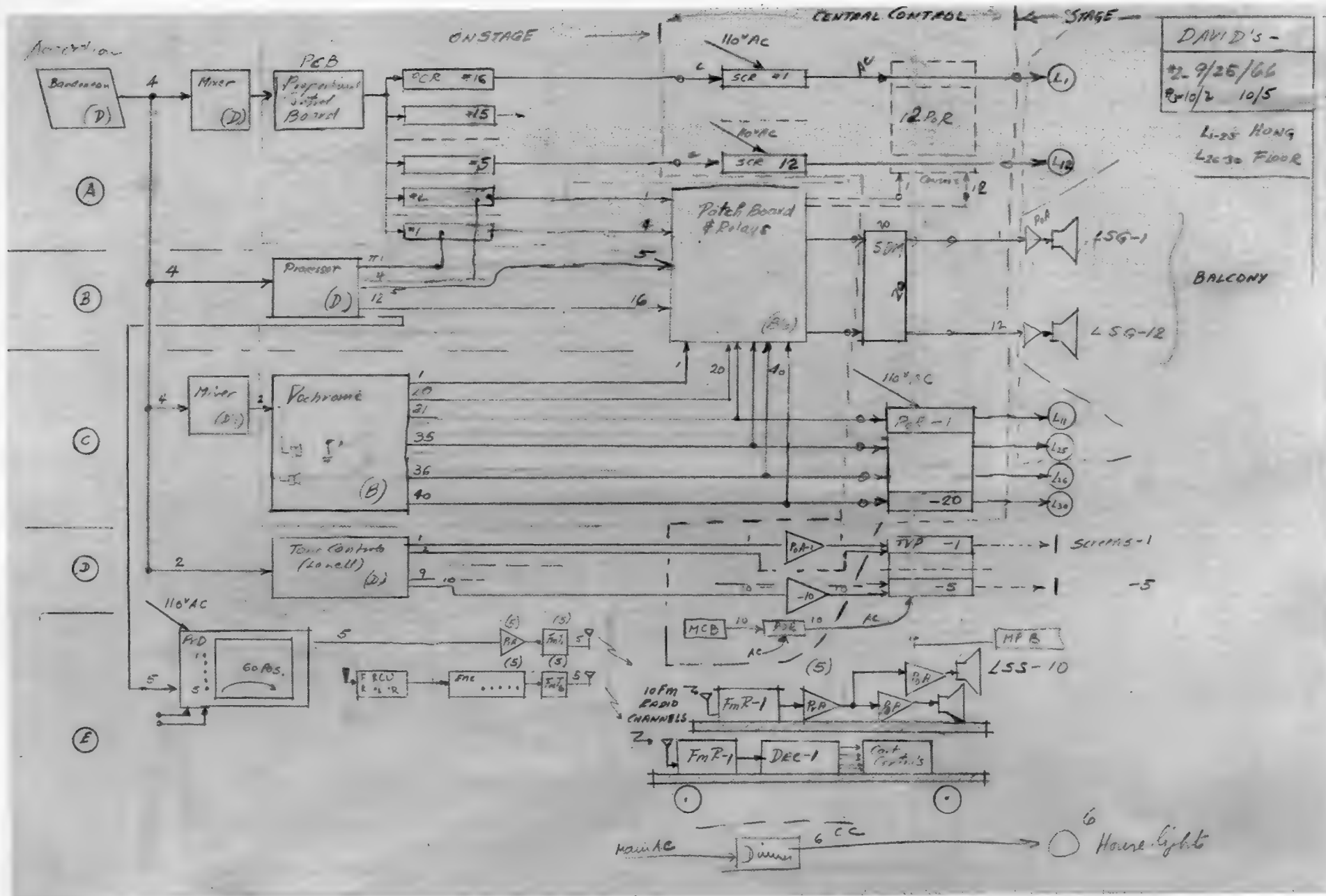
My piece begins with an authentic tennis game with rackets wired for transmission of sound. The sound of the game will control the lights. The game's end is the moment the hall is totally dark. The darkness is illusionary. The hall is flooded with infra-red (so far invisible to the human eye). A modestly choreographed cast of from 300 to 500 people will enter and be observed and projected by infra-red television on large screens for the audience. This is the limit of the realization of the piece to date.

Tennis is movement. Put in the context of theater it is a formal dance improvisation. The unlikely use of the game to control the lights and to perform as an orchestra interests me. The conflict of not being able to see an event that is taking place right in front of one except through a reproduction is the sort of double exposure of action. A screen of light and a screen of darkness.

The support of the Downtown Community School is responsible for the large cast in Open Score. Through the management of Marilyn Wood and the cooperation of parents and interested parties, the cast has been generously collected. The sources are varied and rich in intentions. The result of their voluntary involvement reaps the Downtown Community School \$1000 for a scholarship fund. I would like to draw attention to the fact that all the names were not available at the time this program went to press. They should all be personally recorded, but the next best thing to do is to report that they well represent the world (our society) and are locally from such varied organizations as high school science classes, drama organizations, senior citizens groups, individual artists, reformed addicts' club and a New York fencing club. I am touched by the positive support, work, art, love and people.



Steve Paxton with tennis racket testing closed-circuit tv system.
Photo Bob Rauschenberg



bandoneon ! (a combine)

by: David Tudor

performance engineer: Fred Waldhauer

tv images by: Lowell Cross

carts: David Behrman
Anthony Gnazzo

vochrome: Bob Kieronski

Bandoneon !, (bandoneon factorial), is a combine incorporating programmed audio circuits, moving loudspeakers, tv images and lighting, instrumentally excited.

The instrument, a bandoneon, will create signals which are simultaneously used as material for differentiated audio spectrums (achieved through modulation means, and special loudspeaker construction), for

the production of visual images, devised by Lowell Cross; for the activation of programming devices controlling the audio visual environment, devised by Bob Kieronski ("Vochrome," and programmed patch-board) and Fred Waldhauer (Proportional Control).

Bandoneon ! uses no composing means; when activated it composes itself out of its own composite instrumental nature.

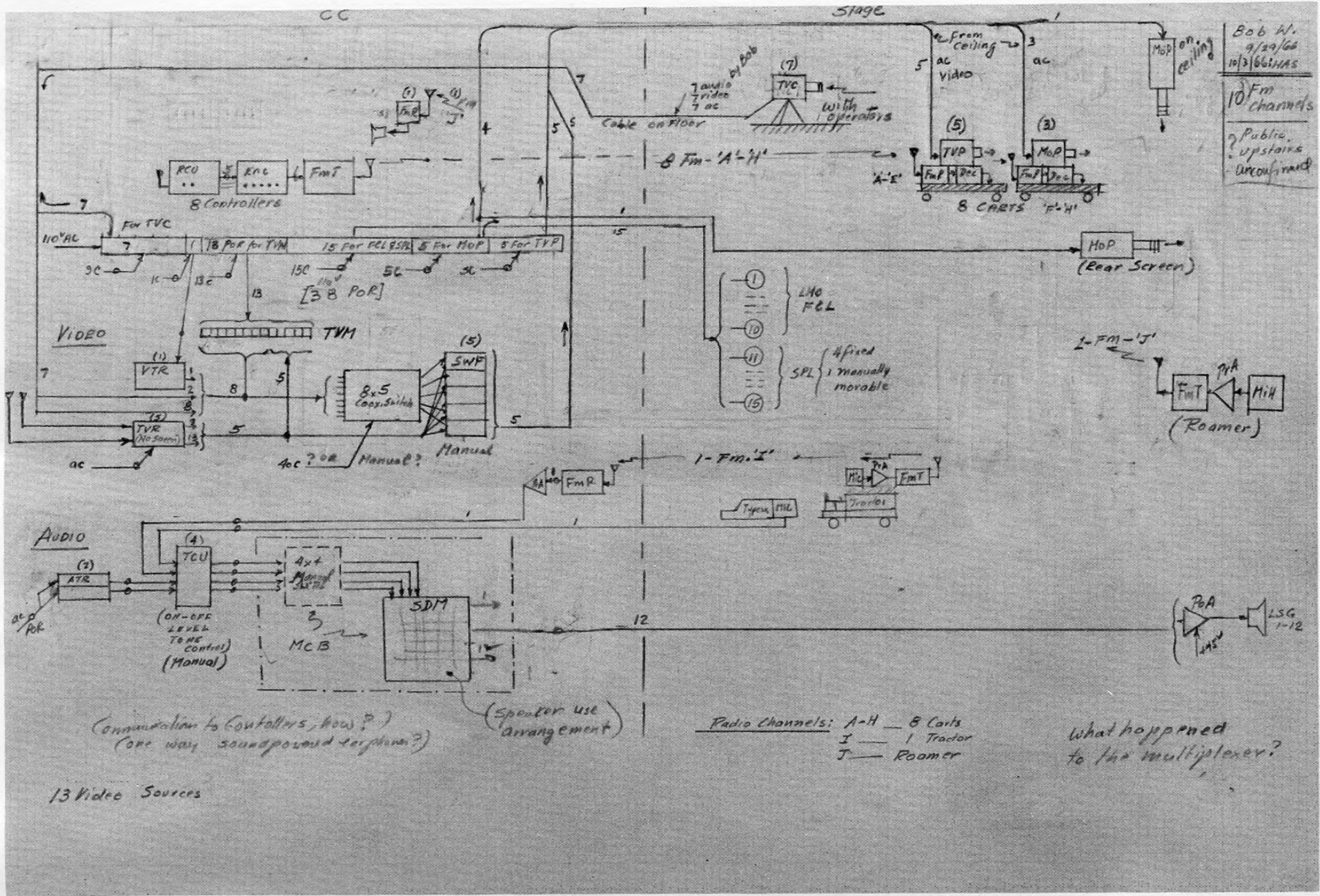
instrumental loud-speakers (sounding physical materials), actuated by material of Mauricio Kagel - 'Alle Rechte vorbehalten' - in a self-multiplying audio-visual application (towards "rebirth of white noise").

live signals → becoming electronic → programmed transmission to physical materials.

tudor



David Tudor, Fred Waldhauer right, with Tudor's bandoneon at a Berkeley Heights School rehearsal.
Photo Franny Breer



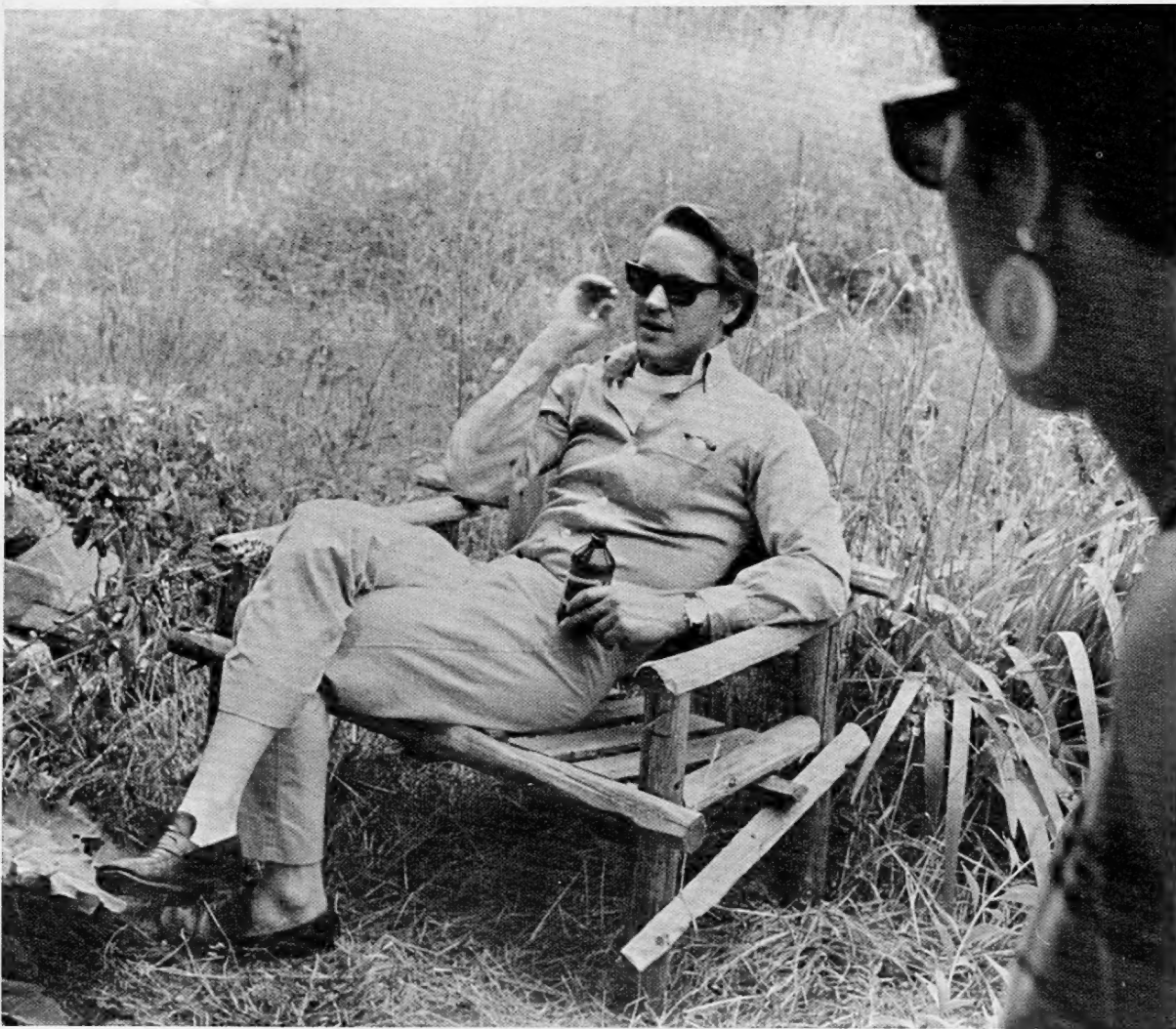
two holes of water — 3

by: R. Whitman

performance engineer: Robby Robinson

- film: Pan American Eastern Airlines
- fiber optics: Flexi-optics
- tv help: Bill Hartig
- performers: Max Baker Les Levine Jane Kramer Susanne de Maria Julie Martin
 Gil Miller Toby Mussman Elaine Sturtevant Mimi Miller
 Terry Riley Bob Breer John Giorno Trisha Schlichter

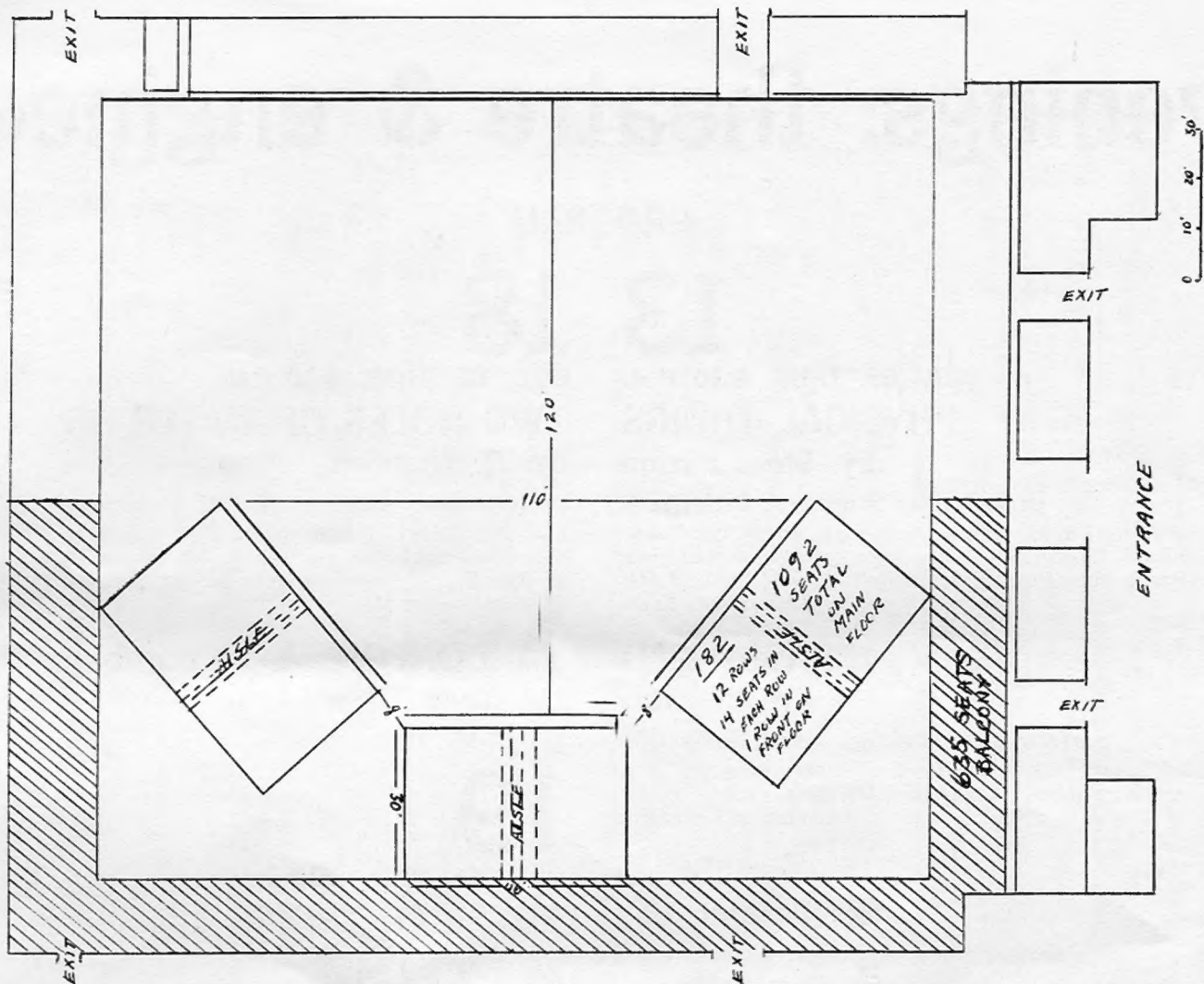
I am after a work around the stability of a film image and the immediacy of news-flash. The images are concerns — the whole piece makes an image. Television is a great way to collect stuff; besides what's on the air, a camera on anything brings it in live — a local newsflash. Film is a rock solid steady unchangeable record of someone looking at something past.



R. Whitman and Debbie Hay during the discussions at Stony Point, N. Y., Summer



This photograph does not include many of the people who were essential to this festival. Reading, left to right, zigzag; Top row: Joe Fallica, Ulla Lyttkens, Phillip Idone, Ron Hobbs, John Cage, Jennifer Tipton, Beverly Emmons, Irfan Camlibel, Jacky Grant, Bob Kieronki, Sören Brunes, Witt Wittnebert. 2nd row from top: Jeff Strickler, Alice Schwebke, Ulla Wigger, Alphonse Schilling, Howard Marks, Herb Schneider, Oyvind Fahlstrom, Larry Heilos, Jim McGee, Per Biorn, Yvonne Rainer, R. Whitman, Clark Poling, Simone Whitman, Gloria Bryant. Bottom row: David Long, Nancy Chandler, Billy Klüver, David Anderson, Deborah Hay, Franklin Königberg, Fred Waldhauer, Lucinda Childs, Robbie Robinson, Robert Rauschenberg, Ralph Flynn, Bruce Glushakow, Pontus Hultén, Alex Hay, Cecil Coker, Larry Leitch, Steve Paxton.



Armory floor plan.

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ADVISOR— Franklin Königsberg

Biographical Index of Participating Artists and Engineers

Per Biorn comes from Copenhagen. He designed and built the ground effect machine for Lucinda Childs and built a part of the decoding units for TEEM. He also set up the automated program for Yvonne Rainer. During the working day he is in semi-conductor research.

John Cage is from Los Angeles and is internationally known as a composer and compositional innovator. He is also famous world-wide as a lecturer and mycologist. He tours regularly with the Merce Cunningham Dance Company as its musical director. He is the author of *Silence*, a collection of his stories and lectures.

Irfan Camlibel was born in Istanbul. He works in absorption spectroscopy and has constructed the major part of the decoders for the TEEM system—a formidable job.

Lucinda Childs has been presenting mysterious and precise dances since the early days of the Judson Dance Theater. She went to Sarah Lawrence College, and has studied with Mia Slavenska and Merce Cunningham. One of her most beautiful works is performed on a street, observed by an audience in a building across the way; a tape prepared in advance describes the details of the walk-way and facades of the street.

Cecil Coker was born in Kewanee, Mississippi. He made contributions to the synthetic speech computer. In 1965 Cecil designed a photocell switching circuit for John Cage's Philharmonic Hall concert. Last spring he designed a feedback sound generator for Bob Rauschenberg's "Linoleum." Cecil contributed to the early original plans for TEEM and initiated the proportional control system. He never fails to come up with solutions to complicated problems.

Pete Cummins born in Hasbrouch Heights, N. J. works on formant vocoders and vocal tract analogs. He has designed

the general purpose pre-amplifier and the original circuit for the 20 Watt power amplifier. Pete also designed an amplifier for picking up body sounds for Alex Hay.

Oyvind Fahlstrom was born in Brazil. He is a painter, poet, playwright and critic. Oyvind has worked in Sweden, Italy, France and the U.S.A. He represented Sweden at this year's Venice Biennale. He has done several happenings in Stockholm. "Kisses Sweeter than Wine" is his first theater work presented in America. His paintings are shown at the Janis Gallery.

Ralph Flynn born in Andover, Massachusetts, used to manage a coffee house in Boston. He now works on high speed PCM repeaters. He has assisted Fred Waldhauer on the construction of the proportional control system and worked on other parts of TEEM.

Alex Hay has firmly backed his friends' dances with performance and technical help. In the latter capacity he toured the world as Rauschenberg's assistant with the Cunningham Dance Company. His own choreography is laconic and painterly. His solos are rarely completely solo in feeling because his music and sound tends to partner the performer. He is from Florida and shows his paintings at Leo Castelli.

Deborah Hay was born in Brooklyn. She has danced for many choreographers, including Merce Cunningham on his 1964 world tour. She has presented dances in Europe, Asia and America. The current tendency of her work toward even, endless, smooth presentation of relatively scant material dates from Summer 1965.

Ken Harsell born in Elizabeth, N. J. works with reberation time measuring equipment design. He has designed and built the tone control circuit which enables an operator to control the gains at four points in the spectrum.

Larry Heilos works on gas lasers. Larry located an infrared TV pick up tube for Bob Rauschenberg. The tube was made in Japan and the only one available of broadcast standard at the time. Larry designed and built the mechanical parts for Debbie Hay's platforms. It was hard work.

Peter Hirsch born in Germany likes to ski, fence, and paint. He works in underwater sound. Peter built and tested the 80KC Doppler sonar for Lucinda. The instrument is beautiful.

Harold Hodges has a wife, six children and is a grandfather. He spent many years as a watch-maker but for the past ten years has worked in laser research. Harold was responsible for many of the technical devices in Jean Tinguely's "self-destructive machine" in 1960. He also built technical equipment for Bob Rauschenberg's "Oracle." Harold designed and built the anti-missile missile and floating snowflakes for Oyvind Fahlstrom.

Bela Julez born in Budapest heads the Sensory and Perceptual Processes Department at Bell Labs. He works on computer pictorial data processing. He provided Alex Hay with necessary information to initiate the building of the low-noise, high-gain amplifier.

Bill Kaminski works in the area of mobile radio research. He designed and built 10 FM crystal control transmitters which are operated under an FCC experimental broadcast license. Bill also built the transmitters for Bob Rauschenberg's tennis rackets.

Rudy Kerl a ham radio operator works in gas laser research. He has contributed most of the mechanical work on the TEEM system, built the SCR circuits and converted the commercial radio receivers to the crystal control.

Bob Kieronski born in Philadelphia does research on digital systems. He has invented a

machine called "Vochrome," the rather unconventional spectrum analyzer used by David Tudor. He also built a relay switching network which can be programmed for 2 billion combinations.

Louis Maggi works on magnetics used for memory and storage system. He constructed part of the power switching relays for controlling light and motors. Louis was born in Brooklyn.

Max Matthews participated during original series of artist/engineer sessions and offered many ideas. He was born in Columbus, Nebraska. He is director of the Behavioral Research Laboratory at Bell.

Jim McGee comes from Illinois and works on holograms. He owns his own plane and is a ham operator. He has worked on tape recorders for Steve Paxton and built the programming drums which will be used by many of the artists.

Stexe Paxton came to the East to study dance. He has since danced with several major modern dance companies, principally Merce Cunningham's company. He produced two series of concerts of the newer dance, Surplus Dance Theater in 1964 and First New York Theater Rally in 1965. During the last three years Steve has choreographed and performed works of his own widely in the U. S. and abroad.

John Pierce broke the general awkwardness during the first meeting between the artists and engineers by telling Stretch Winslow: "Tell them about something they can use."

Robert Rauschenberg born 1925 Port Arthur, Texas. Painter. Theater experience: costumes and sets Merce Cunningham 1955-65; Paul Taylor 1957-59; Lighting for Cunningham, Taylor, Rainer, Hay, Dunn, group shows. Choreographed works: Collaboration for David Tudor 1961. The Construction of Boston 1962. Pelican 1963. Shotput 1964. Elgin Tie 1964. Spring

Training 1965. Map Room I, Map Room II 1965. Linoleum 1966. Open Score 1966. Bob recently bought an old mission house which served as headquarters for the preparations of 9 Evenings.

Robby Robinson born in Atlantic City, holds a radio operator's license. He is the station operator and signs 15 radio broadcast stations on and off every day. Robby's first contribution was the beautifully designed power amplifier for the TEEM system. He also designed the decoder units and worked with Herb Schneider as System Coordinator. Robby's general contribution to the project has been invaluable. At Bell, he works in mobile telephone research.

Herb Schneider studied in Bebek, Turkey and works on mobile radio systems. He is an excellent skier. Herb has taken over the performance planning for all of the artists filling their technical needs. Herb has an enormous capacity for coordinating and planning. The diagrams in the program are his.

Manfred Schroeder is director of Bell's Acoustics, Speech and Mechanics Research Laboratory. He has been granted 32 patents. Manfred suggested the original sonar device for Lucinda and participated in the early meetings between artists and engineers.

Tony Trozzolo, born in Chicago, works in physical organic chemistry. He contributed many ideas on the properties of some chemical materials for Yvonne and Oyvind. Tony designed fiber optics—piping light and optical effects with material that glows in the dark.

many years with John Cage concertizing all over the world. **Fred Waldhauer**, a native of Brooklyn, develops communications systems for long haul services. He has also designed and developed the proportional control system, a unique contribution to the equipment. Fred and Cecil Coker finished the amplifier for Alex on October 7th.

Martin Wazowicz comes from Pennsylvania. He works on micro-wave propagation measurements. Marty built the amplifiers to pick up muscle, heart and body sounds for Alex Hay.

Robert Whitman's theater work dates from the early days of the happenings. Some of his latest pieces enjoyed an extended run at the Martinique Theater and at Circle in the Square. His invention in costuming and architecture, his elegant use of cinema is tempered by roughshod elements of subject and elemental theatrical techniques. The disparity in these elements results in strong and discontinuous images and unexpected humor.

Stretch Winslow worked on the Manhattan Project during the war. He heads Bell Labs' Polymer Research and Development Department. Many of the challenging chemical problems were solved by Stretch.

Witt Wittnebert was born in Rahway, N. J. As assistant to Billy Klüver in laser research, Witt has become accustomed to communicating with artists. He built the photocell switching circuits designed by Cecil Coker for Cage's Philharmonic Hall concert last year. For 9 Evenings, Witt contributed to many areas such as building pre-amplifiers and all the electronic gear on Debbie's platforms.

Dick Wolff developed Steve Paxton's radio loop system and built the encoder. He works in superconducting research. Dick enjoys experimenting with Hi-fi equipment and photography.

9 evenings: theatre & engineering

PROGRAM

13 18

OCT. '66, THUR. 8:30 P.M.

PHYSICAL THINGS

by: Steve Paxton

performance engineer: Dick Wolff

cast: Karen Bacon, Sue Hartnett, Margaret Hecht, Michael Kirby, Ted Kirby, Clark Poling, Elaine Sturtevant, David White, and others. technicians and help: Karen Bacon, Margaret Hecht, Tony Holder, Walter Gelb, Larry Leitch. sound: disparate sources.

GRASS FIELD

by: Alex Hay

performance engineer: Herb Schneider

sound distribution: David Tudor. cast: Steve Paxton, Robert Rauschenberg. credits: Schweber Electronics for integrated circuits, Mt. Sinai Laboratory for technical information.

SOLO

by: Deborah Hay

performance engineer: Larry Heilos

performers: Franny Breer, Lucinda Childs, William Davis, Jim Jardy, Alex Hay, Deborah Hay, Margaret Hecht, Ed Iverson, Kathy Iverson, Julie Judd, Olga Klüver, Vernon Lobb, Fujiko Nakaya, Steve Paxton, Bob Rauschenberg, Joe Schlichter, Bob Schuler, Marjorie Strider, Carol Summers, James Tenny. music: "Funakakushi" by Toshi Ichiyonagi. performed by: David Tudor. men's costumes by: Letty Lou Eisenhauer.

14

OCT. '66, FRI. 8:30 P.M.

OPEN SCORE

by: Robert Rauschenberg

performance engineer: Jim McGee

cast: Frank Stella and Mimi Kanarek and a group of 500 people.

BANDONEON ! (a combine)

by: David Tudor

performance engineer: Fred Waldhauer

tv images by: Lowell Cross. carts: David Behrman, Anthony Gnazzo.

15

OCT. '66, SAT. 8:30 P.M.

CARRIAGE DISCRETENESS

by: Yvonne Ranier

performance engineer: Per Biorn

performed by: Carl Andre, Becky Arnold, Rose Marie Castoro, William Davis, Letty Lou Eisenhauer, June Ekman, Ed Iverson, Kathy Iverson, Julie Judd, Michael Kirby, Alfred Kurchin, Benjamin Lloyd, Lewis Lloyd, Meredith Monk, Steve Paxton, Carol Summers. Stage manager: Rudy Perez.

VARIATIONS VII

by: John Cage

performance engineer: Cecil Coker

performers: David Tudor, David Behrman, Anthony Gnazzo, Lowell Cross. grateful acknowledgement is made for the cooperation of: Merce Cunningham Dance Foundation, Luchow's Restaurant, A.S.P.C.A., N. Y. Times, the City of New York, Terry Riley, Robert Wood, Richard Hennessy, Rubin Gorowitz.

16

OCT. '66, SUN. 8:30 P.M.

VEHICLE

by: Lucinda Childs

performance engineer: Peter Hirsch

cast: William Davis, Alex Hay. slides by: Les Levine.

VARIATIONS VII

by: John Cage

(See Oct. 15)

OCT. '66, TUES. 8:30 P.M.

TWO HOLES OF WATER—3

by: R. Whitman

performance engineer: Robby Robinson

film: Pan American. fiber optics: Flexi-Optics. tv help: Bill Hartig. performers: Max Baker, Gil Miller, Terry Riley, Les Levine, Toby Mussman, Bob Breer, Jane Kramer, Elaine Sturtevant, John Giorno, Susanne de Maria, Mimi Miller, Trisha Schlichter, Julie Martin.

BANDONEON ! (a combine)

by: David Tudor

(See Oct. 14)

19

OCT. '66, WED. 8:30 P.M.

PHYSICAL THINGS

by: Steve Paxton

(See Oct. 13)

TWO HOLES OF WATER—3

by: R. Whitman

(See Oct. 18)

21

OCT. '66, FRI. 8:30 P.M.

CARRIAGE DISCRETENESS

by: Yvonne Ranier

(See Oct. 15)

KISSES SWEETER THAN WINE

by: Oyvind Fahlstrom

performance engineer: Harold Hodges

direction Soren Brunes and Oyvind Fahlstrom. production assistants: Letty Lou Eisenhauer, Ulla Lyttkens. props: Alfonse Schilling. performers: Bob and Frances Breer, Letty Lou Eisenhauer, John Glover, Bruce Glushakow, Tom Gormley, Jim Hardy, Ed Iverson, Kosugi, Larry Leitch, Les Levine, Marjorie Strider, Bob Schuler, Ulla Wiggen, tapes: Sveriges Radio, Stockholm: WBAI-NYC. films: "Creation of Humanoids," courtesy of W. Barry, Genie Productions Inc. and Medallion Pictures. "Acqua Sangemini" courtesy Ditta Agrippa, Rome; and educational films courtesy AT&T. chemicals: Nuclear Research Associates.

22

OCT. '66, SAT. 8:30 P.M.

GRASS FIELD

by: Alex Hay

(See Oct. 13)

KISSES SWEETER THAN WINE

by: Oyvind Fahlstrom

(See Oct. 21)

23

OCT. '66, SUN. 8:30 P.M.

OPEN SCORE

by: Robert Rauschenberg

(See Oct. 14)

SOLO

by: Deborah Hay

(See Oct. 13)

VEHICLE

by: Lucinda Childs

(See Oct. 16)