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E.A.T. - misc

Bob Whitman

For Whitman, the idea of art and technology was not important. The thing that excited him was the prospect of the artist becoming integrated into society as a useful force. He feels that the door was opened to this in Nine Evenings and EAT, and that it's by no means a dead issue - that it will be easier when it comes up again. But he and RR never discussed this, or similar ideas. And he doesn't think that RR shares this view, or has any real interest in a new social role for the artist.

Ivan Karp

E.A.T was a tragedy. Billy Kluver's "hopeless enthusiasm." Art should not contest with technology that way -- it should take account of it the fact that technology gives us much of our visual imagery, and that many objects of technology are more beautiful than works of art. But EAT went at it the wrong way, trying to make things that were better than technological artifacts.

Francis Mason, who [illegible]
to be a professional org. and felt they should have a professional running it, decided to resign after 8 months in office. ("His experience had been with the government," Billy explains. "This situation was a little too uncertain and messy."). As Billy puts it, he took over at EAT because "it was either that or EAT disappearing."

EAT
Now, says Billy, the whole concept is much clearer, and it seems more relevant every day. See his article on EAT ("Rainforest").

Some aspects of EAT: It is experimental first and foremost. There is also the aspect of scale -- instead of an artist making an independent work of art to hang in a gallery (or the Peace Corps idea of sending one many into a village, after which he goes away and everyone is left standing around), EAT thinks in terms that involve a number of people in time, and in which many participate. Also, EAT thinks in terms of ecology -- always concerned with the effect of something on other things.

Big problem is that most people still don't understand what's going on -- don't understand even the idea of the artist being "outside art."

But the social usefulness of the artist is basic to concept. The artist's perception is what is useful. "He doesn't carry around all that institutional baggage. Whitman's contribution in India was marvellous, for example. He saw things nobody else would have seen, like the fact that Indian children watching something always sat very close together, much closer than children do in the West..." (see Whitman quote)

Definition of an artist: Art is his main occupation. Not in it for money.

Maurice Tuchman? "My first reaction was that it could be very dangerous, because he was undertaking something that would be very diffult to do. Now it seems to be working...

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Yvonne Rainer

She developed a serious intestinal infection during Nine Evenings, an adhesion. Bob had a collection of Indian objects that he "more or less made up. I make certain combinations of them, to help keep my mind concentrated on a certain subject that needs attention. I've been involved very closely with Yvonne in three emergencies of life and death. This was the first. I guess I'm fairly superstitious. Nearly always I carry around all sprts of things in my pocket. Navajo de-witchers, that I picked up in New Mexico. Some are like pieces of fossalized opal -- being a Libra, opal is extremely good luck, it has magic powers. Little rocks or objects, a safety pin, it can be nearly anything as long as you believe it has some power. It's just prayer, but not as noisy. I used it in the hospital and Yvonne turned out just fine. It certainly couldn't have hurt -- and it took care of my caring, of the helplessness one assumes."

The other two occurrences: One near Aspen, intestinal infection again; the other a suicide attempt. "I got into a moral hassle over that with some of my friends, who said if someone wants to kill themself, let them, it's none of your business. I've never felt the same about those friends since."

"With Yvonne it's a strange mixture of love and fear. Her presence often makes me feel weak. She's powerful! I used to have to work so hard being in Yvonne's pieces. I knew I was replaceable so easily, so I had to be at rehearsals right on time. Her pieces were constructed deliberately illogically -- you had to get them into your body. My fear of displeasing Yvonne made it possible for me to work that way."

Francis Mason, who [illegible] to be a professional org. and felt they should have a professional running it, decided to resign after 8 months in office. ("His experience had been with the government," Billy explains. "This situation was a little too uncertain and messy."). As Billy puts it, he took over at EAT because "it was either that or EAT disappearing."

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(EAT Notes)

Billy Kluver 9 invu Jan. 28, 1970

Billy was bornx in Monaco, Nov. 13 1927. His father had been a timber merhhant in Norway, of an old Swedish family listed in the Almanach de Gotha. He decided to get away from all that and become a chicken farmer in Spain. While in Spain he met his future wife. Billy would have been born in Spain, but the father got sick (hepatitis) and they moved up to the Riviera, Rocquebrune. The closest hospital was Monaco (now the Princess Grace Hosp.). Very soon after B. was born they moved to Sweden where his father took over a hotel in the town of Ed (southern Sweden). Billy spent his childhood (ten years) there and in the mountain village of Sälen where his father built a hotel for skiiers. His parents were divorced in 1939. Billy went to ~~Swedish~~ school Royal Inst. of Technology college in Stockholm, ~~(Royal Inst. of Technology) then to the Univ of Technology there.~~ While an undergrad he got involved with making movies (was pres. of the college film society), and met a number of filmmakers and artists. He graduated from ~~college~~ Royal Inst. in 1951, did his year of military service, then went to Paris where he got a job working for a television laboratory. Met Tinguely and Breer, who became his liaison with the art world.

Came to US 1954 and entered Univ of California at Berkeley. Got his MS in Electrical Engineering there in 1955, his Ph.D. in 1957. Was Ass't Prof. in Electrical Engineering there 1957-1958. Then joined technical staff of Bell Tel. Labs (Sept. 1958). At Bell nine years, working on vacuum tubes, lasers, etc (see official bio). Simultaneous collaboration with artists: Tinguely, RR, Johns, Warhol, ~~Oldenburg~~ (See over)

Towards the latter part of 1968 he was thinking of leaving Bell. Had had several offers, was considering post with Natl Acad of Science. But then Francis Mason, who had been taken on as Pres, of EAT because they wanted it to be a professional org. and felt they should have a professional running it, decided to resign after 8 months in office. ("His experience had been with the government," Billy explains. "This situation was a little too uncertain and messy."). As Billy puts it, he took over at EAT because "it was either that of EAT disappearing."

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Billy (ctd)

"EAT is an experiment in organization -- I should have said in fluid, changing organization." The real problem is the interface between artist and engineer or industry, what Billy calls the problem of "software."

The danger is that industry, misunderstanding, will turn against the concept and in turn help to cut off possible funds from others, like Philip Johnson after Hommage à New York, telling Billy that he would never again be caught doing anything for modern art .

Note on Billy: A museum man once described him as "the Edison-Tesla-Steinmetz-Marconi-Leonardo da Vinci of the American avant garde."

Collaborations with artists

Jean Tinguely, "Hommage a New-York," March 17, 1960.
Jasper Johns, "Field Painting," "Zone" 1962-1965.
Yvonne Rainer, Dance "The House of My Body" , 1963.
Robert Rauschenberg, "Oracle," 1962-1965.
John Cage, "Variations V," Lincoln Center, June 1965.
Andy Warhol, "Pillows," 1965-66.

Coordinator for Nine Evenings: Theater and Engineering, Jan1966-Oct. 1966, with works by ten contemporary artists collaborating with 40 engineers,

Also active in several exhibitions: "Art in Motion," Stedelijk, Moderna Museet, Lousiana Museum in Denmark, 1961; "Four Americans," Moderna Museet, 1962 (Leslie, Stankiewicz, Johns, Rauschenberg); "Art 1963 - A New Vocabulary," Arts Council of YMHA, Phila., 1962; "Popular Image", Washington Gallery of Mod Art, 1963; "American Pop Art", Moderna Museet, 1964 (also Stedelijk).

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Statements on Art and Technology (Kluver)

~~Billy Kluver~~: "Functional rules simply don't exist for the artist. He discovers the rules and how to use the material as he goes along. His work is essentially instantaneous and he will rarely commit himself to future restrictions. The engineer oh the other hand is theoretical. He knows what he is doing, why he is doing it, and what the function of the work is. He works logically within a framework... The artist's work is like that of a scientist. It is an investigation which may or may not yield meaningful results. In many cases we only know how meaningful or not years later." (Quoted from article in Bell journal).

~~Kluver~~: "All of the art projects that I have worked on have at least one thing in common: from an engineer's point of view they are ridiculous."

~~Kluver~~: "I am not an art historian, but I am willing to bet that the Pepsi involvement in Expo '70 will be read about in art history books in the year 2100... if there are any books."

~~Kluver~~: "At the time of Aristotle, the Greeks cut the orange the other way. Agnos: mathematics, lawsuits, poetry and rhetoric. Techné: sculpture, painting, physics, medicine and crafts. Today the scientist and the artist share both Techné and Agnos."

~~Kluver~~: "The function of technology as a material is not to put previous ~~e~~sthetic concepts into new forms but to provide the basis for a new esthetic, one that has an organic relationship with the contemporary world."

"We have to live with a work of art or fight it. Technological success or failure cannot be criteria for judging the work. A work of art loses its interest if it is ~~judged~~ only judged according to predetermined norms. To assume such an attitude would be disrespectful toward the audience, and it would never allow the collaboration ~~b~~between artists and engineers to mature. ~~.~~. Whether the technology works or fails is not a very important aspect of this relationship. We know for sure we can always make something work."

"I have yet to meet a scientist who would collaborate with an artist -- or who could." (see Art In America invu, source of four above quotes, for more on difference between engineer and scientist).

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See Also: Rainer article in Ballcock, Minimal Art, p. 263 - how new dance reflects new art.

Yvonne Rainer - "Work 1961-73"

Born 1934 in San Francisco.
Came to N.Y. with ad Held in 1956, enrolled in Herbert Berghof School of Acting. Took dance class 1957 with Edith Stephen, and decided after seeing Erick Hawkins' Here and Now with Watchers that year to become a dancer. Studied with Graham, Ann Halprin, Cunningham.

1960 - got involved with Robert Dunn workshop - p. 5. Made first dance, using score for Cage's Fontana Mix.
Also studied + danced with James Waring - p 6

1961 - Dunn workshop; "Cagean idea that chance offered an alternative to the masterpiece" (p. 7)
Origins of Judson Dance Theater - pp 8 ff.

Rauschenberg's effect: "those of us who appeared with him became the tail of his comet." (9)

Minimalist tendencies in dance - p. 63
Why no more grands jetés - p. 65-66

On Merce - "doing something totally ordinary" - p. 327

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E.A.T

Collaboration on one-to-one basis, each sharing resp. for result, was RR's idea (Nine Evenings)

EAT founded Sept. 26, 1966 by RR, Fred Waldhauer, Robt Whitman, & Kluver.

"The collab of artist & engineer emerges as a revolutionary contemporary sociological process."

First grant 1967, fr NYS Council on the Arts. That summer, AT&T, IBM, Xerox, AFL-CIO.

"Some New Beginnings" computer & exhib., Brooklyn Museum, Nov 24 1968

By end 1969 EAT had memberships of 2500 engineers & 2500 artists, increasing by 100 a month.

EAT interest turned to projects in developing countries, after Expo 70.

January 30th, 1970

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RAINFOREST

by

Billy Klüver

Experiments in Art and Technology, Incorporated

(History of EAT)

January 30th, 1970

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The rainforest is made up of thousands of feedback loops of continual activity. Thousands of animals, plants and trees live in the rainforest. Its roots are few and shallow as opposed to the oak tree's deep roots in the ground. The oak tree takes energy out of the ground and shades the area so that no small bush or flower can grow near it.

The main purpose of Experiments in Art and Technology is to develop, through experimentation and experience fluid organizational forms whose model is that of the rainforest rather than the oak tree.

The Early Sixties

The creative outburst in all fields of art early in the sixties has now become a fact. The works of John Cage, Robert Rauschenberg, Jasper Johns, and Jean Tinguely; the early happenings and theatre pieces of Robert Whitman, Allan Kaprow, Claes Oldenburg and the Gutai Group; the dance work of Merce Cunningham and Ann Halprin; and many others, implied a new aesthetic - a new form of art experience which moved outside the canvas and away from classical materials and into a concern with the process of making art. This new aesthetic enlarged and enriched the relationship between the artist and the materials. The desire of artists to use the new technology and his increasing concern with process led to the first contacts between artists and engineers. E.A.T. evolved from the tentative relationship between artists and engineers that developed during the early sixties.

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As a scientist and engineer working in the field of electron beam theory and later in lasers at Bell Telephone Laboratories since 1958, my own experience in working with artists had been spontaneous and matter-of-fact, solving problems and designing or supplying equipment as artists approached me. Some of the events which were based on artist-engineer contact in which I was directly involved included, Jean Tinguely's "Homage à New York" at the Museum of Modern Art, New York, March 17, 1960. Harold Hodges, another engineer from Bell Laboratories, and I worked for about a month with Jean on this automated self-destructing machine that was to destroy itself after 27 minutes of operation. In the process we came up with several ingeneous ideas on how to break steel members automatically, start a fire, and trigger other events that Tinguely wanted. The "Art in Motion" exhibition held at the Moderna Museet, Stockholm in the spring of 1961 under the direction of Pontus Hulten, provided an opportunity for both American and European artists to show works involving new materials and some of which were the results of working with engineers. In Yvonne Rainer's dance in 1963 "The House of my Body" internal body sounds of the dancer were picked up and transmitted to offstage speakers. Between 1962 and 1965 I worked with Robert Rauschenberg on his major sculpture, "Oracle", which used five AM receivers which would retransmit the AM radio sounds to four other free-standing sections of the piece.

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John Cage's "Variations V" performed in the summer of 1965 involved several engineers from Bell Labs, in particular, Max Mathews and his group. I see this performance now as an important step in the growing involvement of artists and engineers. Already at Bell Laboratories John Pierce and Max Mathews were sympathetic to the involvements of the artist with technology and had initiated an artist-in-residence program in which composers explored the use of computers in their work.

As I became more and more aware of the artists' needs and interests, the role that I, as an engineer, could play in relation to the artists concerned me. My contacts with artists and the art world date from the forties. But I was educated as a scientist and could only work with the artist in my professional capacity as a scientist and develop the possibilities of a relationship in which artists and scientists function in very different ways.

> During the construction of the machine I was constantly amazed at Jean's disregard for the simplest rules of engineering. In one instant he would demand that something should function and in the next he would violate his demand by the most trivial of actions. Jean worked as an artist. He chose his motors and put on his slings as an artist. He was only interested in functional operations that he could understand, so that he could reject or accept them as he pleased. But he was also imspired by the possibilities of

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engineering and realized that he could use these as long as he was in complete control over what he was doing. As an engineer, working with him, I was part of the machine. This new availability was largely responsible for the size and the complexity of the machine. (1)

The difficulties which arose during work on "Oracle" were perhaps not so much of a technical nature (once we had decided what to do, the technical problems were normal), as working with Rauschenberg. I don't mean that Rauschenberg is in any way difficult to work with; he is a wonder of patience. It is just difficult for an engineer to talk to an artist. The engineer speaks slowly, with a natural hesitation. He knows that the problems can be solved, even though he can't see the solution right away. He is worried about costs and needs time to find what materials are available. He tries to force the artist to give a more detailed description. What is the goal? What should the power of the amplifiers be? What noise level is allowed? Could interference between local oscillators from the various radio receivers be allowed? What should the maximum and minimum dial speeds be? How stable should the frequency of the local transmitter be? How many hours should the batteries last?

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> The artist on his side works fast and with his hands. He works with existing facts and does not want to bind himself to theoretical details which apply to the future. In a month or a year his attitude may be completely different from what it is today. He doesn't know the engineer's language, and he doesn't know what the words mean. Can he trust the engineer? The engineer needs definite information to make the problem comprehensible. The artist wants as much freedom as he can get to control the result. (2)

I felt the growing need and interest on the part of the artist, and I knew from my own experience that scientists and engineers could get seriously involved with the artist. But the cultural separation was so great that at this time, summer of 1968, the best solution appeared to be a book aimed at the technical community. As I worked on the book - which I tentatively titled Engineering in Art - I realized that a much greater effort would be needed to satisfy the artists' expectations, and to interest engineers and scientists in working with artists. Clearly there had to be some form of organization which would provide artists with access to the new technology. The impetus would have to come from something more concrete than a book. One year later "9 Evenings: Theatre and Engineering" provided the impetus.

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9 Evenings: Theatre and Engineering

At the end of 1965 an opportunity arose to make a series of theatre performances using new technology. Artists would have access to the new technology as material for their works with a view toward demonstrating - on a large scale- the artists' interests in the new technical materials and the necessity to provide them with access to these. The process began by putting ten artists in direct contact with a group of engineers. This was probably the first time a group of artists and engineers had self-consciously come together to develop projects with no preconceived ideas of what they would end up doing, except that the result would be a series of theatre performances. "That first meeting on January 14, 1966 with a group of 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 John Pierce suggested: "Let's tell them about something they can use." The ice was broken." (3)

After this first meeting about a dozen bull sessions were held. The first suggestions and ideas of the artists were recorded and some are listed below:

500 kc doppler sonar to pick up ordinary motion by the body. Beat frequency should be directly audible.

Stretch rubber or fabric in two directions so that area is multiplied many times. Probably use textured yarn and have commercial knitter make fabric to specification.

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Clouds. Solid and otherwise. Use of styrene foams is possible if they are hollowed. And filled with helium. One litre helium can lift one gram, one litre foam weighs 1.5 grams.

Gases. Which gases are nontoxic and innocent and affect people? (Helium).

Subsonic sounds.

Large (more than ten feet) mirrors made up of aluminized mylar, circular and stretched. The radius of curvature of the mirror can be changed continuously by applying pressure or vacuum behind aluminized sheath.

All body functions which relate to use of energy: Use of CO_2, sweat, EGG, breathing to be converted into sound.

Powerpak. What is the maximum power which can be obtained during ten minutes, from batteries and which weighs less than 30 pounds? Cannot be liquid batteries.

Instant heat and cold. Use of infra-red sources and liquid air.

Low frequency transmission loops, simple and with low definition. Each of the spectators to carry a receiver.

Debbie Hay wants to be able to approach two objects (comb and hair, knife and fork) and connect a sound-source (tape recorder). In how many ways could such a switch be made?

Fahlstrom and Rauschenberg want to float, suspended in air. (4)

The engineers commented on the feasibility of these ideas, gave possible solutions, made counter suggestions.

One set of problems resulted from the fact that each group knew little about how the other one operated. The engineers were unfamiliar with the thinking and attitudes of the artist and at first did not understand the depth of the artist's commitment to his work. The artists already wanted to explore the possibilities of using technology, but because they were unfamiliar

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with the actual workings of the technology they appeared vague to the engineers. The artists had to contend with the fact that the engineers had 9 to 5 jobs and that they couldn't promise anything until they had designed and tried out an idea.

During the summer of 1966, as the form of the working relationship between the artists and the engineers took shape, the concept of the one-to-one collaboration between artist and engineer, each one sharing in the responsibility for the final work was introduced by Robert Rauschenberg. (5) His insistence on a working situation in which people take responsibility for the areas of their involvement and contribute in their professional capacity in an open-ended situation became a major operating principle of the collaborative process.

After 9 months, a series of performances,"9 Evenings: Theatre and Engineering"was produced which has been described extensively elsewhere. (6) It represented a breakthrough in that it was the first time engineers got involved on that scale in producing a work of art: 4 man-years of engineering time was devoted to 9 Evenings. But even more important the engineers found themselves operating in the environment of the contemporary artist.

During the final preparations for 9 Evenings it was decided, by the artists and engineers involved, that a formal organization was needed to carry on the work of providing artists with continuous access to new technology. 9 Evenings had given the impetus for the formation of Experiments in Art and Technology, which was founded September 26, 1966 by Robert Rauschenberg,

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Fred Waldhauer, Robert Whitman and myself with the support of other artists and engineers who participated in 9 Evenings. We stated the purpose: "to catalyze the inevitable active involvement of industry, technology and the arts." (7) That this had important social implications was clear to us at the time:

> Engineers are becoming aware of their crucial role in changing the human environment. Engineers who have become involved with artist's projects have perceived how the artist's insight can influence his directions and give human scale to his work. The artist in turn desires to create within the technological world in order to satisfy the traditional involvement of the artist with the revelant forces shaping society. The collaboration of artist and engineer emerges as a revolutionary contemporary sociological process. (8)

Growth 1966 - 1969

Immediately following "9 Evenings" we called a general meeting for artists in the New York Area. The purpose of the meeting was to determine whether there was a need for an organization like E.A.T. The response overwhelmed us - over 300 artists attended, 80 of whom expressed an immediate need for technical assistance and materials. A subsequent meeting in January 1967 confirmed this interest. When engineers who attended this meeting were asked to identify themselves, and 12 stood up, the artists who were present broke out in spontaneous applause.

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Once we realized the intensity of the artists' interest, we were confronted with two major problems - how to reach individual scientists and engineers and interest them in working with artists, and how to encourage the participation and interest of industrial management.

In 1967 we received our first grant, from The New York State Council on the Arts. We devised the first set of approaches towards establishing collaboration between artists and engineers and began to find out what artists actually required. We also held meetings especially for engineers and developed closer contacts with them. During 1967 the engineering membership increased from 20 to 130. In the summer and autumn industrial sponsorship became a fact. A T & T, I B M, XEROX, the A F L - C I O, and other important organizations gave financial support.

E.A.T.'s major effort in the spring of 1968, was a series of 32 lecture-demonstrations for artists, given by leading scientists and engineers in various fields of technology, including computer-generated music, images and speech, honeycomb papers, plastics, lightsing television, color theory, lasers and holography. The series was well received by the artists.

In the fall of 1967 E.A.T. had been approached by Pontus Hulten with a request to provide works for his exhibition, "The Machine" at the Museum of Modern. We recognized this as an opportunity

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to involve the technical community and decided to hold a competition for the most inventive technical contribution by an engineer to a work of art produced in collaboration with an artist. E.A.T. also invited artists to submit works which incorporated new technology, to be considered for inclusion in the exhibition. The jury was composed of 5 scientists who had no previous, direct involvement with the arts. The competition was announced on November 11, 1967 in the New York Times, and later Scientific American and fifteen technical journals. E.A.T. offered to match any artists or engineers interested in entering. By June 1, 1968 the deadline for submission of entries - 147 works were submitted and of these 95 were collaborations, representing 19 states and 7 foreign countries. The number and variety of these entries confirmed that collaborations between artists and engineers could and did work and revealed the intense involvement of many artists in using a wide range of the new technology.

In the summer of 1968 it was decided that all the works submitted would be exhibited to show a representative cross-section of works which resulted from collaboration between the art world and the technical community. The Brooklyn Museum offered space, artist and engineer members of E.A.T. volunteered time to set up the exhibition, "Some More Beginnings: Experiments in Art and Technology", which opened on November 24, 1968. The public, in particular the youth from the local area, responded enthusiastically, becoming very involved in the pieces with which they could interact. (9)

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At the end of 1969 we estimate that E.A.T. has a membership of 2,500 engineers, 2,500 artists. The general membership increases by approximately 100 per month. And we calculate that since 1966 approximately 50 man-years of engineering time has gone into working with the artists in individual collaborations.

One factor in E.A.T.'s growth during the years 1966 through 1970 was the appearance of E.A.T. local groups. We encouraged anyone who showed interest to form a local group using the E.A.T. name. Such groups were initiated by artists and engineers in their own communities and many have become active and self-generating. Local E.A.T. groups were founded in Amsterdam, Ann Arbor, Atlanta, Boston, Buenos Aires, Chicago, Cleveland, Colombus, Denver, Detroit, Genoa, Ithaca, Las Vegas, London, Los Angeles Miami, Milwaukee, Minneapolis, Montreal, New Haven, Philadelphia, Pittsburgh, Portland, Providence, Richmond, San Francisco, San Paulo, Saint Louis, Schenectady, Seattle, Stockholm, Sydney, Tokyo, Toronto, Vancouver, Washington, D.C.

Technical Services

In addition to specific projects, the continuing effort during our first four years was to develop the Technical Services Program. The four main problems which the Technical Services had to deal with were: artists' lack of knowledge of technology and technical language; great variety in artists' needs ranging over many technical fields and varying over many levels of technical sophistication; the need to attract engineers and scientists

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and sustain their professional interest in working with artists; and the need to overcome the almost total lack of understanding within industry of the needs of the contemporary artist.

We consider the Technical Services an experimental program to provide the artist with technical information and assistance, to provide him with access to industrial resources, and to build up viable organizational forms to establish permanent contact between artists and engineers and scientists. These services are free, and open to all artists, engineers and art institutions. The services fall roughly into three categories: those that involve direct contact between artists and our general engineer and scientist membership and make use of the engineer's volunteer services; those that involve specialized services and programs directed towards individual artists and art institutions; and those that develop approaches and methods for matching the artist into industry. Since our aim is to catalyze new opportunities for the artist to work in collaborative situations within the technical, industrial and research environment, the services will not set up workshops, resource centers, reference libraries or facilities for designing or producing works of art.

The services are flexible and responsive to the wide and shifting needs of the artist and the artist-engineer relationship and have a short turn-around time. Documenting, recording and analyzing the effectiveness of our service program is necessary in order to continually refine the services and make them available in suitable form to other institutions.

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The current system is to code engineers and scientists onto edge-knotched cards according to information provided on the membership form, on which they indicate their fields of technical competence and in which services they would like to participate.

Technical Information

The artist makes his request by mail, telephone or coming to the office, and he is given the name of an appropriate engineer or scientist to contact. In the case of technical information, the engineer or scientist provides the artist with materials, processes, or equipment, makes judgements on feasibility of ideas, suggests circuit designs, etc. The nature of these requests are such that they do not require a second follow-up by the artist and can usually be handled on the telephone.

The range of technical questions which the artists ask is so broad that this service cannot be handled by a computer-based information retrieval system. Instead the technical information concentrates on methods of direct contact with engineers and scientists, and builds up a group of engineers within the general membership who can effectively answer these kinds of questions. The system must involve a very short turn-around time; and one method that can be experimented with is to connect this group of people to the E.A.T. office by telex and develop the information system using telex communication.

An analysis of the questions and answers can suggest other ways to provide the artist with technical information, such as

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special lectures, technical memoranda on subjects of wide interest, or the incorporation of these subjects into the curriculum for courses in art schools.

Technical Assistance

Many times an engineer is needed to design or build something specific which the artist doesn't have the technical capability to do - setting up sound systems for performances, machining plastic, designing control equipment, making mechanical designs. In this case personal contact takes place and can last for a period of weeks or months.

There are at present two means for developing the technical assistance service: first, develop a group of engineer members who are most interested in giving technical assistance; second, to attract engineering students to do field work and gain experience by working with artists.

Collaboration

The artist requests to be matched to collaborate, or a collaboration is called for when a project or idea appears to be technically feasible but needs extensive development and design. The artist and the engineer or scientist work together to realize the artist's idea and possibilities develop that were not the preconception of either. In a collaboration, the engineer has a deep involvement in the project. The credit for the work is shared equally by the artist and the engineer.

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Collaboration is the basic form of most of E.A.T.'s activities and large-scale projects. Understanding the interpersonal dynamics of collaborative efforts has a wider social significance. Giving attention to the artist-engineer relationship will provide significant insight into such efforts.

Open House

One of our first activities and one of the most successful is the weekly Open House held at the E.A.T. loft on 9 East 16th Street. All artists and engineers and scientists are invited to come to meet and talk to each other informally. Staff members introduce artists and engineers to one another and talk about E.A.T. to people coming for the first time. Sometimes artists bring plans of projects and engineers, samples of materials, and collaborations develop from this meeting. Special Open Houses are arranged where topics of special technical nature are discussed.

Lecture-Demonstrations

The format we have developed for transmitting technical information to a non-technical audience is for working engineers and scientists to give lecture-demonstrations in their field with a large portion of the time devoted to questions and answers and demonstrations of materials and equipment. This has proved a simple and direct way for artists to acquire

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knowledge of processes, materials, new techniques, new engineering fields, etc., and to have direct contact with leading engineers and scientists. A second aspect is that the artist learns how the engineer thinks about problems and how he works in his field; conversely the engineer learns the interests and ideas of the artists and how what he is doing can actually relate to what the artist is doing.

Special lectures or short series of lecture-demonstrations are organized to provide artists with information on areas in engineering and science that suddenly become of general interest in the art community for example: lasers and holograms, pneumatics, fluidics. These lectures also can serve to inform artists of limitations of the state-of-the-art technology and of what physically cannot be achieved, as in the case of holograms.

Safety Program

The problem of safety is three-fold: to prevent the artist from endangering himself in working with new technical materials such as plastics, lasers, chemicals; to insure that works are safe when exhibited publically; and to prevent arbitrary restrictions from being put on artists' use of new technology by authorities. We have already been active in insuring the safety of works on public exhibition and working with public health officials to obtain their approval for these works. In particular, the work

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by Keizi Usami, "Laser:Beam:Joint", was passed by health officials and shown at the Jewish Museum, spring 1968.(10) We have contacted relevant organizations: American Medical Association, National Safety Council, National Science Foundation, and industrial safety organizations and have begun to form a committee of safety experts in various fields which could advise both artists and museums on safety procedures.

Reviews

In special cases artists' projects are sent to engineers and scientists for comment on their technical feasibility. The reviewers are also asked to give suggestions for means of implementation and industries that might be interested and capable of working on such a project.

These comments can be used as supporting material when applications for funding are made to industry, foundations, government agencies, etc.

Industrial Sponsorship

We attempt to find industrial sponsorship for artists' projects, in which the aim is not to procure funds but to establish for the artist contact with industry, in effect a project-orientated artist-in-residence situation. As we develop knowledge of industry and make industrial contacts, we can formulate the most effective methods of approaching industry

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and develop a language for making industrial management understand how the contemporary artist operates.

Artist-in-Residence Program

There is increasing interest from industry to establish artist-in-residence programs. We will, on request, assist industries in establishing experimental, open-ended situations in which the artist has access to pertinent areas of research and manufacturing. Since 1968 a number of these situations have been organized.

Materials

Experience has shown that industry is willing to give technical materials to artists but does not want to spend the man-hours that will be necessary to service all the different requests of individual artists. E.A.T. plans to work with industry to develop methods for making an inventory of available materials and developing a system for distributing them to artists, which matches into the industrial structure.

Use of Research and Industrial Equipment

Another need of the artist is to gain access to specialized equipment, for a specific project. Here the problem is to insure that the operator of the equipment understands the artists' problems and means of approach so that he will be

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open to new ways of using the equipment that the artist might suggest; and conversely, the artist must understand the limitations of the quipment. Here E.A.T. locates industries with appropriate equipment, contacts them on the artist's behalf.

Museum and Art Galleries

For various reasons associated with the difficulties facing the artist, many works incorporating new technology lack the necessary reliability to prevent breakdowns when shown in public. Other works need special technical installation and continuous service and attention. E.A.T. provides a pool of engineers available for installation and maintenance of exhibitions involving new technology. E.A.T. also advises museums on technical requirements for such exhibitions. E.A.T. will make recommendations concerning adequate technical facilities to anyone planning new exhibition spaces.

Education

A large volume of requests for advice and help have come from schools and universities planning courses or programs dealing with artists' relationship to the new technical materials. We have provided information, given talks and lectures, suggested speakers, established an engineer-in-residence program and also encourage collaborative courses and projects between art and engineering students and faculty as part of the curriculum.

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Pepsi Cola Pavilion

The Pepsi Cola Pavilion is a living responsive environment. The cloud surrounding the pavilion responds to the metero-logical conditions, the sun track follows the path of the sun, and the moving floats react to physical contact. The inside of the pavilion is an experiment in individual experience. It represents a new form of theatre space which completely surrounds the audience and where every part of the space has the same theatrical intensity for the individual. This environment will be continuously changing. Artists will operate and program the light, sound, and stage equipment. The accumulated software created by the resident artists will become a remark-able document of the six-months life of the pavilion. The most significant measure of the artists' and engi-neers' involvement in designing and programming the pavilion will be the variety and richness of ex-periences that the visitors will have.

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In August of 1968 David Thomas of Pepsi Cola International asked E.A.T. to develop a proposal for the design of their Pavilion at Expo '70. This project interested us because it presented an opportunity for a number of artists to collaborate to create an environment, one situation. It had the possibility of becoming a large-scale collaboration between artists and engineers, sponsored by industry, outside the traditional boundaries of art.

The method of bull sessions from 9 Evenings was tried again but in a somewhat different fashion, since in this case the hardware boundary conditions were given; i.e. the shell of the pavilion had already been designed, the size of the lot was given, as well the practical boundary conditions of how many people would go through the pavilion every day. Because of this, the first important question became: what was the concept that the four collaborating artists wanted to give the pavilion? The four artists, Robert Breer, Forrest Myers, David Tudor, Robert Whitman, who collaborated on the original design, agreed from the beginning on the basic notion of the pavilion. The individual visitor would be encouraged to explore the environment and choose his own experiences rather than be presented with a series of predetermined events. John Pan, Fred Waldhauer and myself assisted them with technical information about possibilities and feasibility of ideas.

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As is described elsewhere in this book by Nilo Lindgren and Barbara Rose, a large number of suggestions for the design of the pavilion were made and rejected during the following months.

The final design was arrived at between November 10 and December 2, the date of the presentation to Pepsi Cola, in a high pressure situation; and during this time the engineering advice was not of such great importance. In this sense the design of the pavilion is a result of the collaboration of four artists working with an architect, John Pearce, rather than between a group of artists and engineers. Beginning in January, after the basic design had been accepted, it had to be realized; and, the engineers came to play an important part in the development - both esthetically and technically. All of the systems are results of collaboration between the artists and engineers, and the following people worked directly on the system involved:

Control Room Wiring: Lowell Van't Slot

Crowd Counting: Larry Silverstein, Lowell Van't Slot

Floats: Robert Breer, John Ryde

Floor: John Pearce

Fog: Tom Mee, Y. Mihara, Y. Mitsuda, Fujiko Nakaya, Karl Steck, Gosta Wolin, M. Wurtele

Interior Lights: Robert Lippman, Tony Martin, Boris Sojka

Laser Deflection System: Lowell Cross, Jim Hobart, Elsa Garmier, Carson Jeffries

Light Foot: Robert Breer, Tom Fabry

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Light Frame: Frosty Myers, Marlow Pichel, Larry Silverstein, Boris Sojka

Loop System and Hand Sets: Masuda, Okuyama, Lowell Van't Slot, Fred Waldhauer

Sound System: Per Biorn, Cyril Harris, Toshi Ichiyanagi, K. Issa, Peter Kubik, Gordom Mumma, Larry Owens, David Tudor, Fred Waldhauer

The mirror deserves special mention. Once the decision had been made to make a 90 foot diameter spherical mirror, it became purely a construction and engineering problem. We investigated and tried many methods - hard panels, air structures with foams, etc. The final decision of a negative air structure made of melinex was made in early November, 1969. The people who worked on various experiments were: Chris Dawson, John Forkner, Sebastian Hiraga, Tom Huseby, E. Komoguchi, Chip Lord, David Mac Dermott, V. Mitsuno, M. Oda, Ardison Phillips, John Ryde, Alan Stanton, and M. Ueda. The people who were primarily responsible for the final mirror were: Gunnar Spons and Sigvard Stenlund.

In all these cases, John Pearce and Larry Owens played a crucial role in performing the various design and interface functions necessary to pull the systems together. John Pearce, our architect for the project, interfaced the various systems into the construction and architectural aspects of the building and represented us in our relationship with the Japanese construction company, Takenaka. Larry Owens designed and supervised the building of the sound system as well as much of the electronics. On the Japanese side, T. Fujiwara and S. Hiraga of Pepsi Cola acted as coordinators and translators of

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our ideas. There was on the part of the Pepsi Cola management, a genuine respect for the integrity of the artists and their decisions. As we worked with David Thomas, Allan Pottasch, Charles Quigley, Russ Mooney and Dick Collins, they shared in the excitement and involvement we all felt in building the pavilion.

The form of organization of the project as it developed was that the only full-time staff were 3 or 4 E.A.T. staff members, architectural and engineering coordinators and the four artists. Most of the work on specific elements was done in collaboration with over 50 engineers and artists and industries in Japan and different parts of the United States. There was no over-all coordinator for the project in the sense that there was one person who was responsible for the engineering and esthetic design of every element. In other words, the people who were responsible for and interested in a particular aspect made the decisions. If a problem arose it would go back to the person concerned: the fog, the mirror, lights, color of concrete on the plaza. In this way, all decisions about the pavilion had the same intensity. For this reason, no one person was appointed by E.A.T. to stay with the project in Japan at all times, but rather that people came to Osaka whenever they had to. In this way, members of the project travelled more than a million miles in 1969.

If all separate sections of a project are to be perfect then the interfacing of the various elements becomes the overriding problem and good communication between members of the project is necessary. The horizontal, fluid situation under which we operated

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necessarily required that each member of the group understood their responsibility as well as their limitations. Complications arose when engineering, esthetic and budgeting considerations got mixed up. The artist must express his esthetic criteria so that the engineer can understand clearly the boundary conditions that are being set up. Ideally, engineering design, in a situation like this, should be carried out independent of budget considerations. In situations where overlapping interests arose they could usually be resolved by discussions and interchange. There seems to be a point where good engineering and good esthetics meet; whether this point lies within the budget is another question. My con-tention has been that good engineering leads to the least expensive solution.

During the 9 Evenings experience it became clear to us that artist-engineer projects could result in significant practical developments of technology. At this point we don't know what will result from the design of the Pepsi Cola Pavilion though it is clear that several of the projects are 'firsts' in terms of scale and several have led to the development of systems whose technology has further applications.

The mirror is the largest spherical mirror ever made and is the first use in this scale of a melinex, negative-pressure air structure. Using the same technology as the Echo and PAGEOS satellites, which were also made by the Schjeldahl Company, it uses the inside reflective surface of a sphere for the first time. The implications of being able to see and study the

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effect of real images on this scale should be interesting. Its accuracy is better than that of the satellites' and approaches optical accuracy over a distance of a foot along the surface. It is conceivable that this method of making concave reflective surfaces from melinex or mylar can be used in making various types of antennas. Present capacity for making balloons go up to 600 feet diameter, which indicates the possibility of making parabolic antennas for receiving radiation from space of approximately 1000 feet in diameter. There may exist the possibility to use these large reflectors for solar energy concentrators. It is conceivable that very cheap microwave reception antennas can be made for use in satellite television reception.

The common method of producing artificial clouds or fog is to introduce small chemical particles around which the water droplets can condense. The cloud surrounding the pavilion is the largest water vapor cloud produced without the use of chemicals. The method that Mee Industries developed to produce the cloud for the Pavilion offers interesting possibilities for irrigation systems, out-door air conditioning, and protection of crops from frost without polluting the air.

It is the first time the sound properties of a spherical environment have been used to produce music. The sound system is uniquely designed for this environment, in particular the arrangement of speakers in a rhombic grid. The sound system includes possibilities which I am certain will contribute to

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the development of contemporary music and concepts of performance spaces, as well as provide opportunity for experimentation by acoustics experts.

The high-frequency laser deflection system by Lowell Cross and Carson Jeffries has interesting possibilities for large scale mapping and lotting, as well as visual display of information and possible for real-time holography.

"Live programming" of the pavilion became a reality in the beginning of 1969. The hardware ideas were so rich in possibilities that the concept of a continuously changing environment developed organically. To make this possible, we decided on "live programming" in which a changing group of four artists (composers, dancers, painters) or scientists would reside at the pavilion at all times and determine the activities and programming. The sound and light systems, as well as the floor space, the hand set system, and the mirror, were then designed taking into account the demands of this continuously changing environment. The pavilion has become a new kind of theatre space; theatre conceived of as a total instrument, using every available technology. The programming and operations of the pavilion are as important as

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the design of the hardware. With the committment to "live programming" we had moved from a hardware to a software situation. This became very interesting within the context of Expo '70.

In the 19th century the world expositions were very successful in diffusing information about technical ideas and objects, and promoting their general acceptance:

> International exhibitions frequently played a crucial role in making innovations generally known. In a surprisingly large number of instances a new device or process was discovered by the technical world in an exhibition hall, even though it may have been in existence for many years. For example, the Bessemer steel exhibit at the 1862 London exhibition gave Germans their first knowledge of the Bessemer process, although it had been patented in 1856 and described by Bessemer in a paper before the Britist Association for the Advancement of Science meeting of 1856. A particular version of the Corliss engine valve gear was known in Germany as the "1867 valve gear" having been discovered by German visitors to the 1867 Paris exhibition; they later learned that this device had been patented in France in 1859. The conventional type of micrometer caliper, a workshop measuring instrument, was introduced by Brown and Sharpe into the United States in 1868 after Joseph R. Brown found at the 1867 Paris exhibition a micrometer caliper that had been patented in 1848 by Palmer, a Frenchman.

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When in the early 1890's the question was raised as to how the power derived from Niagara Falls might be conveyed to Buffalo, about twenty miles away, an alternating-current system appeared to a small minority of engineers to be desirable, but nothing was known with any certainty about such a system. In 1891 there was exhibited at an electrical exhibition in Frankfurt, Germany, a long-distance alternating-current transmission system, conveying power from 100 miles away. In 1893, a alternating-current system was selected for the World's Columbian Exposition which demonstrated the suitability of alternating current to carry a large and variable light and power load. These two public demonstrations of alternating-current electricity helped give the Niagara Falls Power Company confidence to install an alternating-current system in the face of predictions of dire consequences by such noted experts as Thomas Edison and Lord Kelvin.(11)

The important factor in the success of these exhibitions in transmitting hardware ideas was that people were able to experience first-hand the new machine or process.

At the Paris exhibition of 1889: In the Gallery of Machines there are hugh machines which make paper. Enormous crowds are drawn about these hugh vats and smoking wheels. Two machines, looking almost identical, were built and developed by Mr. M. Darblay and the Belgium Constructor, Mr. de Nayer. These machines operate in front of the visitors who cannot

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> take their eyes off the fantastic machinery, where one can see paper pulp arrive in a state of liquid form in 2 large vats and then leave at the opposite end of the machine in the form of a continuous roll of dry and sturdy paper which is rolled up upon a large cylinder of wood. (12)

In the 20th century the technical community has developed other very efficient means of spreading technical information; but equally as important. As the emphasis in technology has shifted from concern with hardware to concern with software; so too, world expositions have become more involved with software ideas. This is particularly true of Expo '70. When early in 1969, we met with the originators or Expo--Tange, Isozaki, Tono, and others--we discovered that our emphasis on the pavilion as a software situation coincided with their general objectives to create a technologically advanced environment in which the people could participate. For instance, one of the original ideas for Expo was to have the central monument be an "invisible" monument to the individual, a large open space in which the people there would be a monument to themselves. In fact the central performance area of the fair, Festival Plaza, is designed for large scale activities in which the visitors can participate: dancing, games, sports, parades, etc. However, the parallel with the 19th century expositions remains: for the transmission of new ideas--people must come, see, and in the case of software, participate in the new explorations and possibilities.

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One of E.A.T.'s objectives in relation to the Pepsi Pavilion is to physically demonstrate the variety and multiplicity of esthetic experiences the new technology can provide for the individual. The pavilion has a quality of physical experience that cannot be reproduced or reconstructed; it has to be seen firsthand. This is true not only in the trivial sense that the experience of the real image is completely unique, and cannot be synthesized or experienced or understood any other way; but further, that the software experiences with which the pavilion is involved are very physical and have to be directly experienced. E.A.T.'s commitment to moving into software sitautions is based on a belief in the positive role that technology can play in creating useful and enjoyable environments for the individual. Some aspects of technology as it has developed in the West that have positive software implications are the following: Technology directs our attention to practical rather than to the abstract, to physical rather than intellectual activity.

Technology is neutral. It possesses no inherent values, value judgements, goals. It is a tool.

Technology separates and defines functions which can be understood outside a specific cultural environment or value system. Anyone can learn to drive a car or become a computer programmer. Thus, technology creates value-free functions based on the individual's interest, time, and commitment.

Technology generates activity. The introduction and use of technical products leads to development of skills and generates work

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activity. The effect is the same in situations as widely different as the introduction of a Singer sewing machine into a native village and the installation of a large computer in industry.

Technology and technical activity promote agreements between individuals. Communication and transportation systems bring people together and stimulate mutual understanding and acceptance of different attitudes and behaviour patterns.

Technology demands and at the same time provides accessibility to information. Present work in information processing indicates that certain aspects of intelligence such as memory, manipulation of facts, and even some theoratical reasoning processes will be handled by the machine and become available to everyone.

Technology changes the individual's attitude toward the object. Because of increased availability, variety and cheapness, use becomes more important than possession. This encourages the individual to explore the multiplicity of functions inherent in technical products.

Technology promotes individualistic behavior. The car owner travels when and where he pleases. Technology has expanded domestic choices and made wide variety in food, housing, clothing, and leisure activities possible. The new sports-scuba diving, skiing, surfing, flying, parachuting, car racing-are individualistic and participatory.

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These characteristics indicate that technology acts as a catalyst to strengthen the ability of the individual to make significant choices, cooperate with others in implementing decisions, and participate in shaping his own environment.

Future Projects

In the future, E.A.T. is interested in projects in developing countries. E.A.T. is committed to projects which are directed toward the individual, and depends on participation and involvement by individuals in their own environment. Projects that we will generate will be involved with hardware-software, man-technology interface. There are problems which do not have straightforward solutions and where experimentation is needed. We have build too many steel factories, too many model villages, too many ideal class-room situations to know that they either deteriorate and become unworkable, or become unintegrated show places. We know that only the new technology can make significant changes in terms of communication, education, food, housing, and creating activities for people. How is this going to happen without useless efforts, serious cultural dislocations or bloodshed?

Our concern is to develop organizational forms for dealing with the "cultural" translation of technology and for working in the interface between the individual and the new technology. We know that the man at the market place who tells stories and relates news has to be replaced by the television set that gives instruction, information, education and news. But, we do not know

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what the programming will look like. To counteract the dislocation of industrialization and too rapid urbanization, and to encourage development some positive feedback situation has to start that involves the farmers again in the land, in their own environment. These are esthetic questions, questions of human motivation and involvement, pleasure, interest, excitement.

I believe that the artist is a positive force in perceiving how technology can be translated to new environments to serve needs and provide variety and enrichment of life. He may be the only one who can transcend cultural bias and deal with individuals of a culture on their own terms. The direct, straight ahead sensibility of the active artist is needed in this difficult situation. We are all amateurs in this business but the artist is the best amateur.

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REFERENCES

1. Klüver, Billy, "The Garden Party", published in Zero I, Munich, Germany, 1961; reprinted in The Machine, The Museum of Modern Art, New York, 1968, p. 168 - 170

2. Kluver, Billy, "Teknologi for Livet", Konstrevy, Number 2, 1966 p. 56 - 61

3. Kluver, Billy, "9 Evenings: Theatre and Engineering", Experiments in Art and Technology, Incorporated, New York, 1966, p. 3

4. "Transcript of Suggestions for 9 Evenings", reprinted in E.A.T. NEWS, Vol. 2, No. 1, March 18, 1968, p. 12 - 18

5. I had expressed the idea of the engineer as "material" for artists: "The Great Northeastern Power Failure", a talk given at College Art Association, Annual Meeting, New York, January 28, 1966.

Notes from a meeting on March 11, 1966 record that Rauschenberg said:

> "I like our organic collaboration with technical facilities where technique and esthetics are both being experimented with rather than our having a set esthetic to implement with technology."

For Robert Rauschenberg's earlier ideas about collaboration see: Calvin Tompkins, "Moving Out", The New Yorker, February 26, 1964, p. 39 - 105

6. a. "A Wacky Collaboration of Science and Art", Fortune, January, 1967, p. 100 - 103

b. Lippard, Lucy R., "Total Theatre", Art International, Jan. 20, 1967, p.39 - 43

c. "Theatre and Engineering, An Experiment, 1. Notes by a Participant: Simone Whitman, 2. Notes by an Engineer: Billy Klüver", Art Forum, February 1967, p. 26 - 33

d. "Art and Science: Two Worlds Merge", Bell Telephone Magazine Nov./Dec. 1967, p.17 - 18

e. "Theatre and Engineering", Americas, January 1968, p. 19 - 20

f. Davis, Douglas M., "Art and Technology - The New Combine", Art in America, Jan./Feb. 1968, p. 28 - 47

g. Lindgren, Nilo, "Art and Technology", IEEE Spectrum, May 1969, p. 47 - 50

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REFERENCES

7. E.A.T. NEWS, Vol. 1, No. 2, June 1, 1967, p. 1

8. Loc. Cit.

9. "Some More Beginnings: Experiments in Art and Technology" Experiments in Art and Technology, Incorporated, New York, 1968

10. Poole, Peter, "The Public Exhibition of an Art Work Employing Lasers", E.A.T. Proceedings, No. 5, March 17, 1969

11. Kranzberg, Melvin and Pursell, Carroll W., Technology in Western Civilization, Oxford University Press, New York, 1967, p. 724-725

12. Merveilles de l'Exposition de 1889, A la Librairie Illustree, Paris, 1889, p. 927

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E.A.T. PROCEEDINGS

No. 9 May 19, 1969 235 Park Avenue South, New York, New York 10003

EXPERIMENTS IN ART AND TECHNOLOGY

OCTOBER 1966 - MAY 1969

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1. EXPERIMENTS IN ART AND TECHNOLOGY: A SUMMARY

Experiments in Art and Technology is an international network of experimental services and activities designed to catalyze the physical, economic, and social conditions necessary for the inevitable cooperation between artists, engineers and scientists, and members of industry and labor.

We initiate services and projects which enable the contemporary artist to collaborate with engineers and scientists in the industrial environment and have access to technical materials and processes. We undertake large-scale projects which use existing intelligence and material resources toward new ends and promote the individual involvement of the artist and the engineer and the scientist in all areas of society. Our information and communication efforts generate greater public involvement and understanding of the artist's activities and of the collaboration between artists and engineers and scientists.

Founded in 1966 as a non-profit, tax-exempt organization, E.A.T. was organized in response to the expressed desires of the contemporary artist to evolve a new and viable role in society. In this evolving role, there appear at present to be three areas of social significance which are reinforced by our program:

The work of the contemporary artist provides a unique source of experimentation and exploration for developing human environments of the future.

Through the collaboration with artists, the engineer and scientist establish a practical working relationship with non-technical professionals and add new dimensions to their work.

The activities of the artists serve as a prototype of the process by which the individual can interact with the new technology - increase his options and understand his responsibilities for technological change.

We see the E.A.T. network as a new form of university and laboratory to which any individual has access for experience and experimentation. The aim of the network is to create possibilities for mutual contact between individuals in a live, responsive society.

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2. GROWTH: 1966-1967

The impetus for forming E.A.T. came from artists and engineers who collaborated on a series of large-scale performances in October 1966 called "9 Evenings: Theatre and Engineering". E.A.T. was incorporated in New York State on September 26, 1966. Dr. Billy Klüver, a Member of Technical Staff of Bell Telephone Laboratories, became President, and Robert Rauschenberg, artist, became Vice-President. The original Board of Directors included Walter H. Allner, Alfredo Bonino, Rubin Gorewitz, Marion Javits, Franklin Konigsberg, Max V. Mathews, Jerald Ordover, Stanley Post-Horn, Seymour Schweber, Marie-Christophe Thurman, Fred D. Waldhauer and Robert Whitman.

To determine the extent of the general need for an organization like E.A.T. in the art community the artists and engineers involved in 9 Evenings called a meeting for New York artists at the Central Plaza Hotel on November 30, 1966. Over 300 artists and other members of the art community attended. The response was very positive and 80 artists expressed immediate need for technical assistance and materials. A subsequent meeting at the end of January 1967 at the Park Place Gallery confirmed the artists' desire to make contact with engineers and scientists.

To formulate the plans and articulate the goals of E.A.T, a Newsletter was published on January 15, 1967. It focused interest and solidified support for E.A.T. among the artists. A second Newsletter issued in June contained the formulation of the basic concept of E.A.T. arrived at by Billy Klüver and Robert Rauschenberg. (See Appendix I)

Plans were for E.A.T. to obtain its funds from industry; but experience suggested this would be a long process and we would need initial support from other sources. In December 1966, an approach was made to the Director of the New York State Council on the Arts, John Hightower, for initial funds. His reaction was immediately positive. Howard Adams, Associate Director of the Associated Council of the Arts, was appointed by the New York State Council to give E.A.T. "technical assistance" in organization. In April 1967, a grant of $8,000 was given to E.A.T. by the New York State Council, the first outside grant to the organization other than the support given by its principal officers.

At this time, a full-time staff member was hired to handle the increasing volume of applications for membership, artists' requests for assistance, and general inquiries from interested people. In addition, E.A.T. rented a loft at 9 East 16th Street, New York, which served as office space, storage for

equipment, and a meeting-place for artists and engineers. Through this centrally-located headquarters, E.A.T. had close contact with artists who came to discuss their technical problems. A selection of requests and projects that E.A.T. received in the Spring of 1967 is given in Appendix II.

During the early part of 1967, the members of the Board of Directors of E.A.T. began to approach industrial leaders to gain support for E.A.T.'s program. IBM, AT&T, Xerox, and Atlantic Richfield all responded favorably. With the help of Theodore W. Kheel who joined the Board in the Summer of 1966, E.A.T. initiated contact with labor leaders and obtained their support. John G. Powers, who became a Board Member at this time, assisted E.A.T. in extending personal contacts with industrial leaders.

A Council of Agents, who would be contacted as individuals and who would assist E.A.T. with issues and problems of a special nature, was instituted to avoid waste, duplication, and institutionalization. This Council has expanded and at present includes twelve leaders in various fields.

A crucial part of E.A.T.'s program during 1967 was to develop effective means of enlisting Participating Member engineers. We had decided that it was important for the artist to have direct contact with engineers and scientists in their facilities rather than develop a staff of engineers working in E.A.T. facilities. During the Spring and Summer of 1967, we began negotiations with the Institute of Electrical and Electronics Engineers (IEEE) to form a special-interest sub-group, "Engineering in Art". We organized a presentation by artists at the IEEE annual meeting in New York; sent information about E.A.T. to 3000 engineer members of IEEE in the New York area; and began to generate articles about E.A.T. in the technical press.

Because of these pilot efforts and the continuing concentration on enlisting engineers and scientists, the number of engineer and scientist members has grown faster than the number of artists seeking technical help and it appears that by the end of 1969 there will be an equal number of artist and engineer members. This rapid rate of growth is indicated in Figure 1. Another measure of the growing interest from engineers and scientists is that the amount of space devoted to art and technology in the technical press has increased steadily, as indicated in Table 1.

The interest in E.A.T. from outside the New York area grew steadily. In May 1967 we decided not to confine our activities to New York but to become a national organization. We encouraged the organization of a local group where interested artists and engineers felt a need for one. By the end of 1967, local groups had been started in 16 places in the United States and abroad.

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The activity of 1967 culminated in a large press conference directed at the general and technical press to make a broad public announcement of the aims and programs of E.A.T. In preparation for this, the following aims were formulated:

Maintain a constructive climate for the recognition of the new technology and the arts by a civilized collaboration between groups unrealistically developing in isolation.

Eliminate the separation of the individual from technological change and expand and enrich technology to give the individual variety, pleasure, and avenues for exploration and involvement in contemporary life.

Encourage industrial initiative in generating original forethought, instead of a compromise in aftermath, and precipitate a mutual agreement in order to avoid the waste of a cultural revolution.

It was held at Robert Rauschenberg's house on October 10, 1967 and included films, an exhibition of works incorporating technology and a formal presentation that explained the wide range of E.A.T.'s program. Statements in support of E.A.T.'s involvements were made by: Dr. Warren Brodey, Director of MIT Science Camp; Ralph Gross, President, Commerce and Industry Association; Senator Jacob K. Javits; Herman D. Kenin, President, American Federation of Musicians; Theodore W. Kheel, President, American Foundation on Automation and Employment; Robert Morris, artist; Dr. John R. Pierce, Executive Director, Bell Telephone Laboratories.

The press conference marked the beginning of E.A.T.'s formal organization. Beginning November 1967, E.A.T. had a staff of five people to handle operations and the Board began to make efforts to find a full-time administrative director. Francis Mason, a Cultural Affairs Officer in USIA became Acting President during a formative period of E.A.T.'s growth and was succeeded by Billy Klüver in November 1968.

During 1968 financial support from industry, labor and individuals was generated in the form of $1000-5000 grants. Grants from Rockefeller Brothers Fund ($25,000) and from the National Endowment for the Arts ($50,000) in the summer of 1968 were expressions of confidence in the organizations and its goals as well as an important contribution to its financial stability.

A more detailed account of E.A.T.'s activities and growth during 1968 is contained in the following sections of the Report.

3. POLICY

Services in the network are not terminal but catalytic and experimental. They are designed to provide the artist with multiple means of access to the most comprehensive and up-to-date technical information, equipment, and materials, and to put him in direct contact with engineers, scientists, manufacturers, and other sources of information and support in order for him to pursue his needs. All artists have free and complete access to E.A.T. services and all are helped on a technical level without reference to esthetic criteria. Since services are designed to make it possible for the artist to enter into industrial or technical environment, E.A.T. will not set up workshops, study centers, resource centers, reference libraries, or facilities for designing or producing works of art. We shall, however, assist and advise any individual or institution who would like to start such programs. Although E.A.T. does not provide direct monetary support for artists, our activities connected with projects have generated to present approximately $110,000 for artists from industrial sources. We estimate that another $40,000 has been paid to artists employed by E.A.T. in part-time, non-art activities.

E.A.T.'s long-term policy in relation to industry is to evolve a permanent, functional relationship between industry and the individual artist in which the industry fully recognises the contemporary artist as a resource. In developing this relationship, E.A.T. will work for a fair remuneration to the artist for his work and encourage industry not to be embarrassed to recognize the commercial potentials of artists' ideas.

Projects are designed to extend and strengthen the network by increasing the number of contacts, involvements, and activities of the artist and engineer outside the traditional boundaries of the art and engineering communities. They must be experimental in nature and bring about an effective, horizontal collaboration between individuals working in their professional or personal capacity using material resources towards new ends.

E.A.T. publications emphasize the process of making art and not the final product. They aim at bringing about a functional, realistic understanding of the contemporary artist's activities and of his role in society, as well as public recognition of the importance of the collaboration between artists and other professionals. In addition to our own publications, we encourage articles in the general and specialised press concerning the contribution of individuals involved in all parts of the collaborative process.

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4. ACTIVITIES

Matchings, Technical Assistance and Technical Information

The most active and important continuing service is handling artists' requests for simple technical information, for technical assistance, or for more extensive collaboration with an engineer. This is accomplished by matching the artist with an engineer or scientist member who can help him.

We began doing matchings in December 1966 and have continually refined procedures, particularly in two areas: 1) systematic categorization of artists and engineers for more accurate information retrieval: 2) developing a method for getting feedback and reports on collaborations. Matchings handled by the New York office are now being done at a rate of approximately 40 per month -- 113 in the first quarter of 1969. Approximately 35% of the matchings are for artists and engineers outside the New York City area. Appendix III lists the technical areas in which the 1969 matchings were made. Figures are not available for matchings done by local groups although it is estimated that 500 collaborations have taken place since E.A.T. was founded. Local groups' matching systems are being standardized with national procedures.

A majority of the requests for matchings are sent to us, but many artists come to the E.A.T. office (roughly 35 per month), and others (approximately 30 per month) telephone. If possible, we handle the request immediately and give the artist the names of engineer members, answers to simple technical questions, or names of manufacturers. Many times the staff member will call an engineer or industry while the artist is in the office, or make a telephone available to the artist. In some cases, we will write a supporting letter, or make other office services available. We ask the artist to send us a short collaboration report to inform us if contact was successfully made; he is encouraged to come back to us if the matching doesn't work the first time, or if the needs of his project change. If the project develops beyond the financial resources of the artist and engineer, they may present it to E.A.T. for submission for sponsorship to industry or other sources. When the project is completed, both the artist and the engineer are asked to write a brief account of their experiences.

To provide the artist with as many sources of technical information as possible, in February 1968 we compiled a list of all technical libraries in the New York area and arranged for artists to have access to the private industrial libraries that are generally closed to the public.

Equipment Use

The equipment that had been developed and built for "9 Evenings," -- amplifiers, speakers, switching systems, etc., was immediately made available to artists in the New York area. Over the last two years, the equipment has been used by several hundred artists or groups for music, dance or theater performances, and for such varied performances as Lukas Foss, "Concert for Cello" for Rostropovich; Carolee Schneeman, theater piece "Snows"; John Giorno, poetry readings; Deborah Hay, dance concert.

In addition, engineer members help contemporary choreographers, musicians, composers and theatre performers with technical assistance in setting up equipment, sound systems, or other technical facilities.

At present, the E.A.T. group in the Bay Area is acting in an advisory role in the technical planning of a performance space.

Open House

We began to hold a weekly Open House at our loft offices in November 1967. These proved very successful in providing an opportunity for artists and engineers to meet on an informal basis. Artists brought plans of projects and engineers brought samples of materials and other technical literature and collaborations developed organically. Special Open Houses are arranged in conjunction with efforts to enlist participating members from the technical community.

Safety Program

E.A.T. initiated a safety program in November 1967 to inform artists and collaborating engineers of the safety precautions necessary in working with new technical materials and processes, such as ultra-violet light, lasers, chemicals, and microwave radiation, and to act as consultant to museums and art galleries on proper installation and maintenance of such works. On request, we will aid the artists and museums in relations with public health officials in order to prevent arbitrary restrictions from being imposed on the artist showing his work. We have made contact with government and industrial safety experts in several fields to act as consultants, and have discussed further development of the program with the American Medical Association, the National Safety Council, the National Science Foundation, and industrial safety authorities. E.A.T. advised the Pace Gallery, in the Fall of 1967, on works incorporating lasers, the Whitney Museum in the Spring of 1968, on works incorporating new types of lights and, most recently, carried on long negotiations with New York City Health Department to obtain approval for showing an environmental work incorporating two lasers. A report on this was published as E.A.T. Proceedings No. 5, and is being distributed to health authorities and members of the laser industry.

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Access to Equipment and Materials

E.A.T. works to provide the artist with access to industrial and research equipment such as television, computers, testing equipment, earth-moving and constructions equipment, lasers, circuit fabrication equipment, computer-controlled metal-working equipment and vacuum-forming equipment. This equipment is usually made available to the artist for a specific limited project. In these cases, E.A.T. informs the artist of the real possibilities and limitations of the situation and attempts to eliminate arbitrary obstacles to the artist's full use of equipment by obtaining support from the people who operate the equipment.

An active area of artists' involvement with new technology has been the use of new industrial materials. Requests to industry by individual artists through contact with management have proved successful. However, we have discovered that the individual approach based on a personal relationship can become saturated by too many artists approaching one source. Because there is no system for dealing with artists' requests, it is too complicated and requires too much manpower to provide for the great variety of them. Furthermore, many artists are geographically cut off from information and supplies of certain materials. E.A.T. attempts to provide the artist with more permanent means of access to materials by developing, in collaboration with industry, an inventory of available materials and a national distribution system.

Sponsorship of Artists' Projects

In many instances, artists have well-defined, bounded projects which require the support and involvement of industry. E.A.T. is developing procedures for effectively presenting artists' projects to industry, labor and government agencies for sponsorship, based on their technical interest and feasibility. During the Winter of 1967, initial efforts in this respect took the form of writing letters in support of artists' approaches to industry. In the Summer of 1968, a letter was sent to all the artists asking for submission of projects to be presented for sponsorship. When we received these projects, they were sent to scientists and engineers for technical appraisal. As they are returned, we send the projects back to the artists with the comments received, suggest several appropriate industries or other sources, and accompany them, on request, in approaches to potential sponsors.

Artist-in-Residence Programs

Industrial interest in establishing artist-in-residence programs is increasing, as exhibited by a speech by Frank Stanton in November 1967 in which he proposed: "that industrial corporations appropriate money for annual residencies by artists in a

laboratory, production facility or other suitable and useful installation" and suggested: "Experiments in Art and Technology is well suited to act as the recipient and dispensing organization." He further announced that the CBS Foundation will provide funds for two such residencies. Talks are underway to formulate E.A.T.'s role in administering this program. E.A.T. will, on request, advise and assist industries in establishing experimental, open-ended situations in which the artist has access to pertinent areas of research and manufacture.

In the Spring of 1968, the Amalgamated Lithographers of America, Local One, set up, in collaboration with E.A.T., an experimental lithographic workshop at the headquarters school, in which artists can work with the technicians and journeymen there and use the advanced lithographic equipment.

In the Summer of 1968, Harry Fuge of the Singer Corporation approached E.A.T. to arrange for an artist in residence at their laboratories in Denville, New Jersey, and an artist started work there in September.

Julius Haber, Director of Community Relations of RCA, approached E.A.T. in March 1969, and an artist-in-residence program is being established for artists to work at the RCA laboratories in Princeton, New Jersey.

Relations with Scientists and Engineers

E.A.T. pursues an active effort to involve individual engineers and scientists, to inform them of the needs of the artist and to recruit participating members to work with artists. This is done through articles and reports in technical magazines and house organs, as well as talks at science and engineering conferences, exhibits at engineering conventions, and direct mailings.

E.A.T. has established close contact with engineering and scientific societies, and has applied for membership in the Joint Engineering Council.

Schools and Universities

E.A.T. consults with and provides information for individuals for art or engineering schools and universities planning courses or programs dealing with art and technology. We encourage collaborative courses or projects between art and engineering students and faculty as part of the curriculum.

Through E.A.T. the Minneapolis School of Art invited Lloyd Kreuzer of Bell Telephone Laboratories to be artist-in-residence for a short period during the spring semester of 1969.

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Museums and Art Galleries

For various reasons associated with the difficulties facing the artist, many works incorporating new technology lack the necessary reliability to prevent breakdowns when shown in public. Other works need special technical installation and continuous service and attention. E.A.T. provides a pool of engineers available for installation and maintenance of exhibitions involving new technology. E.A.T. also advises museums on technical requirements for such exhibitions. Through its publications, E.A.T. encourages museums and galleries to have realistic expectations about the reliability of these works. E.A.T. will make recommendations concerning adequate technical facilities to anyone planning new exhibition spaces.

E.A.T. will, on request, provide people planning exhibitions or programs with the names of artists with special skills and interests from its files of member artists.

9 Evenings: Theatre and Engineering, January - October 1966

A series of large-scale performances held at the 69th Regiment Armory in New York City in October 1966, "9 Evenings" was produced by collaborations between ten artists and forty engineers and scientists. Undertaken as an experiment to determine if artists and engineers could work together, it crystalized the need for an organization like E.A.T. and provided the impetus for forming it. Even now we are just beginning to understand the significance of "9 Evenings" in terms of effort, scale, problems and further uses of equipment built.

Lecture-Demonstration Series: February - May 1968

E.A.T. sponsored a series of 32 lecture-demonstrations for artists given by experts in various fields of technology. Subjects included computer-generated music, images and speech, honeycomb papers, plastics, lighting, television, color theory lasers, and holography. The series was developed to bring artists into direct contact with scientists and engineers and to serve as a working model for other such series, as well as to show that well-known scientists and engineers would be willing to make presentations to artists. The lectures were taped and xerox copies of the transcripts are available to members at cost.

E.A.T.-M.O.M.A. Competition: Nov. 12, 1967 - Nov. 12, 1968

In the fall of 1967, E.A.T. was approached by K.P.G. Hulten with a request to provide works for his exhibition, "The Machine," to be held at the Museum of Modern Art. In response, E.A.T. offered to sponsor a competition for the most inventive technical contribution by an engineer to a work of art produced in collaboration with an artist. The jury was to be composed of scientists and engineers who were not necessarily familiar with contemporary art. E.A.T. also offered to invite artists to submit works incorporating new technology, to be considered for inclusion in the exhibition. The competition was announced in November 1967 in the New York Times, Scientific American and fifteen technical journals. E.A.T. offered to match any artist or engineer interested in entering the competition. These efforts were primarily directed at reaching the technical community and interesting engineers in working with artists. In this regard, it was successful since membership of engineers grew from approximately 125 in November 1967, to 467 in March 1968. By June 1, 1968, the deadline for submission of entries, 147 works were submitted and of these, 95 were collaborations, representing nineteen states and seven foreign countries. The number and variety of these entries confirmed that collaboration between artists and engineers could and did work and revealed the intense involvement of many artists in using a wide range of the new technology.

Some More Beginnings: Experiments in Art and Technology

July 1968 - January 1969

It was decided in the summer of 1968 to exhibit all of the works submitted to E.A.T.-M.O.M.A. competition. Thomas Buechner, Director of the Brooklyn Museum, offered space there. Artist and engineer members of E.A.T. volunteered time to set up the exhibition which opened on November 24, 1968. A catalogue of photographs and technical descriptions of all the works was published. It was a very popular show, having attracted an attendance of 18,000 by the time it closed on January 5, 1969. The public, in particular the youth from the local area, responded enthusiastically, becoming very involved in the pieces which interacted with the spectator. For fuller details see E.A.T. Proceedings No. 6 and TECHNE Vol. 1, #1.

Expo '70 Project: August 1968 -

In August of 1968, E.A.T. agreed to conduct an experimental collaboration between several artists to develop an environment for the Pepsi-Cola pavilion at the 1970 World's Fair in Osaka. The project was undertaken not as a work of art but to enlarge the scope of artist-engineer collaboration

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to new areas of artists' involvement and experimentation in the environment. The design and programming of the pavilion is being developed through a collaboration between E.A.T. New York, E.A.T. Los Angeles, and E.A.T. Tokyo, involving four American and two Japanese core artists, four assisting artists, and twelve engineers. This is the first large-scale, self-supporting project of E.A.T. For a description see E.A.T. Proceedings No. 8.

Press Relations

E.A.T. has attempted to establish direct contact with members of the general, art, and, in particular, the technical press. Special attention has been paid to articles and notices in the technical press and has resulted in permanent contact with Electronic News, Engineer, IEEE Spectrum and others. We also make an effort to generate articles in in-house organs and the specialized press thus focusing attention on the role of technical and industrial participants in the collaboration. Periodic press conferences are part of this program. Articles on E.A.T. have appeared in about 150 papers and journals.

Public Appearances

In its program of public and professional information, E.A.T. establishes contact with art and engineering associations, educational institutions, and other allied organizations by accepting invitations for E.A.T. staff and members to participate in talks, lectures, panels, conferences, etc. E.A.T. has been involved in a wide range of programs with organizations such as: Massachusetts Institute of Technology, College Art Association, Artists' Placement Group in London, Museum of Modern Art, American Association for the Advancement of Science, and Institute of Electrical and Electronics Engineers. A detailed summary of these activities is included as Appendix IV.

Another important aspect of this is talks at meetings of E.A.T. groups in the U.S. and abroad.

Publications

The first issue of E.A.T. News was published on January 15, 1967. The attached graph, Figure 2, indicates the growth in the size of the editions. Four issues of the newsletter appeared in 1967 and one in 1968 when the decision was made to divide its function into two separate publications. E.A.T. Operations and Information, contains news of services, procedures and activities of E.A.T., and is directed to members. Three issues have been published. A projects and process paper, TECHNE, contains articles, interviews, technical descriptions, ideas for future projects, and material dealing with the process of making art. It serves to focus art and technology activities and provides a communication link. Any interested group will be encouraged to compile their own issues of TECHNE which would be printed in New York and sent out to the entire membership of E.A.T.

Local groups in Boston, Atlanta, Detroit, Seattle, Portland, San Francisco, Los Angeles, and Montreal publish their own newsletters. We are publishing a series of detailed reports on our experience, activities and projects, titled, E.A.T. Proceedings, which will appear periodically. The eight which have been published to date are listed in Appendix V.

Transcripts of the lecture-demonstrations in the series given in the Spring of 1968 by scientists and engineers are available in xerox form to E.A.T. members.

Local Groups

It was decided in May 1967 to extend the activities of E.A.T. outside the New York area and encourage local groups in any area that wanted them. At the time of the Newsletter in June, there were 6 local group representatives active in their areas. E.A.T. activities were initiated in Sweden in the Summer of 1967. By December, 16 people in different cities had expressed interest in forming E.A.T. groups. In February 1968, a letter was sent to all members announcing the formation of groups, suggesting procedures for initiating activities in their areas, and asking anyone interested to act as local representative. By March 1, there were 35 local representatives and during the Spring, Julie Martin, Francis Mason and Billy Klüver travelled to the first public meetings of different local groups to inform them of the activities of the New York office and to help stimulate local activities. The groups visited were in Philadelphia, Boston, Washington, D.C., Denver, Toronto, New Haven, Miami, Detroit, Chicago and San Francisco. Groups were also being formed in Atlanta, Richmond, Pittsburgh, Seattle, Portland, Montreal, Vancouver, Milwaukee, Minneapolis, Charlotte, Cleveland and St. Louis, There was interest from abroad and representatives were established in Argentina, Brazil, England, France, Holland, India, Italy, Sweden and Switzerland.

On June 22-23, 1968, a conference was held for local group representatives and other people interested in setting up the national organization of E.A.T. 53 people attended, representing 21 areas. The program included talks by representatives of industry, foundations and engineering societies, to inform conference members how to approach

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these organizations in their areas. The second session included discussions of the structure of the national organization.

It was decided in February 1969 to establish regional offices to handle and coordinate the information, service, and communication activities of the national and international organization. Local groups would be associated with the E.A.T. offices and would develop organically according to the character and needs of the local artists, engineers, and industry. Regional offices have been opened in Los Angeles and Tokyo.

On March 28-31, 1969, a nation-wide, working conference was held in Sackville, New Brunswick, sponsored by the Canadian Conference on the Arts, to discuss the art and technology situation in Canada. The members appointed a task force to set up a Canadian national organization to be affiliated with an E.A.T. international network.

5. PLANS FOR 1969-1970

Activities

Current activities and projects

Supervise and coordinate design, installation, programming, and performances of the Pepsi-Cola Pavilion for Expo '70.

Assist the Jewish Museum with technical advice on installation and maintenance of works in a forthcoming exhibition.

Establish artist-in-residence programs with RCA Laboratories, CBS Foundation and others.

Plan and execute a series of exhibitions designed by artists at Automation House. The series will deal with Technology and the Individual and a preliminary proposal is given in Appendix VI.

Through the AFL-CIO SPACE Committee, plan a large-scale project that involves members of labor unions in collaboration with artists and engineers.

E.A.T. Organization and International Network

Recruit necessary staff members, including staff engineers and a business manager.

Organize and initiate the E.A.T. International Network in collaboration with interested people and groups in local areas.

Set up a uniform matching system for all local groups and refine the categorization of artists and engineers for more effective information retrieval.

Establish methods for transferring hardware projects to people in local and affiliated groups.

Enlarge the operations research activities of E.A.T. Areas for study include: feedback from collaboration, patterns and growth of industry's involvement, change in technical sophistication of artists' projects, financial analysis of projects and services.

At the request of the Smithsonian Institute, National Collection of Fine Arts, E.A.T. is asking four local groups to submit collaborative projects in model form to be the United States' contribution to the Sixth Biennale de Paris which will take place in the Museum of Modern Art, Paris, September 30 - November 2, 1969.

E.A.T. California is organizing an exhibition of works to be shown at the Western Design Engineering Exposition which will be held in the Convention Center, Anaheim, California, November 18-20, 1969.

Extension of Continuing Services

Consolidate official contact with safety organizations and establish the E.A.T. Safety Committee as an authority to determine safety of artists' works to the satisfaction of public authorities.

Present technically feasible artists' projects to industry, foundations, and government agencies for support and execution.

Establish artist-in-residence programs at engineering schools and scientist- or engineer-in -residence programs at art schools.

Aid an E.A.T. local chapter or a university in setting up a tape library of non-copyrighted sounds for free use by artists.

Establishment of New Services

Set up a pilot technical information network based on the use of telex and facsimile service.

Study the possibilities for a materials inventory and distribution system.

Publications

Publish three issues of TECHNE and three of E.A.T. Operations and Information.

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Publish and distribute four additional publications in the series, E.A.T. Proceedings.

Fundraising

While retaining our free membership category for individuals who wish to participate in E.A.T. activities, E.A.T. has instituted, as of May 15, three categories of fee-paying membership in order to provide broad-based support from those interested in our program.

Any individual who does not wish to participate, but wishes to be kept informed of E.A.T. activities, as well as any institution interested in our program, may become a Subscribing Member. The Subscribing Membership fee is $20 per year.

Any individual who would like to support us further through an annual membership fee of $100, may become a Sponsoring Member.

Participating Membership is free. However, Participating Members are encouraged to support E.A.T. by voluntarily paying a membership fee.

Corporate Membership is open to any industry or corporation interested in supporting us with an annual membership fee of $1,000 - $5,000.

A program for enlisting Corporate Members is being developed and the first approaches will be made through Board Members and Agents. It is estimated that in the next two years, E.A.T. will enlist 250 Corporate Members.

E.A.T. will seek support from foundations primarily to provide funds for the period during which we develop a broad base of industry and member support. These funds will be directed toward the organization of the national network.

It is planned to obtain specialized grants for certain service functions from agencies concerned in their implementation. For example. the National Safety Council may be approached for funds in connection with the E.A.T. Safety Program.

Other activities are self-supporting, such as commercial listings in TECHNE, and the sale of catalogues and other publications.

Large-scale projects will be self-supporting.

The results of past fundraising efforts are shown in Appendix VII.

E.A.T. Actual and Forecasted Income and Expenses

In thousands of dollars

		1970	1969	1968
Income				
Membership Fees		$100	$ 40	$ 0
Industry		175	150	40
Foundations		200	150	50
Projects		200	225	35
Miscellaneous		25	35	5
	TOTAL	$700	$600	$130
Expenses				
Staff:	National Headquarters	$200	$150	$ 70
	Local Groups	100	50	0
Operational Costs		125	150	30
Services		125	50	0
Publications and Public Involvements		50	50	20
Special Project Costs		75	130	10
International Activities		25	20	0
	TOTAL	$700	$600	$130

6. ORGANIZATION AND FORECAST

The rapid growth of E.A.T. has demonstrated the strength of its basic ideas. E.A.T.'s program now forms a necessary part of the current effort to break the deadlock in the artist's bid for a more viable role in society.

During the past two years we have allowed the structure of the organization to evolve on the basis of the experience gained from our activities and personal contacts with artists, engineers, scientists, and members of industry and labor who are active in E.A.T. The organization is now emerging as a network which will incorporate the latest communication and computer technology to provide the individual artist with access to the fullest range of information, materials, and opportunities to participate in projects. We feel this network can serve as an experimental model of the more general way any individual could in the future use his professional capacities and personal energies to work and study in a variety of fields.

In forecasting the next six years of E.A.T.'s activities, we feel that the existing program represents the optimum efforts necessary to implement change A smaller or less coherent effort would run the risk of reinforcing the existing imbalances and difficulties for the artist. A larger program would be economically unrealistic and generate activities with little time for feedback or understanding and thus jeopardize the process by premature institutionalization of

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irrelevant projects. A projection of the development of the budget of E.A.T. to 1975 is presented in an attached chart and curve (Figure 3). The budget is kept relatively conservative, with an average growth of thirty percent per annum. Variations have been incorporated in accordance with estimated impact of specific activities.

To carry out the present program a professional staff must be developed and specially trained during a period of rapid expansion of the organization. We recognize that this is a difficult problem for a new organization with a complex goal and a need to establish contact with radically different sectors of society.

7. OFFICERS, BOARD OF DIRECTORS, AGENTS AND STAFF OF E.A.T.

Officers

Robert Rauschenberg, Chairman of the Board
Billy Klüver, President, Chief Executive Officer
Theodore W. Kheel, Chairman of the Executive Committee
Fred D. Waldhauer, Secretary
Rubin Gorewitz, Treasurer
John G. Powers, Chairman of the Business Committee
Marion Javits, Chairman of the Public Events Committee
Oliver Selfridge, Chairman of the Engineering Committee
Richard Bellamy, Chairman of the Artist Relations Committee

Board of Directors

Walter H. Allner, Art Director of Fortune Magazine
R. Buckminster Fuller, Architect
Herman D. Kenin, President, American Federation of Musicians
Gyorgy Kepes, Director, Center for Advanced Visual Studies, Massachusetts Institute of Technology
Edward S. Langsam, Film Project Director, American Telephone and Telegraph Company
Paul A. Leperq, President, Leperq, de Neuflize, Incorporated
Francis S. Mason, Jr., Assistant to the President, Steuben Glass
Max V. Mathews, Director of the Behavioural Research Laboratory, Bell Telephone Laboratories
Jerald Ordover, Attorney
Seynour Schweber, President, Schweber Electronics
Simone Swan, Public Relations Consultant

Agents

Robert O. Anderson, Chairman of the Board, Atlantic Richfield Corporation
Alfred H. Barr, Former Director of Museum Collections, The Museum of Modern Art, New York City
Richard P. Brandt, President, Trans-Lux Corporation
John Cage, Composer
K. G. P. Hulten, Director, Moderna Museet, Stockholm
Jacob K. Javits, United States Senator
Philip C. Johnson, Architect
Lane Kirkland, Executive Assistant to the President, AFL-CIO
Jack Masey, Deputy Commissioner General for Planning and Design, United States Pavilion, Osaka, 1970, USIA
John R. Pierce, Executive Director, Research, Communication-Sciences Division, Bell Telephone Laboratories
Walter W. Straley, Vice-President, American Telephone & Telegraph Company
Harry Van Arsdale, Jr., President, Central Labor Council

Staff

Billy Klüver has been President and Chief Executive Officer of Experiments in Art and Technology since November 1968. Born in Monaco in 1927, he was graduated in 1951 from the Royal Institute of Technology in Stockholm, Sweden. He received his Ph.D. in Electrical Engineering from the University of California, Berkeley, in 1957. He was Assistant Professor in Electrical Engineering at the University of California, Berkeley, from 1957 to 1958. From 1958 to 1968 he was a Member of Technical Staff at Bell Telephone Laboratories in Murray Hill, New Jersey, in the Communication Science Research Division, working on the physics of infrared lasers. Together with Robert Rauschenberg he founded Experiments in Art and Technology in 1966. He has worked on power conservation theorems, electron beam parametric amplifiers, M-type tubes, low noise electron devices, laser amplifier noise, properties of He-Xe lasers, and has published technical and scientific papers in these areas. Since 1960 he has collaborated on exhibitions in Stockholm, Washington, D.C., and Philadelphia, and has published articles on the relationship between art and technology. He holds ten patents on electron devices and lasers, and is a member of Phi Beta Kappa, the American Physical Society, and the Institute of Electrical and Electronics Engineers.

Karl Erik Friberg acts as Administrative Consultant. Born in Stockholm in 1924, he graduated from the Swedish Military Academy in 1946 and the Barlock Business School in 1947. He studied law and Administration at Stockholm University and at Columbia University in 1952 on a Swedish Government grant. He served as Export Manager for Gylling Company until 1958 when he became Marketing Manager for ITT, Sweden. In 1965 he founded

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and became President of Exmarco Project. He serves as Administrative Consultant to a number of Swedish and Norwegian industries in the consumer goods field.

Peter Poole joined the staff of E.A.T. in October 1967 and now coordinates Technical Services. He obtained his B.Sc. degree in Sociology and Economics from London University in 1962. He worked for the Geographical Branch of the Canadian Government in 1964. He received an M.A. in Geography from Columbia University in 1967, and during this time also worked in the Glaciology and National Parks branches of the Canadian Government.

Julie Martin acts as Assistant to the President. Born in Nashville, Tennessee, she graduated from Radcliffe College in 1960. She received an M.A. in Government and a certificate from the Russian Institute, Columbia University, in 1965. In 1961 she worked as a guide for a USIA exhibition to the U.S.S.R. During 1965-1968 she did free-lance research for film and television, working for the Canadian Broadcasting Company, CBS, and WNDT, on programs on the Soviet Union and contemporary art. She worked on production for Robert Whitman and Mid-Summer Incorporated. During 1967 she edited E.A.T. News and joined the staff in January 1968.

John Pearce is Architectural Coordinator of the Expo '70 Project. He received a B.A. from Yale University in 1961 and a Bachelor of Architecture in 1965. Among the projects on which he has worked are: coordinator in planning and design of an 800-acre new town; developing the architecture of special prefabricated concrete for low-cost housing; preparing the second design scheme and contract documents for the U.S. Pavilion for Expo '70. Before joining E.A.T. he was with Davis-Brody Associates as Master Plan Designer for six colleges on the satellite campus of State University of New York at Buffalo.

Elisabeth Joyce was born in Edinburgh, Scotland, and obtained her M.A. in English Language from Edinburgh University in 1963. She received a post-graduate Diploma in Linguistics from Leeds University in 1964. From 1964 to 1966 she lectured in English Literature and Language at the University College of Rhodesia and Nyasaland and at the University of the West Indies, Jamaica, from 1966 to 1968. Before joining the staff of E.A.T. to handle publications in April 1969, she worked as Assistant to a publisher in New York.

Additional Staff

Since the publication of this report, two additional members of staff have joined E.A.T.

Larry Owens has joined E.A.T. as Staff Engineer. Born in Albany, California, he graduated B.S.E.E. from California State Polytechnic College in 1963 and M.S.E.E. from New York University in 1965. He is currently working on his Ph.D. thesis for the University of Pennsylvania. In 1962 he worked with Pacific Telephone and Telegraph Company as Facilities Planning Engineer, and from 1963 to the present he was a Member of Technical Staff at Bell Telephone Laboratories. He collaborated with composer Steve Reich on a work, "Phase Delay Music Gate", recently performed at New School and the Whitney Museum.

Bruce Blugerman has been appointed Accountant and Office Manager for E.A.T. Born in Citadel, South Carolina, he graduated B.A. (Business Administration) from Citadel College in 1959. From 1959 to 1962 he was an Army Officer in the Infantry Reserve. He worked for the Rupert Allen Company in the Public Relations field, and before joining E.A.T. he was Business Manager for Dance Notations Bureau for one year.

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Gloria Malerba is in charge of membership and joined E.A.T. in December 1968. She received a B.A. from City College of New York in 1958. She has worked as an editorial secretary for the New York Herald Tribune Book Division and as Assistant Editor at Foreign News Service, serving as correspondent covering the U.N. and Brazil. During 1966-1967 she was editor of Teen Date Book Magazine.

David MacDermott received a B.F.A. from Temple University, an M.A. (Sculpture) from the University of Iowa in 1966, and an M.F.A. from Otis Art Institute in Los Angeles in 1968. His sculpture has been shown in various exhibitions and he has worked teaching art, as a research assistant in psychology, and executive director of a medical replacement group. He joined E.A.T. in March 1969 and heads the E.A.T. office in Los Angeles.

Penelope Kullaway, his associate, joined E.A.T. Los Angeles in April 1969. She studied at Denison University and Hunter College. From 1964 through 1968 she was on staff at the Preventive Medicine Institute - Strang Clinic, New York City - initially as Administrative Assistant to the Director and then as Assistant Director for Information with combined responsibilities for public relations and development activities. Previous jobs involved working in the fine and decorative arts in the areas of client service, sales promotion and public relations.

Merlin Stone received a B.A. from the State University of New York, Buffalo in 1957 and an M.F.A. from the California College of Arts and Crafts in 1969. She taught at the Albright-Knox Art School from 1957 to 1966 and at the State University of New York, Buffalo, in 1962 and 1966. Since 1966 she has taught at the University of California Extension in Berkeley. She joined E.A.T. in May 1969 and coordinates E.A.T. Bay Area, California.

Fujiko Nakaya heads the E.A.T. office in Tokyo and began work there in February 1969. She was born in Shapporo, Japan, and graduated from Northwestern University, Evanston in 1959. After a year's graduate work at Northwestern, she went to Paris to study at the Sorbonne for two years. A painter, she has had one-man shows in Chicago and Tokyo, and participated in several group shows.

In addition, at any given time there are between 10 and 20 engineers and scientists who serve as consultants for E.A.T. services and projects.

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APPENDIX I

E.A.T. NEWS

Volume 1, No. 2 June 1, 1967

Experiments in Art and Technology, Inc. 9 East 16th Street, N.Y., N.Y. 10003

The purpose of Experiments in Art and Technology, Inc. is to catalyze the inevitable active involvement of industry, technology, and the arts. E.A.T. has assumed the responsibility of developing an effective collaborative relationship between artists and engineers.

E.A.T. will guide the artist in achieving new art through new technology and work for the professional recognition of the engineer's technical contribution within the engineering community.

Engineers are becoming aware of their crucial role in changing the human environment. Engineers who have become involved with artist's projects have perceived how the artist's insight can influence his directions and give human scale to his work. The artist in turn desires to create within the technological world in order to satisfy the traditional involvement of the artist with the revelant forces shaping society. The collaboration of artist and engineer emerges as a revolutionary contemporary sociological process.

Initially, a successful working relationship between artists and engineers will require that each operate freely within his own environment. The function of E.A.T. is to create an intersection of these environments.

To ensure a continued fruitful interaction between a rapidly advancing technology and the arts, E.A.T. will work for a high standard of technical innovation in collaborative projects.

E.A.T. is founded on the strong belief that an industrially sponsored, effective working relationship between artists and engineers will lead to new possibilities which will benefit society as a whole.

Billy Klüver

Robert Rauschenberg

APPENDIX II

Artists' Technical Proposals: Spring 1967

1. Painting, chemistry:-
   a) The application of synthetic fabrics (such as Fortrel) for use as a more permanent painting surface than those (cotton, linen) now generally available.
   b) Research in the use of nacreous pigments.

2. Painter:- I've been considering developing several ideas which would involve the use of objects.
   A theater piece: this should further involve the use of electronic devices, polarized lights and plastics, put into action with compressed air. Such work would include projection of scientific documentary as well as original short films.

3. A disappearing paint:-
   a) I am interested in encouraging teenagers to paint designs, decorations and murals on the outside of certain buildings to release the inhuman rectangular drabness of so many modern cities.
   b) However, a major objection will always come to such decorations from people who will say, "How will we ever get rid of them?" and they are quite right. One of the big problems with all art is how to get rid of it.
   c) Therefore, I propose inventing a type of paint which can be painted on bricks or cinderblock, but which will change chemically with the first freezing weather, disintegrate to a powder and blow away completely. As soon as such paint is invented, I foresee a large use for it.

4. Sculpture:- I make large lenses and prisms which read the environment. Rather than specific answers to known problems, I would like to find new questions and new problems. Also, I would like to be put in touch with a scientist who knows about micro-organisms which grow in water.

5. Sound sculpture:- Musical machines, electronic games used as a source for random composition, e.g. pool table/jazz set.

6. The steel drum - a new musical instrument:-
   a) The steel drum was invented in the 1940's in the British West Indies by young people who wanted to play music for the carnival parade. They hammered the ends of oil barrels so as to get complete ranges of notes from one barrel.

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b) However, the musical instrument has not spread widely throughout the rest of the world because it is still too difficult to tune or to keep in tune. If it were not for this reason, this instrument would today be widely used in American high schools and among the restless youth of American cities.

c) I believe that by a subtle addition of several turnbuckles on the bottom side of the steel drum, it would be possible to make a steel drum easy to tune. If you know a metallurgical engineer who would be interested in going into this and trying to solve the problem, I would like to work with him. It would be a fascinating project which would have a wide effect on the social life in many American cities.

7. As for projected ideas:- to apply to an environment: plexiglass panels (or panels of some other material with which I may not be familiar) that would light upon physical contact and leave an "after-image" that would be a duplication of the form which made initial contact; and to control, in some manner, the duration of these images. Initial use would be in "environmental theater" but later could be applied in myriad ways to architecture. Also, ideas concerning chemical substances which would respond to audio stimulation and emit light of a color which would correlate to the frequencies making contact. Intensity could perhaps be controlled by the amount of decibels.

8. I am interested in having access to equipment to be able to work with videotape (direct cutting, etc. and to computerize images and moving images and to be able to play back (like a musical instrument).

9. I have been working, for the past five years, with inter-media, that is, a combination of film, dance, words, and audience participation in a complete environment. Electronics:- particularly in an application of projection techniques. I am planning on producing a concert called "Theater Piece with Ladders" which would use a multiple projection technique with live dancers and films on many surfaces.

10. I would like to work with a technician on devising a new way to use the hologram in order to create interchangeable circuits that could be grafted. While a process of grafting is taking place, another machine would compute the data and duplicate this data into a three-dimensional structure. This machine would be free and available to any artist or technician as a new tool.

11. Chemistry:- Slow chemical destruction of objects, perhaps wood or metal. I am interested in a means of changing environment (room size, shape, sounds, sight, etc.) by means of persons moving in space.

12. My technical problem is the development of a hand-held radar-type device, which will function by alterations in sound when it encounters an object within a certain practical range. The person released into the room will be able to guide themselves to the appropriate exit.

13. I am a poet and am particularly interested in the possibility of obtaining information and assistance in the area of acoustical and electronic research. Among the things I would like assistance in, is the preparation of certain deformations of recorded speech. I'd also like information about the possibility of providing mobile "actors" with lavalier speakers the size of miniature mikes, so the actors could act and remain silent while speech is projected from them. Also, about the possibility of cross-dubbing speech that has been synchronized with one film onto another, for the purpose of collaging film sound tracks onto other films or superimposing and synchronizing recorded tapes to already existing film. My main purpose would be the production of a multi-dimensional poem (linguistic structure) for performance.

14. I have two projects:-
a) Electromagnetics: the construction of a variable participation sculpture, a non-compositional work of art (open-ended). I have been using a light bulb as a resistor to a soft iron hand-wound electromagnet (with AC/DC rectifier which I haven't gotten into the system yet). Results are disappointing so far. I need help.
b) This project involves the use of a laser hologram unit for a growing sculpture. Kinetics in a different sense than is usual - would mean a variable film unit and might result in something usable within technology. I have one idea for making the diffraction plate variable.

15. I am a painter, sculptor and a musician. I would like to develop a human-scaled electronic keyboard to be played solo and with a group, in spontaneous conversations. I would like to investigate laser beam projections and other light phenomena for drawing in space with light. I would also like to study grid structures with a computer. I would like to be a representative for a number of downtown Manhattan-based artists centered around Park Place Gallery in order to merge the idea of the artist and engineer with our own projects involving architects and city planners.

16. Media - sculpture: resources - electronics, chemistry: projects:-
a) Plexiglass cubical forms with interior lighting which is directly proportional to sound in the area.
b) Photo-electric fence which contains ground effect, hovercraft-type sculpture.
c) Six-foot plastic glob that moves under its own power, under remote control or pre-programming.
d) Energy transfer to flying sculpture to provide sustained flight.
e) Stationary sensitive sculpture that responds to sound, light, temperature and, most important, people.

My background includes a formal education in art design, a technician's knowledge of electronics, and experience in experimental circuits and sculpture material.

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17. I am interested in the creation of objects exploiting the physical properties and light transmission properties of plastic materials. I am also interested in the use of new technological developments in working with various materials.

18. I would like to develop an electronic percussion section for orchestra, to experiment with 3-D lasers, to experiment with weightless chambers and also an aluminum extruder.

19. I have been working recently with aluminum wall construction in painted acrylic layers, especially for use out of doors. I would be interested in substituting color light for paints, and developing some aesthetic construction to enclose the lighting units so that the timing switches, transformers, etc. are enclosed within, with no wiring.

20. I am working as an independent film-maker and as film-maker for USCO. My interests lie in immediate work in any of the following fields: laser projection, verbal speed projection, and stroboscopic projection.

21. I would like to make contour maps of people using stereo photos and topographic map equipment. I am also interested in the use of isotopes to follow bodily functions.

22. I have a project that needs a computer and a programmer. It's a poem called, "IBM".

23. I wish to incorporate a feedback control system with a twenty-foot long vibrating sculpture being designed for the forthcoming exhibition at the Institute of Contemporary Arts in London, entitled, "Cybernetic Serendipity".

24. I would like to apply an electro-luminescent system on the surface of a sculpture.

25. I am considering a piece of sculpture that is mechanically transformable. It is made up of a number of related units that lock together to allow form and color changes. There have been some problems in finding a good type of fastener.

26. I am interested in using individual helium ballons in dance, both self-operated and remote-controlled which allow extraordinary movement in the area of anti-gravity dance.

27. Sculpture:- I am working particularly with fabric and plastics now, trying to create floating inflatables, but having difficulty finding the right factory with the right equipment, i.e. large heat-sealing dies. I would like to work with perhaps a manufacturer of plastic swimming pools and also with a scientist to discover properties of gases for inflation. I am also interested in dance and planned obsolescence as an art-combine.

APPENDIX III

Technical Subjects of Artists' Projects Which Were Matched in the First Quarter, 1969

electrical and mechanical engineering, computer-generated films, mathematics - computers, printing electromagnetically on irregular surfaces, fiberglass manufacturing, environmental mobile/electric construction involving light/sound, mechanics for inflatables, intermedia, plastic forming and optics, holography, lasers, electrodynamics, oceanography, geology, space, crystal growth, translucent and luminous aqueous colors, floating houseboats on foam, light machinery, projectors and projection systems, kinetic art, electrical engineering/plastics, reorganizing language, effects of technology upon body physiology, earth/global simulation projection, light projectors - color organ, light projection, color organ, flashing lights, holography, use of light for robot, electronics information display devices, flying and floating inflatable forms, vacuum molding, plastics, photoelasticity, rotating scrolls to which paper is attached, aerial projections, cinegraphics, chemical engineering, polyester sculpture, laser technology, computerized lighting, photographic collages, poetry and mathematics, high voltage coronas, random movement and sound, plastics, making use of computers for multisensory and dynamic pieces, aquarium environmental simulation, lasers, light box, holography, optical simulation - electrical engineering, video tape, projection of intense light, holography, light, mechanics, projection, holography, computers, plastics, liquid sculpture, retro recorder, electronic data processing systems, remote control, sound translations, films, etc., photocell-activated light show, electroluminescence, electric circuit layouts, painted aluminum for outdoor use, electronic music synthesizers, electrical/mechanical engineering, plastic forms filled with incandescent gases, chemical light sources - holography, structural engineering, computer programming and poetry, multi media use of computers, plastics, colored rotating forms, fiber optics, anti-gravity machine, mechanical clock containing recordings, relief photography, experimenting with light/electronics, video-tape, sealing and working with vinyl, neurology, plastic lamination, opaque and translucent art works, glass, light, mechanical engineer to assist in three-dimensional projections, electronics, constructions with special lights, glass mirrors, computer-electronic music analyzer and synthesizer, computer graphics, audio-visual conversion, electrical mechanical engineering, mechanical engineering, outdoor constructions with electric lighting, earth grading, asphalt construction, electrical engineering:planar image assembling painting and film, mathematical formulae for sculpture, electronic media-music, optical and mechanical engineering, motorized steel panels, heating device for plastic fabrication box, coatings and moding techniques, electronic music computer, plastic lamination, illuminated fluid moving in relation to lenses and mirrors, plastic objects floating in liquid, computers and TV, computer-controlled light array, computer graphics, computer films, public address system with echo, light effects from linear polarization, electroplating non-metallic material, computer-controlled audio-visual conversion, construction of plexiglas-neon/vacuum form, painted sheet metal constructions, moving holograms, traveling circus

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APPENDIX IV

E.A.T. Staff and Member Participation in Talks, Conferences, Panels, etc.
February 1967 - May 1969

February 1967: "Hommage a E.A.T.," one event in the series, "Contemporary Voices in Art," sponsored by the New York State Council on the Arts at the 92nd Street YM-YWHA, New York City. Panel performance: John Cage, Merce Cunningham, Billy Klüver, Len Lye, Jack Tworkov, and Stan VanDerBeek, in collaboration with engineer members of E.A.T.

April 1967: Massachusetts Institute of Technology, Cambridge, Massachusetts. "Interface: Artist/Engineer"; Billy Klüver. (Published as E.A.T. Proceedings No. 1.)

1967: Meeting sponsored by U.S.I.S. at Sao Paulo, Brazil. Talk: Robert Rauschenberg.

February 1968: Annual Meeting of the College Art Association, Kansas City, Kansas. "Collaboration between Art and Engineering Students: A New Addition to the Curriculum": Billy Klüver.

March 1968: Annual International Conference of the Institute of Electrical and Electronics Engineers, New York City. Participated in panel on Computer Graphics: Billy Klüver, Stan VanDerBeek. Artist members manned an E.A.T. booth at the Conference Exhibition.

March 1968: Symposium on Science and Art, sponsored by the Center for Advanced Visual Studies and the Center for Theoretical Physics; Massachusetts Institute of Technology, Cambridge, Mass. Participated in panel: Billy Klüver, Robert Rauschenberg.

April 1968: "Sightsoundsystems," Ryerson Polytechnic Institute, Toronto, Canada. Talk at a series of performances: Billy Klüver.

April 1968: Regional Meeting of the Associated Councils of the Arts, Buffalo, New York. Participated in conference: Francis Mason.

April 1968: Regional Meeting of the College Art Association, New York City. Talk: Francis Mason.

May 1968: Annual Conference of the Council on Foundations, Kansas City. Participated in panel: Francis Mason.

June 1968: Meeting for Dutch artists in Amsterdam. Talk: Robert Rauschenberg.

June 1968: The School of Engineering, University of Michigan, Dearborn, Michigan. Talk: Billy Klüver.

June 1968: The Annual Meeting of the Associated Councils of the Arts, San Francisco. Participated in panel: Francis Mason.

June 1968: The Corcoran Gallery, Washington, D.C. "Technology and the Arts": Francis Mason.

July 1968: The Summer Research Institute of Film Study, McGill University, Montreal, Canada. "Art and Technology: Are They the Same?": Billy Klüver.

September 1968: Symposium, "The Industrial Negative," sponsored by the Artists' Placement Group, London. "Artists and Industry": Billy Klüver.

September 1968: The New Jersey Society of Professional Engineers. Panel on E.A.T.: Julie Martin, Peter Poole, Fred Waldhauer.

October 1968: Midwest Museums Association Conference, Milwaukee, Wisconsin. Participated in panel: Billy Klüver.

October 1968: The Annual Midwest College Art Conference, Minneapolis, Minnesota. Participated in panel, "New Media in Curriculum": Lloyd Kreuzer, Julie Martin, Iain Whitecross.

December 1968: The Museum of Modern Art, New York City. "The Artist and Industry": Billy Klüver. (Published as E.A.T. Proceedings No. 4.)

December 1968: The Annual Meeting of the American Association for the Advancement of Science, Dallas, Texas. "Art and Science: Will There Be a Difference?" Panel organized by Billy Klüver, with three artists and three scientists. Mel Bochner, Gyorgy Kepes, Robert Whitman, Elsa Garmire, Billy Klüver, Jack Nolan, Henry Hopkins/Moderator.

January 1969: Meeting of the American Institute of Architects, Princeton, New Jersey. Talk: Julie Martin, Iain Whitecross.

March 1969: The Annual Conference of the National Education Association, New York City. E.A.T. prepared a series of programs for the conference participants.

March 1969: E.A.T. offices in New York City. Two programs for students from Michigan State University, as part of their Art Orientation Program visit to New York.

March 1969: Annual Meeting of the College Art Association, Boston. Panel, "Artists, Technology, and Industry": Julie Martin, Eric Rawson.

April 1969: University of Pennsylvania, Philadelphia. Talk on E.A.T.: Billy Klüver.

April 1969: The International Conference on Technological Change and Human Development, Hebrew University, Jerusalem. "Artists, Engineers, and Technology": Billy Klüver, Robert Rauschenberg.

May 1969: The Minneapolis School of Art, Commencement Address: Billy Klüver.

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APPENDIX V

E.A.T. PROCEEDINGS:

The following is a list of talks and reports published in the series E.A.T. Proceedings:

1.67 Interface: Artist/Engineer. Talk given at Massachusetts Institute of Technology by Billy Klüver, April 1967, $1.00.

2.67 Technical Libraries Within a Fifty-Mile radius of New York City, $.50. Compiled by Peter Poole.

*3.68 Description of E.A.T. Lecture Series, $.25. Transcripts were made of all the lectures. For information about ordering these, contact E.A.T.

4.68 Artist and Industry. Talk given at the Museum of Modern Art by Billy Klüver, December 1968, $1.00.

5.69 The Public Exhibition of an Art Work Employing Lasers. E.A.T. Safety Program Report, by Peter Poole, $1.00.

*6.69 Report on E.A.T.-M.O.M.A. Competition and SOME MORE BEGINNINGS, $.25.

*7.69 E.A.T. Clippings. A compilation of newspaper and magazine clippings on E.A.T. to date. Compiled by Gloria Malerba, $2.50.

8.69 Description of Pepsi Cola Pavilion for the Japan World Exhibition, 1970, Osaka, $.75.

E.A.T. PROCEEDINGS are available to members of E.A.T., and prices are based on cost of reproducing these reports.

* Available after May 15, 1969.

Telephone 212 242 8803 9 East 16th Street New York New York 10003 Cable EATCENTRAL

APPENDIX VI

EXPERIMENTS IN ART AND TECHNOLOGY, INCORPORATED

March 17, 1969

TECHNOLOGY AND THE INDIVIDUAL: RECOGNITION OF CHOICES

A Proposal for a Series of Exhibitions Designed by Artists

The aim of the exhibitions is to promote a recognition of the options for the individual presented by the physical capabilities of the new technology. There are two areas of concentration: areas of technological development which are related to unresolved social attitudes toward technology; and the physical relationship between the individual and technology.

The following are subjects on which there can be one or more exhibitions, divided into the two areas:

Variations of the Body: Genetics

Variations of the Body: Renovation, Transformation, and Extension

Secrecy or Sharing: New Communication and Information Technology

Automation: Activity or Work?

Technology and the Environment: A Simulated Ecosystem

Atomic Energy: The Cloud and the Clear Sky

Technology for the Three-year-old

The Technological Environment of Women

Sports Equipment: The Individual in Nature

Shaping the Environment: Participation by the Individual

The physical presentation of the subjects of the exhibitions will be designed by contemporary artists in collaboration with scientists, engineers, architects and professional designers. They should be interactive and provide for maximum audience participation.

The exhibitions will be reproduced in quantity and circulated on a rental basis like prints of a film. They will be designed and packaged by latest technical means to be easily transportable and adaptable to the greatest variety of extremes of audience and place of installation.

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APPENDIX VII

Financial Support: September 1966 - April 1969

As we were unable, before going to press, to obtain written consent from all our sponsors to print their names in this report, a statement of the numbers of contributors and the amounts donated is presented here.

Contributions of over $10,000 have been received from two Foundations, one corporation, and three individuals.

Nineteen Corporations, seven Foundations, four labor unions, and sixteen individuals contributed between $1,000 and $10,000.

Contributions of up to $1,000 were given by eight corporations, one Foundation, two universities, and eighteen individuals.

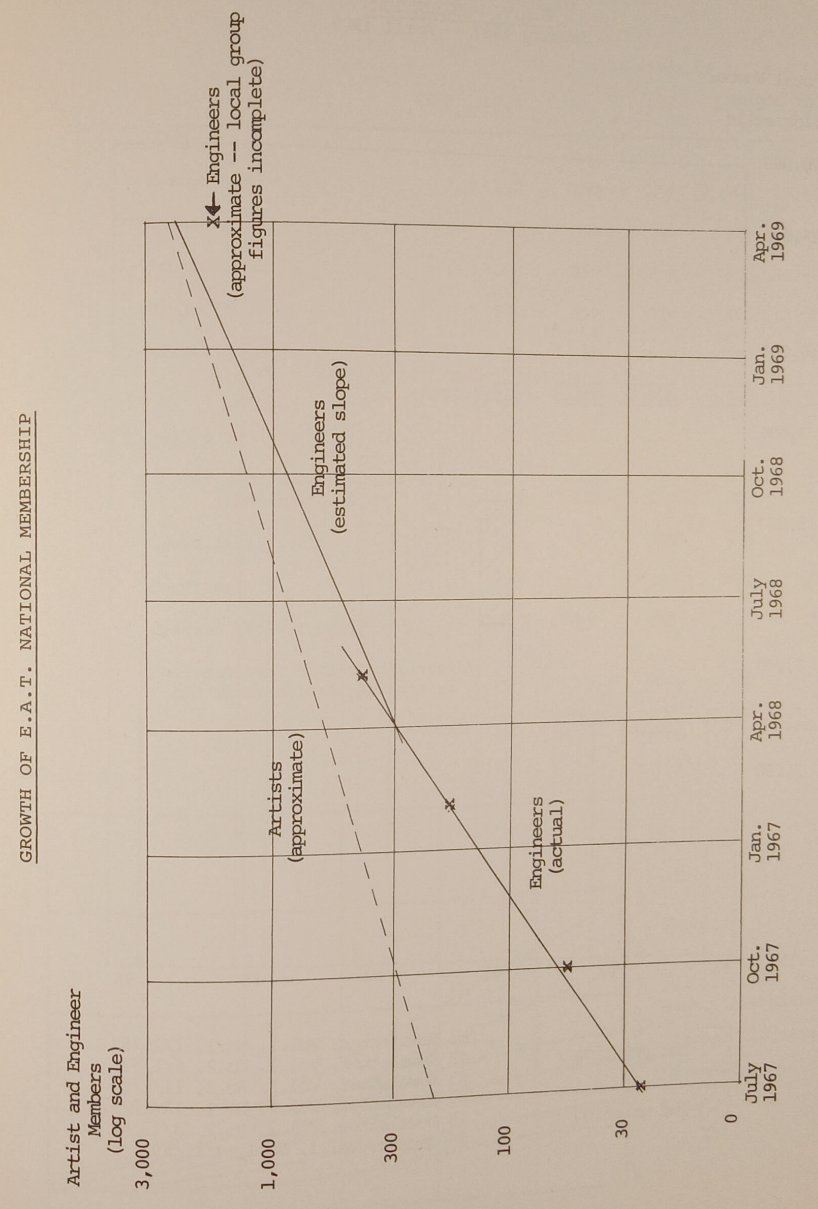
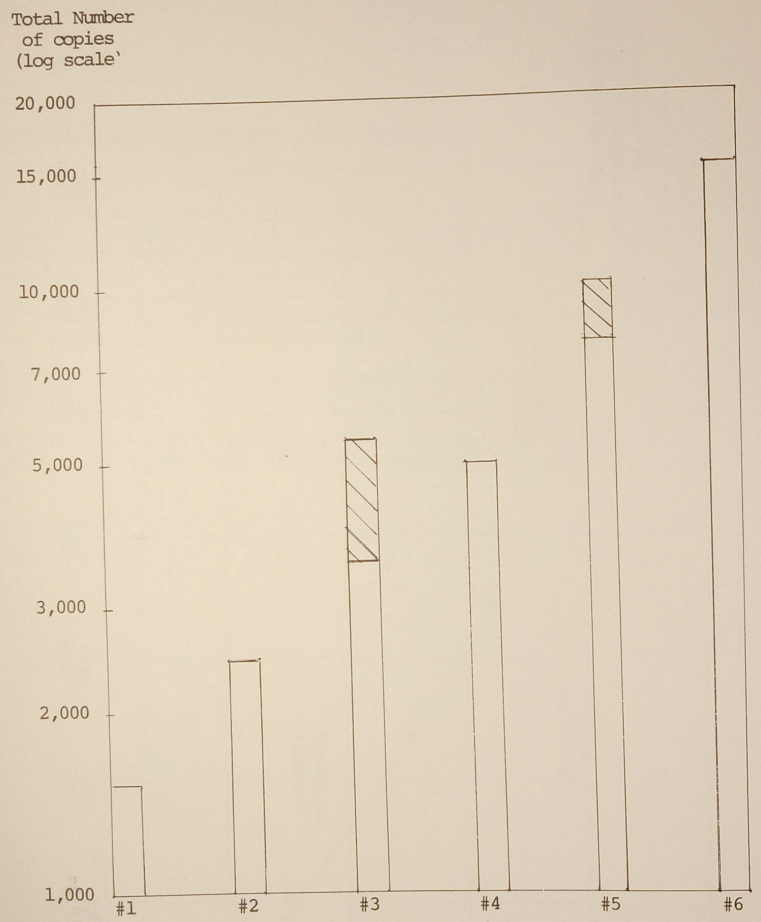


Figure 1

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E.A.T. PUBLICATIONS
January 1967 -- April 1969



#1 Newsletter, Vol.1, No.1, 1/15/67
#2 Newsletter, Vol.1, No.2, 6/1/67
#3 Newsletter, Vol.1, No.3, 11/1/67
#4 Newsletter, Vol.1, No.4, 12/20/67
#5 Newsletter, Vol.2, No.1, 3/18/68
#6 Techne, Vol.1, No.1, 4/15/69

Figure 2

E.A.T. BUDGET FORECAST

(Thousands of dollars)

YEAR	1970	1971	1972	1973	1974	1975
INCOME						
Membership	100	150	250	300	400	500
Industry	175	300	600	900	1,100	1,400
Foundations	200	250	250	300	400	400
Projects	200	250	300	400	500	600
Miscellaneous	25	50	100	100	100	100
TOTAL	700	1,000	1,500	2,000	2,500	3,000
EXPENSES						
Staff: New York Headquarters	200	300	400	500	600	700
Local Groups	100	150	150	200	200	200
Operational Costs	125	200	300	400	500	500
Services	125	150	300	400	600	800
Special Project Costs	75	100	150	200	250	300
Publications, Public Involvement and International Activities	75	100	200	300	350	500
TOTAL	700	1,000	1,500	2,000	2,500	3,000

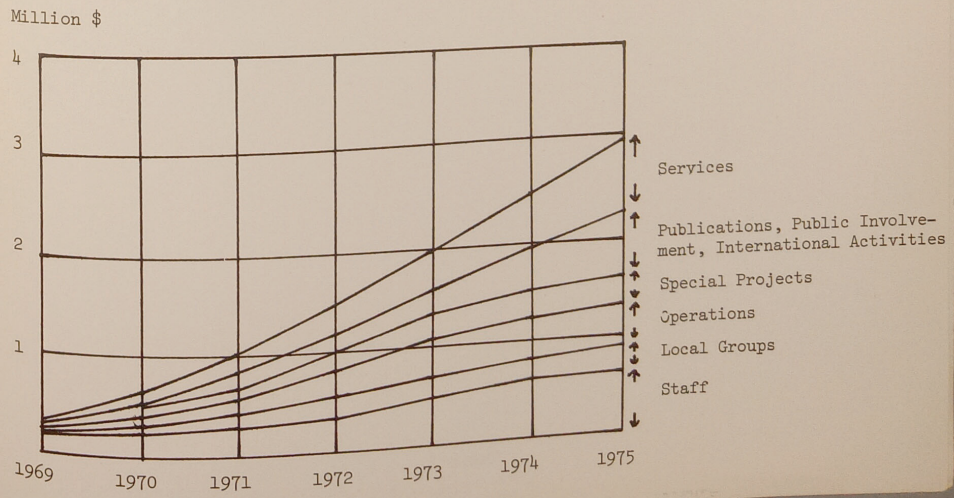


Figure 3

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ARTICLES IN TECHNICAL PRESS

STIMULATED BY E.A.T. ACTIVITIES

	TEXT (column inches)	PHOTOS (square inches)
1966	122	345
1967	182	562
1968	321	880
1969 (1st quarter)	288	366

Table I

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Reflections in Rauschenberg's *Soundings* during Student Evening of November 8 (photo by Robert A. Propper)

Student Evenings

Eyeful—Four Special Evenings for College Students, a pilot project sponsored by the Museum's Junior Council brought a total of 3,000 young people to the Museum for programs of films, mixed media presentations, poetry readings, and viewings of the permanent collection and special exhibitions. To give students in the metropolitan area a chance to explore the Museum at their leisure, the galleries were open from 7:30 to 11:00 p.m. four Friday evenings: October 25, November 8 and 22, and December 6.

Curatorial departments of the Museum made special contributions to these evenings. The Department of Film selected a group of experimental films and two classics of the silent era that have influenced young filmmakers. Buster Keaton's great comedy, *The General,* and Carl-Theodor Dreyer's moving tragedy, *The Passion of Joan of Arc,* were shown. The series of film programs was opened with the award-winning *David Holzman's Diary;* 25-year-old Jim McBride, who made the film, spoke with the students at the screening. The series concluded with six short films by West Coast moviemakers whose subjects ranged from radical satire *(Oh Dem Watermelons)* to surrealistic sexual fantasy *(The Bed).*

On each of these evenings, the Founders Room on the sixth floor was used for performances by people active in the new theater, dance, and music movement. On October 25, James Waring and John Herbert McDowell created a "Lecture-Demonstration," their term for a gentle happening that immersed the audience in a darkened environment filled with audio-visual surprises. On the evening of November 8, Tony Martin and Morton Subotnik combined elaborate light and music devices, and their performance evolved from the activation by the audience of wired elements such as screens and plexiglass poles. On November 22, the third Friday evening, Reverend Al Carmines and some members of the Judson Church Group presented a review of their repertoire of original drama, poetry, and music. For the final program, on December 6, Gordon Mumma, Barbara Lloyd, and Trisha Brown Schlichter created an intricately choreographed environment of bodies, sound, and blinking lights.

Robert Rauschenberg's *Soundings,* on view at the Museum from October 22 to January 26, a large construction of plexiglass panels over whose surface repeated images of chairs tumble when a light source is activated by sounds the spectators make, proved to be a magnetic attraction. Rauschenberg himself was at the Museum on December 6 to talk about his work with the students. That same evening the Lower East Side Film Club, a project sponsored by the Young Filmmakers Foundation, filmed all the events that took place.

—Margery Aronson
Executive Secretary of the Junior Council

Experiments in Art and Technology

It has become evident in the development of contemporary art over the last few years that many artists are extensively involved with the new materials and processes that have emerged through developments in science and technology. Even more, the artists of today want to create within the technological world to satisfy the traditional involvement of the artist with the relevant forces that shape society. The organization Experiments in Art and Technology was established to provide an active intermediary between the artist and the new technology located in industry. E.A.T. is concerned with the process of making art, not with the work of art as a final product. The primary aim of its activities is to develop the most effective means for providing the artist with access to new technology.

The decision to form Experiments in Art and Technology developed from the experience of producing the performance series, *9 Evenings: Theater and Engineering,* which was held at the 69th Regiment Armory in New York in October 1966. Forty engineers and ten well-known, contemporary artists worked together to develop technical equipment which was used as an integral part of the theater, dance, and music works. During the preparation for *9 Evenings* it became clear that if continuing, and organic, artist-engineer relationships were to be achieved, a major, organized effort had to be made to set up the necessary physical and social conditions.

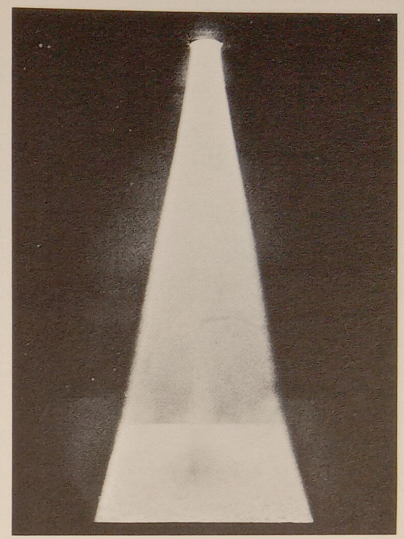
In November 1966 there was a meeting of artists in New York City to find out if E.A.T. as an organization could provide the artist with access to the technical world. Over 300 artists, engineers, and other interested people attended. Their reaction was positive. Billy Klüver, a physicist in laser research at Bell Telephone Laboratories, became president, and the artist Robert Rauschenberg, vice-president. Membership was opened to all artists and engineers.

E.A.T.'s membership of more than 4,000 artists and engineers are informed of the organization's direct services—such as, providing artists with technical information, directing artists to available computer and industrial facilities, etc.—in *E.A.T. Operations and Information,* a publication that is issued at various times during the year. E.A.T. also publishes *TECHNE,* a paper that reports on activities and projects of artists and engineers who are involved in using new technology. E.A.T. has also organized local groups in 34 locations in this country and Canada, as well as abroad, to enable artists and engineers to work with local technical and industrial resources.

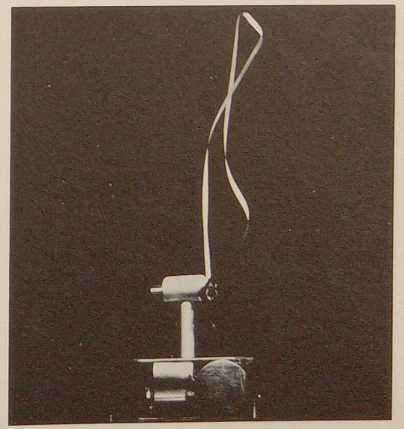
Soon after E.A.T. was organized it became increasingly clear that in order for the artist to be involved with the relevant forces that are shaping the technological world, he must have access to the people who are creating technology. Thus E.A.T. began to act as a matching agency, through which an artist with technical problems or a technologically complicated project could be put in touch with an engineer or scientist who could collaborate with him. Now E.A.T. not only matches artists and engineers to work on collaborative projects, but also works to secure industrial sponsorship for projects that result from the collaboration. To cut across traditional boundaries and facilitate the completion of projects resulting from the artist-engineer collaboration, E.A.T. tries to gain the interest and support of other groups as well: universities, foundations, labor, politics. So far 250 collaborations have been initiated through E.A.T.

E.A.T. also administers special projects involving numbers of artists and engineers. The projects—performances, exhibitions, large sculptures, etc.—provide situations for the artists to explore and experiment with new technology and to move outside his familiar art-gallery situation. Most recently E.A.T. co-ordinated the collaboration between several artists in planning an environmental situation for the Pepsi Cola Pavilion at the World's Fair that will take place in Osaka, Japan, in 1970.

E.A.T. has also established a Professional Exchange Program through which it administers projects suggested by institutions and industries which invite artists to work—in their professional capacities—within the institution in situations in which the artist's participation will not only benefit himself but will



Jean Dupuy (artist) and Ralph Martel (engineer). *Heart Beats Dust.* 1968. Wood, glass, Lithol Rubine, tape recorder, co-axial speaker, tungsten-halogen lamp, rubber. First prizewinner in the E.A.T. competition for The Museum of Modern Art exhibition, *The Machine as Seen at the End of the Mechanical Age.*



Lucy J. Young (artist) and Niels O. Young (engineer). *Fakir in ¾ Time.* 1968. Textile tape, aluminum, plastic, variable speed motor. Second prizewinner in the E.A.T. competition for The Museum of Modern Art exhibition, *The Machine as Seen at the End of the Mechanical Age.*

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also advance the interests of the institution. The first such program, The Quarry, is an experimental lithographic workshop in the modern facilities of Local One, Amalgamated Lithographers of America, in New York City. The second is an artist-in-residence program with The Singer Company, Central Research Laboratory, Denville, N.J. In addition, E.A.T. will administer an artist-in-residence program for which The CBS Foundation will provide funds to pay salaries for artists to work in co-operating industries. E.A.T. is also establishing a Safety Program in association with the American Association of Museums and the Art Dealers Association of America which will co-operate with governmental and industrial safety organizations in advising artists, engineers, galleries, and museums on how to insure the safety of both spectator and artist in dealing with new technical processes and equipment.

The exhibition *Some More Beginnings,* held at The Brooklyn Museum during November 1968–January 1969, was an outgrowth of yet another collaborative venture. The Museum of Modern Art asked E.A.T. to co-operate on a section dedicated to the new technology which would be an extension to its exhibition *The Machine as Seen at the End of Mechanical Age.* E.A.T. then announced a competition for engineers and artists in which the prizes to be awarded would go to the engineer for his contribution to a work of art produced in collaboration with an artist. This was accompanied by a request for submission of works involving new technology made by an artist alone, to be considered for inclusion in *The Machine* exhibition. Awards would be granted to the engineer on the basis of the most inventive use of new technology as it evolved through the collaboration of the artist and engineer. There were two criteria on which the works were to be judged by the jury: How inventive and imaginative is the use of technology? To what extent have the engineer and artist collaborated successfully?

The three prize-winning works, plus six others, were included in *The Machine* exhibition at The Museum of Modern Art. In *Some More Beginnings* at The Brooklyn Museum, all the entries to the competition were shown.

E.A.T. feels that the competition revealed the interest of the engineer and scientist, and showed that

Wen-Ying Tsai (artist) and Frank T. Turner (engineer). *Cybernetic Sculpture.* 1968. Multiple stainless steel units, oscillator, stroboscopic lights, electronic equipment. Second prizewinner in the E.A.T. competition for The Museum of Modern Art exhibition, *The Machine as Seen at the End of the Mechanical Age.*





Renovation plans being discussed by (from right) Donald Dean, a Trustee of The Studio Museum and chairman of the Renovating Committee; Percy Ifill, of the architectural firm Ifill, Johnson and Hanchard, designers of the project; Bill King, president of Hannibal General Contractors. At the left is Charles Inniss, first director of the Museum. Summer 1968

black art in the greater New York area. While this second exhibition was being prepared, however, the Whitney Museum opened their exhibition *The 1930's: Painting and Sculpture in America.* No black artists were included in the show. In protest, a committee of prominent black artists, headed by Henri Ghent, Director of The Brooklyn Museum's new Community Gallery, came to The Studio Museum with a proposal for an exhibition. The idea was accepted; all other dates were moved forward and the second show became *Invisible Americans: Black Artists of the 30's.*

This flexibility is typical of the way The Studio Museum will work. Instead of the customary resident curatorial staff, the Museum will draw on talents of guest directors. Some will be commissioned to organize exhibitions; others, as was the case with the *Invisible Americans,* may approach the Museum with their own suggestions. In addition, The Studio Museum hopes to provide space occasionally for traveling exhibitions that would otherwise not be seen by New Yorkers.

Other shows scheduled for the current art season include *The Art of the Afro-Haitian,* organized by Leon Chalom. In addition to paintings, the exhibition will include ceremonial material of the Voodoo religion, slide projections surveying many aspects of Haitian life, and music taped at various ceremonies in Haiti this past summer. The exhibition after that will be directed by Richard Bellamy, a New York art dealer who was the first to show many of the best young American artists. His show will be a selection of work by young artists who are just beginning to be known.

One of the most interesting, and important, aspects of The Studio Museum's exhibition schedule is the Studio Program, whereby part or all of the Museum's space is turned over to an artist or a guest director to realize a special project. This may take any form—environmental, electronic, theatrical—but once accepted by the Museum, it must be accomplished through the participation of apprentices drawn primarily from the Harlem community who follow through every phase of the exhibition from inception to final showing. In the first exhibition, Tom Lloyd's electronic sculptures were constructed with the aid of apprentices. The use of apprentices throughout the Museum is an integral part of its program.

Another important part of the Museum's program, which also involves participation, is the Film Unit and workshop, which has been under way since the spring. Through the Film Unit, The Studio Museum offers training and experience in the technique of film-making under professional direction. An artist-in-residence program will also be initiated at the Museum in the near future.

Since it began, the Museum has held several open houses for the neighborhood community, and has assisted in planning visits for numerous school groups. It will continue this kind of community contact, and through the quality and nature of its exhibitions hopes to attract as wide an audience as possible. The intention of The Studio Museum in Harlem is to provide a forum for communication within the contemporary arts for the entire community, black and white.

—Campbell Wylly
Assistant Curator, Department of Painting and Sculpture
—Irene Gordon
Special Assistant to the Director

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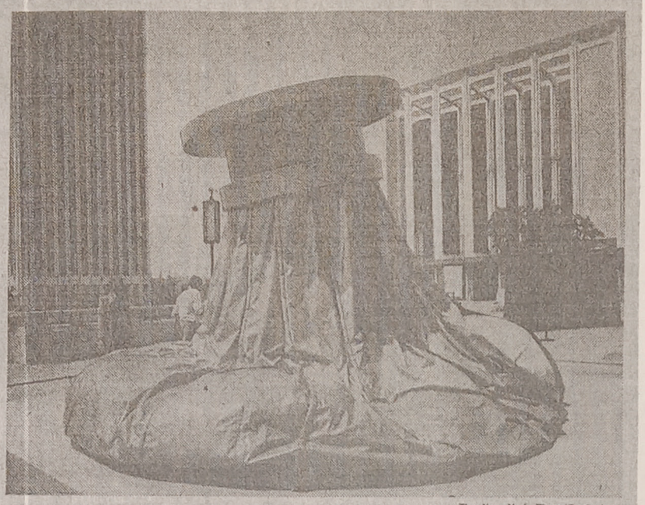
5-12-71

'Art and Technology' to Open on Coast

By HILTON KRAMER
Special to The New York Times

LOS ANGELES, May 11—Unless there is a power failure in Southern California on Friday, the much heralded "Art and Technology" exhibition, representing a collaborative effort on the part of contemporary artists and major industrial corporations, will finally open to the public at the Los Angeles County Museum of Art.

Organized by Maurcie Tuchman, the museum's senior curator of modern art, the exhibition has been in the planning and production stages for four years, and the elaborate installation process has been going on in Los Angeles for 12 weeks—and is still going on. Some of the most celebrated talents of the past decade—Claes Oldenburg, Robert Rauschenberg, Andy Warhol and Tony Smith, among others—have been enlisted in this project, as have the technological resources of some of our most prestigious corporate enterprises—Kaiser Steel, I.B.M., the Container Corporation, Philco-Ford and Lockheed Aircraft.



The New York Times/D. Gorton

"Giant Icebag" by Claes Oldenburg on display at Los Angeles County Museum of Art

●

As for the cost of the exhibition, no one connected with the "Art and Technology" project will even hazard a guess—at least in public—at the final figure, which is certain to be gigantic.

The exhibition was conceived by Mr. Tuchman on a monumental scale. Some 80 artists and 40 corporations were invited to participate in the venture. In the end, however, only 16 artists produced works that could be exhibited—enough, certainly, to provide us with some notion of what the artistic potentialities of such collaborative efforts might be. The mind reels at the thought of what the exhibition might have been like if every single proposal had been successfully realized.

As it is, the actual exhibition is a curious mixture of the familiar and the unfamiliar. It abounds in stunning visual marvels, a few of them guaranteed to induce instant vertigo in even the sturdiest of souls, but it also boasts a number of works that seem to have little or nothing to do with advanced technology. The contributions of R. B. Kitaj and Oyvind Sahlstrom, for example, simply offer us larger versions of their familiar styles. Their vision seems not to have been modified in the least by their involvement with the facilities at Lockheed, where Kitaj worked, or at Heath, the manufacturers of steel and plastic signs, where Sahlstrom produced his three-dimensional tableau celebrating the cartoons of Robert Crumb. Their work offers us a conventional gallery experience.

The real interest of the "Art and Technology" show and the real test of its significance as an artistic event lies elsewhere — in those works that could not exist without the elaborate and expensive mechanical devices that industry has created for its own distinctly nonesthetic purposes. In this respect, the most important contributions to the exhibition are those of Newton Harrison, Rockne Krebs, Boyd Mefferd, Claes Oldenburg, Robert Rauschenberg and Robert Whitman.

Mr. Harrisons room devoted to tall vertical cylinders of delicate changing colored light (executed at Jet Propulsion Laboratory) affords one of the most beautiful and tranquil experiences in the show. Mr. Krebs's work is also a construction of colored lights — in this case powerful laser lights, which, to the manipulation of various fool-the-eye-devices, create an illusion of vast abstract vistas of space defined by an endless construction of colored lines.

If this is not sufficiently disorienting to the normal spectator, Mr. Mefferd's room of flashing strobe lights leaves an instantaneous series of head-splitting pictorial after-images floating in the mind. It is powerful enough to make one want to rush to the nearest exit for some relief. I suspect the museum is going to have to provide some first-aid, probably in the form of tranquilizers (or perhaps a stiff drink) to quite a few of the people who wander into Mr. Mefferd's bizarre entertainment.

●

The most amusing as well as the most appealing work in the show is undoubtedly Mr. Oldenburg's kinetic "Giant Icebag," which performs a 20-minute programed "dance" on the museum's open-air plaza to the evident pleasure of everyone who sees it. Mr. Oldenburg has taken a rather old-fashioned view of the function of technology in this work: he has used it as a convenient means to animate his own comic sculptural conception. The spectator is never really required to think about the mechanics of the work, which in this show is something of a relief.

Still, as one visits and revisits this exhibition, what is finally most impressive is not the range of innovation that advanced technology has made available to artists, but something quite different — namely, the extent to which virtually all the visual images that impinge on the spectator's vision are assimilable to, and indeed drawn from, traditional pictorial and sculptural forms.

Mr. Rauschenberg's ingenious landscape of liquid mud, which errupts into little fountains and explosions and gurgling eddies, is, after all, only another surrealist landscape. Mr. Whitman's room of mirrors and floating images of objects is likewise a bit of Magritte magnified into a new technological but not a new esthetic dimension. Mr. Harrison's lovely cylinders of color are explicitly conceived of as a "Homage" to Rothko, and even Mr. Krebs's lasers realize patterns that have been on the minds and in the drawings of constructivist artists for half a century.

●

The "Art and Technology" show can certainly claim its share of visual shocks and revelations. But, oddly enough, one doesn't come away from it with one's visual imagination very much enriched. The new technology provides some dazzling visual sensation, but surprisingly little in the way of really new visual forms. The heritage of Dada, surrealism and constructivism, the newer modes of pop and color abstraction — these still govern the minds of these artists, who have not yet found in the resources of advanced technology the inspiration to move beyond them.

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New Head of Business Arts Panel Presents Plans

By HOWARD TAUBMAN

The next big push of the Business Committee for the Arts should be to establish a clearing house of information and guidance for corporations ready to involve themselves in the arts but not yet certain about what direction to take.

This is one idea that Robert O. Anderson is considering as he takes over the committee chairmanship. Elected this week to succeed C. Douglas Dillon as head of the committee of 107 leaders of some of the nation's largest companies, Mr. Anderson has begun to think about a program to broaden the committee's usefulness.

"In the three years of the committee's existence," he said, "it has given a big boost to the concept that business should have a stake in the arts. Now we must try to operate in depth. We should seek to develop our influence more intensively on the national level. We should guide as well as promote, and we will probably organize an advisory panel of performing and creative artists to help."

Details Interests

Sitting in his art-filled 24th-story office at 56th Street and Fifth Avenue—Mr. Anderson is chairman of the Atlantic Richfield Company—the new arts leader was a model of subdued sophistication as he talked of himself and the place of the arts in the texture of our society.

"My three main interests," he said, "are environment, education and the arts, and they profoundly affect the quality of life. Business is learning that this is so. The best young talents in America, the kind business wishes to attract, insist on these things as essentials."

Mr. Anderson has been that kind of businessman. Besides being the chief executive officer of a major oil company and the owner of almost a million acres of ranchland in the Southwest where he carries on a large cattle operation, he occupies himself with the humanities, the arts and the natural world.

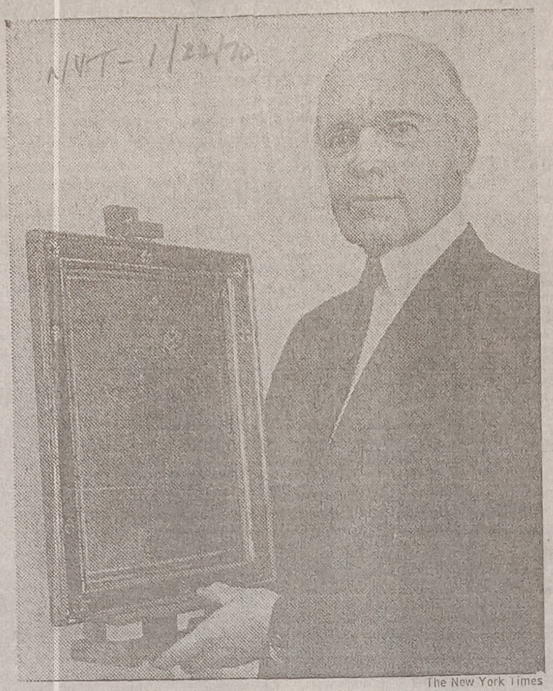
He is chairman of the Aspen Institute of Humanistic Studies, a vice chairman of the John F. Kennedy Center for the Performing Arts now being built in Washington and chairman of the Eisenhower Exchange Fellowships.

"I grew up in Chicago, almost as part of the University of Chicago," the 52-year-old executive said, smiling. "I never went to school anywhere else. I attended the university's experimental elementary and high schools and then the university itself.

"My father was a banker, but I was constantly in the homes of the men who were working on splitting the atom because their children were my buddies."

Although busy with the petroleum business into which he went shortly after leaving the university, he painted as an avocation. About 20 years ago he was invited to submit his work for an important exhibition.

"That's when I decided," he recalled, "to quit. I realized that either I had to paint seriously if I had the talent or to admit that I hadn't. But I admire good painting and sculpture."



The New York Times

Robert O. Anderson at his Atlantic Richfield Company office here, shows a painting of St. George. On wood, it is over 100 years old, and on the back is name of Atlantic Refining Company, a forerunner of the present concern.

Mr. Anderson's tastes are catholic. In the corridor approaching his office there is a huge wall hanging of abstract, multicolored designs created by Herbert Bayer, his close friend and Aspen neighbor, who was a member of the Bauhaus, the famed German art group.

In his office there are Eskimo sculptures, realistic English equestrian figures in bronze, contemporary Greek and Spanish paintings and a small painting of St. George and the dragon for which he has special affection.

He insists that you examine it closely. It has the innocent workmanship of a primitive. He points out that it is painted on wood and then carefully turns it around, like a stage director building an effect, to show the back, which carries the printed legend, Atlantic Refining Company.

"It was painted more than 100 years ago, probably by a Greek," he said. "I would guess that a piece of wood from a crate or keg caught his fancy. A dealer in Europe wrote us about it, and I bought it, and not only for sentimental reasons.

Home in New Mexico

Mr. Anderson's legal residence is in Roswell, N. M., where one of his friends is Peter Hurd, the painter whose portrait of President Johnson was rejected by its subject.

"We both raise horses and we both enjoy the outdoors," Mr. Anderson observed.

"I adore nature. I am convinced that people who love the sky, the mountains, the sea and want to keep them unspoiled are people who love painting and music and theatre and the other things of the mind and spirit, and I hope it will be the business of the Business Committee for the Arts to do what it can to enhance the quality of life for us and all other Americans.

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UNDAY, NOVEMBER 24, 1968

N. Y. Times

Art Notes

An Erotic Auto, A Roomful Of Fog

By GRACE GLUECK

WHEELS whirring, computers purring, lasers beaming, motors steaming, a pair of art-technology shows have clanked into not one but two local arenas—the Brooklyn Museum and the Museum of Modern Art (Brooklyn opens Tuesday, MOMA next day).

The MOMA show, catchily titled "The Machine As Seen at the End of the Mechanical Age," is billed as a "historical collection of comments on technology by artists of the Western world." Assembled by K. G. Pontus Hulten, the high-input director of Stockholm's Moderna Museet, it comprises more than 220 works, ranging from a Leonardo drawing for a flying machine to "Toy-Pet-Plexi-Ball," a sphere that rolls in response to light and sound and calms down only when you throw a blanket over it.

The Brooklyn show, coordinated by Experiments in Art and Technology head Billy Kluver, picks up where MOMA leaves off. Rather shyly titled "Some More Beginnings," it includes 137 examples of collaborative art, hatched by artists working with engineers—some so far out (the art, not the artists) that they make computers look like—well, abacuses.

In the works (no pun intended) for two years, the MOMA exhibition actually sparked the Brooklyn one. To keep his retrospective "open-ended," Hulton asked EAT to collaborate on a section of new technology in art. A nationwide prize competition, staged by EAT last year, flushed 147 entries, 95 of them collaborative works. The three top prize winners and six others will appear at MOMA, the rest at Brooklyn.

*

The EAT show, says Kluver, "has uncovered a fantastic resource of inventiveness and energy." And what's more, he exults, "it reflects a wide-open, non-art historical approach to materials." Among the uncoveries: Preston McLanahan's "Fog Room," in which the viewer walks through an area of light made visible by artificial fog; a wood-and-Plexiglass structure by David Lawner and Garry Furgeson whose 600 lamp bulbs blink in response to different voice timbres; a life-size nude by Roberta Phillips and Thorne MacDonald, whose face is a TV screen reflecting patterns generated by stereophonic music.

Hulten's title for *his* show, "The Machine at the End of the Mechanical Age" points out that the mechanical machine, "an imitation of our muscles," is losing ground to electronic and chemical devices which imitate brain and nervous systems. "Since W.W. II, we've been moving toward a more dignified position with regard to technology," says Hulten. "We're coming to control machines better and to know more about what they can do. Our relationship with them in the future will be far more interesting."

His show includes work by artists of every ism—Futurists, Dadaists, Constructivists, Surrealists, Bauhausers—lovers, haters, humorists, despairers and affirmers of the machine. Among the prime exhibits are a 15-foot reconstruction of the Russian artist Vladimir Tatlin's model for a 1,300-foot motorized tower, "Monument to the Third International"; Jean Tinguely's "Meta-Matic Machine," which collaborates with viewers on drawings; a cluster of Rube Goldberg's contraption cartoons; and Ed Kienholz's "Back Seat Dodge," an example (says Hulten) of the auto's eroticism.



Henri Dauman

Alain Jacquet and "burlap"
His name stands for bread and backgammon

Even in the teeth of technology, Hulten doesn't doubt that artists are here to stay. "One of the things wrong with technology is its fatalistic view. The engineer cannot provide us with an attitude. But the artist reveals to us the complexity of technology, and unlike the technician, takes total responsibility for his work. He may imbue technology with a sense of responsibility."

FAKING IT

The 26 bags filled with plastic waste and piled in a corner *look* like burlap. The planks on the floor *look* like wood. And you'd think the patterned panels along the wall were *real* sections of corrugated sheet iron.

But all of Alain Jacquet's objects at the Waddell Gallery are faking it. The burlap is a photo reproduction of burlap, printed on cotton fabric, the wood is a grainy wood pattern photo-printed on Fiberglas, the sheet iron is a photo of same reproduced on transparent plastic.

Their irreality pleases Jacquet, who insists that the *trompe l'oeil* effect makes the objects seem more authentic. "You get more the feeling of burlap," he explains. "You never notice such commonplace surfaces as wood or sheet iron, but this forces them on your attention."

Jacquet, Paris-born 28 years ago, has been fooling around with photo-screen processes (they produce the minuscule dots in mag or newspaper photos) since 1964, when he re-did Manet's famous painting, "Luncheon on the Grass," as a heavily-screened photo reproduction of friends picnicking on a lawn. (To approximate the Manet grouping, he put French critic Pierre Restany in a philosopher's cap, posed Mme. Restany as the nude odalisque, and used a commercially-packaged bread called "Jacquet" as part of the food.) Sometimes, on the other hand, he takes details of a photo-screened work and blows them up to such enlargement that they seem as abstract as Pollocks.

*

"My work is all about making images disappear through dots," explains Jacquet, who acknowledges a debt to Rauschenberg and Warhol (mostly Rauschenberg). "It's a visual, formal thing—there's no deep philosophy behind it and I'm not commenting on photo-journalism. I'm fascinated by the way a picture can break down into the tiniest abstract elements close up, then reappear as a pictorial image."

The dots have brought Jacquet a distance from his first show (1961) in which he exhibited backgammon-paintings (his name means "backgammon" in French). Later, he did "camouflages," paintings superimposed on Old Masters—for example, a Shell gas pump added to Botticelli's "Venus."

He got into dots, he explains, because the "camouflages" took too long to paint—"I had to find a new process." He describes with glee a recent defeat at the hands of Phillips, the giant European electronic combine. "They wanted me to do a poster on the quality of their TV image. But when I proposed using the dots, the art director blanched. He wanted me to build up their image, not break it down."

COLLAGE

The "anonymous" Los Angeles art disposal service, described in this column last week, was really hatched by John Manno, an L.A. artist-teacher, according to the L.A. Free Press. Why? "The things in the galleries don't represent real works of art—they're mostly the dealer's choices of what they think will sell," Manno told the newspaper. On its initial run, in a labeled dump truck, the A.D.S., alas, collected nothing . . . For his temporary quarters in the new Executive Office Building, Pres.-Elect Nixon has borrowed from the National Collection of Fine Arts ten 20th-century American paintings. The catholic selection (chosen by the NCFA) includes John Twachtman, William Zorach, Fritz Glarner, John Marin, Abbott T. Thayer . . . Yale University has transformed the one-time United Restaurant, a former student haunt on Chapel St., into the United Restaurant Gallery, a showcase for student work, organized and operated by students in its school of Arts and Architecture . . . Two more collectors On Collecting Art: Roy S. Neuberger, whose book, "An American Collection," has been published by Harry Abrams; Robert Scull, who is working up something for Macmillan.

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The New York Times

WEDNESDAY, OCTOBER 11, 1967 L+ 49

Art and Science Proclaim Alliance in Avant-Garde Loft

By HENRY R. LIEBERMAN

In a sound-drenched Lower Manhattan loft building that was enlivened by revolving painted disks, film projections, floating pillows and miniskirted girls in paper smocks, representatives of industry and labor joined a number of artists and scientists yesterday to proclaim a "working alliance" between art and technology.

This modest and uncertain merger seeks to bridge the gap between the two worlds. It is intended to bring modern technological tools to the artist for creating new art forms and fresh insights and viewpoints to the engineer for creating a "people-oriented" technology.

The event was celebrated at a news conference "happening" in the six-story loft building at 381 Lafayette Street used for studio purposes by Robert Rauschenberg, the avant-garde artist.

Kheel's 'Biggest Mediation'

Mr. Rauschenberg, along with Dr. Billy Kluver, an electronics engineer who is specializing in laser research at the Bell Laboratories, and Theodore W. Kheel, the lawyer-labor mediator, are prime movers in the art-technology merger.

"For me" said Mr. Kheel, "this is the biggest mediation I've ever undertaken."

Among the art objects on display was a large drawing of a nude generated by a computer, Masterminded by two engineers, L. D. Harmon and K. C. Knowlton, this project involved the making of a transparency from a photograph and scanning it with a device operating like a television camera.

The information on the transparency was then stored on magnetic tape in the form of pulses standing for digits, with the brightness level of the picture elements represented by numbers ranging from 0 to 7. After processing all the numbers, the computer printed a drawing of micropatterns formed by clusters of symbols used in electronic design.

Visitors at the studios were intrigued by a sculptural representation of a woman taking a shower. As droplets of water dripped from the shower-head in a white stall, moving-picture images of the woman were registered by a projector behind the stall on a sand-blasted Plexiglass panel.

Rauschenberg's 'Oracle'

Another sculptural construction was a sound-emitting assembly consisting of a tire, truck door, window frame, bathtub and air vent. This is Mr. Rauschenberg's "Oracle."

Five radios are used, with the tuning dial of each being rotated by motor. Thus, each radio picks up snatches of the broadcasts of all the local radio stations. To eliminate wiring from assembly connections to the central pick-up point, signals from the radios are relayed to the components by small FM transmitters.

Last year an artist-engineer collaboration called "Nine Evenings: Theater and Engineering" left the art critics bewildered. A few visitors at the Lafayette Street show also looked with puzzlement on "Oracle." But the show's sponsors emphasized that it was the idea of collaboration, and not a specific art work, that counts most.

While 20 helium-filled pillows floated gently in a two-story room called "the Chapel," the need for bringing artist and technologist together was stressed in speeches by Senator Jacob K. Javits, a traditionalist who sees merit in modern art; Ralph C. Gross, president of the Commerce and Industry Association; Edwin Langsam, film projection supervisor of the American Telephone and Telegraph Company; Herman D. Kenin, head of the A.F.L.-C.I.O.'s new Scientific, Professional and Cultural Employees Council, and Dr. Warren Bradley, a psychiatrist, of the Massachusetts Institute of Technology.

Contributions Are Listed

A.T. & T., the International Business Machines Company, the Bell Telephone Laboratories and the Experiments in Art and Technology, Inc., a nonprofit organization of artists and engineers, to the new Automation House being prepared at 49 East 68th Street.

Automation House will be the center of the American Foundation on Automation and Employment, headed by Mr. Kheel and concerned with human problems caused by automation — notably the problem of individual "isolation."

Dr. Brodey, who heads M.I.T.'s science camp for underprivileged youngsters, noted that new technologies had opened large new areas of creativity. While the industrial revolution "averaged the people," he said, the great strides made in science and engineering had opened "a new potential for living in a personalized environment if we merely can think our way out of the old mass-production mentality."

He added:

"It is the artist who has the capacity to make personalized products that grow in meaning as they become more familiar. The artist has learned to use as his material the familiar that is outside the 'accepted system.' By his slight shifts, relevance and meaning emerge from the hackneyed."

Dr. Kluver, the laser specialist, stressed his belief that the art-technology merger should primarily be aimed at "catalyzing the individual's responsibility for the shaping of the new technology." In pursuing this end, the 40-year-old scientist, a thin, blond man who came here from Sweden in 1954, has long assisted artists in developing new modes of expression.

A Natural Marriage

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'No Place Is Safe'

"If you don't accept technology you better go to another place because no place here is safe," he said. Asked what made technology so exciting for him, he replied: "Nobody knows the kind of art that will be created if two or three men in diverse fields become collaborators."

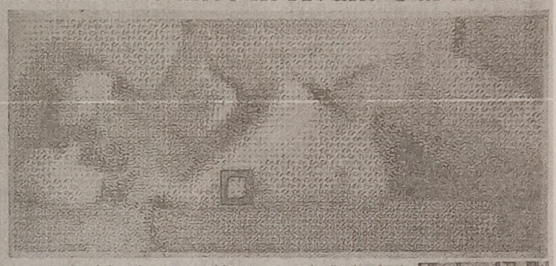
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Mr. Rauschenberg himself



Dr. Billy Kluver, electronics engineer specializing in laser research, arranges helium-filled pillows.





Drawing of the nude was generated by a computer under direction of L. D. Harmon and K. C. Knowlton, engineers. Black square encloses the detail shown.





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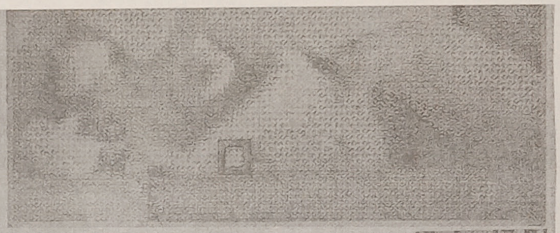
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Contributions Are Listed

A.T. & T., the International Business Machines Company, the Atlantic Richfield Corporation and various labor groups are among the organizations that have made $1,000 contributions for furthering the cooperation between artists and engineers. But Mr. Gross urged industry to enlarge "the less than 3 cents of each corporation contribution dollar that goes to the arts."



Drawing of the nude was generated by a computer under direction of L. D. Harmon and K. C. Knowlton, engineers. Black square encloses the detail shown.

"Along with its obligation to be a profit-maker for its owners, the modern business corporation has an obligation to be a good citizen in the community," he said. "As a basic part of this obligation, the corporation must examine carefully its responsibility to support the arts."

In explaining the unions' interest in art and engineering, Mr. Klein, who is head of the musicians' union, said that union members were concerned about a "growing chasm" between disciplines, the "growing impersonalization" of work and the frustrations faced by many individuals in seeking to make "valuable contributions."

He noted that union members were also consumers, members of audiences and citizens concerned with the quality of society.

The event served to dramatize a drive to win organizational support for the art-technology merger and to mark the transfer of Experiments in Art and Technology, Inc., a nonprofit organization of artists and engineers, to the new Automation House being prepared at 49 East 68th Street.

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A Natural Marriage

He has advised sculptors on how to build self-exploding contraptions, helped painters add neon lights and motors to their works, and provided them with amplifiers, oscillators, speech synthesizers, image projectors and various kinds of electronic detectors to extend their range. To Dr. Kluver, it is a natural marriage.

Technology supplies new materials, new techniques and new imagery to the artist. In return, technology gets from the artist new outlooks that make it "more human, more reasonable, more varied, more lifelike, if you will."

Robert Rauschenberg, the 41-year-old soft-spoken ex-Texan who has been called an artistic enfant terrible, agrees that technology has bountiful gifts to offer the artist. Far from fearing it, he finds it an "exciting challenge."

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Mr. Rauschenberg himself has a project in mind with problems that he has not yet been able to solve technically. He envisages a room "that would be responsive to weather, to people viewing it, to traffic, noise and light."

This he sees as the art of the future.

"Nobody wants to paint rotten oranges anymore," he said.



Senator Jacob K. Javits speaking yesterday at gathering at 381 Lafayette Street. A traditionalist, the New York Republican nevertheless finds merit in modern art.



Robert Rauschenberg, the artist, says, "If you don't accept technology, you better go to another place."

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Nixon's Inner Circle Here Remains Close to Him

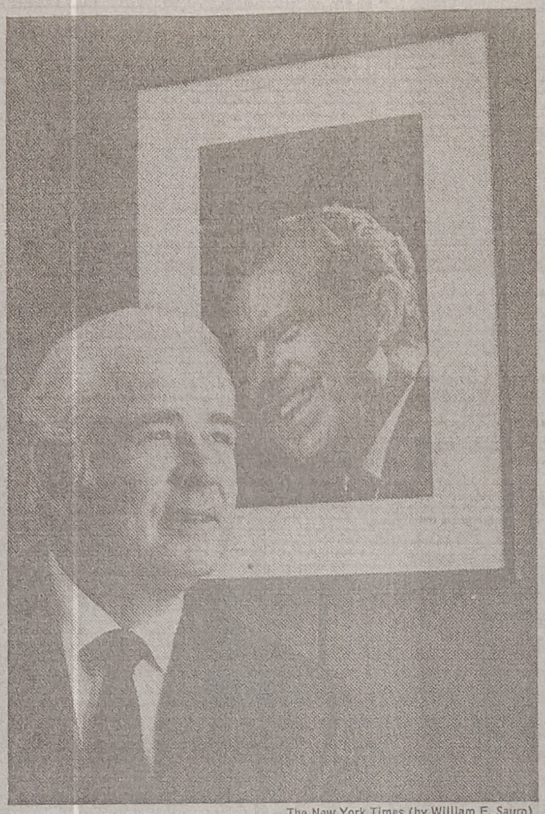
By ALDEN WHITMAN

In the five and a half years that Richard M. Nixon lived in New York — from June, 1963, to January, 1969 — he had a small group of intimate friends, men with whom he dined, shared his deepest thoughts, played golf or otherwise relaxed. These friends are high in the metropolitan area's banking, business, publishing, legal and political communities.

They still play an important part in the private side of Mr. Nixon's life as President as his closest friends in New York. They visit him frequently at the White House or at his vacation retreats. They correspond or talk on the telephone. They offer him information and advice.

Many of them also serve as sounding boards for his Presidential policies. And they provide him moments of utter privacy on an easy first-name basis.

These friends include Robert H. Abplanalp, the multimillionaire inventor of an aerosol valve; Elliott V. Bell, economist and former editor of Business Week magazine; Elmer H. Bobst, honorary chairman of the Warner-Lambert Pharmaceutical Company; George Champion, former chairman of the Chase Manhattan Bank; former Gov. Thomas E. Dewey, a leading corporation lawyer; Gabriel Hauge, president of Manufacturers Hanover Trust Company; Donald M. Kendall, president of PepsiCo, Inc.; Hobart Lewis, editor in chief of Reader's Digest, and George A. Murphy, chairman of Irving Trust Company.



The New York Times (by William E. Sauro)

Donald M. Kendall, president of PepsiCo, Inc., with an inscribed photo of President Nixon. Mr. Kendall warmly recalls a favor Mr. Nixon did him at Moscow Fair in 1959.

Apart from their Republicanism, the nine men have several characteristics in common: they are successful and wealthy; their achievements are largely self-made; they are doers rather than theorists. All but one — Mr. Lewis — knew Mr. Nixon before his arrival here from California after his 1962 defeat for the governorship.

Although the men shun publicity about their friendship with the President, some have received public tokens of his esteem. Mr. Lewis and Mr. Kendall were named last May as trustees of the Richard Nixon Foundation, which was formed for educational and charitable purposes, including possible construction of a library and museum. Mr. Kendall is also unsalaried chairman of the National Alliance of Businessmen, to which the President appointed him.

Mr. Lewis, in addition, is vice chairman of a commission to prepare for the bicentennial of the Declaration of Independence. He was also appointed to a panel to survey the Defense Department. Both posts are nonsalaried. Mr. Abplanalp was named last month to the Commission on White House Fellows, which selects scholars and students for Government service. That job, too, is unsalaried.

Not all of these men are mutual friends. The bankers —Mr. Champion, Mr. Hauge

Continued on Page 17, Column 1

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THE NEW YORK TIMES, SATURDAY, JANUARY 17, 1970

Friends in Nixon's Inner Circle Here Still Playing a Part in H

Continued From Page 1, Col. 5

and Mr. Murphy—do not, for example, know Mr. Abplanalp, although they do know each other. Mr. Dewey and Mr. Lewis are friends; but Mr. Lewis is no more than acquainted with the bankers.

All of them share an intense personal loyalty to Mr. Nixon, which he evidently returns.

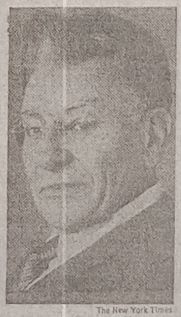
Thus, one foundation of the Nixon-Abplanalp relationship is that Mr. Abplanalp, a generous contributor to the 1960 Presidential campaign (he keeps the amount confidential), sought out the then Vice President in defeat and offered his friendship.

The tie has developed to the point where Mr. Abplanalp, an easy-going, earthy, six-footer can be host to the President (most recently at Thanksgiving) at Grand Cay, a 125-acre hideaway in the



The New York Times

Robert H. Abplanalp



The New York Times

Elliott V. Bell

Bahamas, a short helicopter flight from Key Biscayne, Fla., where Mr. Nixon has a vacation compound. Grand Cay is one of a dozen islets Mr. Abplanalp leases or owns through his privately held, Yonkers - based Precision Valve Corporation.

Helps President Relax

Mr. Abplanalp, who shares with Mr. Nixon an interest in sports and the outdoors, is proud to be able to give the President an occasional day of relaxation at Grand Cay. "When the President is there," he said in a recent interview, "he has privacy—he doesn't have to worry that every time he scratches himself someone will take a picture."

In another gesture of friendship, Mr. Abplanalp (with his wife Josephine) bought last year one of the five bungalows in the Key Biscayne compound for $150,000 and leased it to the Secret Service. The four-bedroom house adjoins that owned by Charles G. (Bebe) Rebozo, one of Mr. Nixon's most intimate friends.

Mr. Abplanalp's fortune is recent. Of Swiss-German descent and the son of a Bronx machinist, the 47-year-old Bronxville inventor graduated from Fordham Prep and attended Villanova. He dropped out in 1941 at the start of his junior year "because mathematics [for engineering] wasn't for me." (Last June, however, Villanova recognized his business success by giving him an honorary doctorate of engineering.)

After three years in the Army, he set up a machine shop in the Bronx in 1946. Three years later, in response to a casual request by a customer, he devised a simple and dependable seven-part aerosol valve that now dominates the market. Later, he also put together the automatic machinery to process the valve — one-and-a half billion of them are produced annually in his plants in the United States and abroad for a sales volume of $50-million.

In addition, Mr. Abplanalp, through Precision, owns two plastic companies; a company that cans fried chicken; a fish hatchery at Eldred, N.Y., and land on Tupper Lake in the Adirondacks; and a fishing resort at Walker's Cay in the Bahamas.

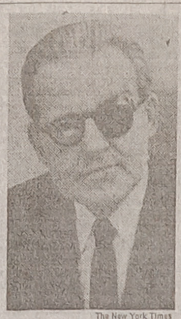
In contrast to Mr. Abplanalp's outgoing manner, Mr. Bell of McGraw-Hill and the three bankers — Mr. Champion, Mr. Hauge and Mr. Murphy — are taciturn, especially about their relationships to the President.

Mr. Bell, 67, who began his career as a financial writer and rose to editorial chairman of Business Week, says only that he is on "very friendly" terms with Mr. Nixon, but he denies that he in any way advises him. The two met more than 10 years ago.

A close friend and one-time economic adviser to Mr. Dewey, Mr. Bell has pipelines to finance and industry through directorships of the Chase Manhattan Bank, the New York Life Insurance Company, the Carrier Corporation and New York Telephone Company.

An Illinois farm boy who grew up in California and who now lives in Darien, Conn., Mr. Champion, who is 66, started in banking as a teller and retired last year as chairman of Chase Manhattan.

Mr. Champion has known Mr. Nixon "for 15 years at least" and says he has been a golfing companion and social friend. But he is silent on the details of his present



The New York Times

Gabriel E. Hauge

relationship to the President, except to say, "I have been asked for advice on a few things, but I don't consider myself an adviser."

Equally tight-lipped is Mr. Hauge (pronounced HOW-gie), who declined to talk about his friendship with Mr. Nixon. Mutual friends report that the Manufacturers Hanover Trust chairman was under consideration for chairman of the Federal Reserve Board, a post to which Arthur Burns was recently appointed. Among economists Mr. Hauge, Mr. Bell and Mr. Burns are known as having tough anti-inflation views.

Mr. Hauge and Mr. Bell are also close friends, with Mr. Hauge having served as administrative assistant for economic affairs to former President Dwight D. Eisenhower, at Mr. Bell's recommendation.

Mr. Hauge, 55 and the son of a Lutheran clergyman in Minnesota, got into banking through teaching economics at Harvard and Princeton. His voice and manner reflect his academic background, though his husky build is that of a weight-thrower.

Mr. Murphy is somewhat more communicative about Mr. Nixon than his fellow bankers. "I'm an admirer—I like to think of him as a friend," the Irving Trust chairman says, adding, "I'm not part of the Washington scene."

Born in a small Georgia town 64 years ago, Mr. Murphy attended Oglethorpe University and did graduate work at Harvard before joining Irving Trust in 1931 as a trainee. He met Mr. Nixon during Navy basic indoctrination courses, but their friendship did not flower until 1963, when Mr. Nixon came to New York.

Like his fellow bankers, Mr. Murphy sits on a number of important boards, including General Telephone and Telegraph, Otis Elevator and Continental Can. Mr. Champion's main directorships are Southern Railway and Travelers Insurance, while Mr. Hauge's are American Metal Climax and American Home

Former Governor a Friend

Among the nine men, the only one with professional political experience is Mr. Dewey, who served three terms as Governor from 1943 to 1955, and who was his party's Presidential candidate in 1944 and 1948. The Michigan-born lawyer, now 67 and senior partner in the firm of Dewey, Ballantine, Bushby, Palmer & Wood, finds Mr. Nixon "a charming man socially, who takes part in a dinner party with extraordinary grace and who sometimes plays the piano for intimates."

Mr. Dewey has known Mr. Nixon since 1952 ("I invited him to a Republican dinner and liked him very much"), and the two lunched and golfed together and entertained each other at home until last January. Since then, Mr. Dewey has visited the White House privately "four or five times."

"While Dick has many



The New York Times

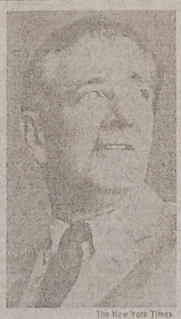
Thomas E. Dewey

friends," Mr. Dewey says, "he doesn't necessarily follow the advice of any one or two."

As a lawyer, Mr. Dewey has worldwide contacts. Among the clients of his firm have been Chase Manhattan, whose banking interests are global; the Government of Turkey; the Chrysler Corporation; the Japan Export Promotion Agency, and Chas. Pfizer & Co., the pharmaceutical concern.

The President's friendship with Mr. Lewis began at the offices of Reader's Digest in Chappaqua, N. Y. in 1963 when Mr. Lewis was editor for an article — "Khrushchev's Hidden Weakness" —by Mr. Nixon for the magazine.

Since then the two men have golfed together — "He hits a good long ball," Mr. Lewis says — and have exchanged family visits. Last summer Mr. Lewis, who has just turned 60, gave a dinner party for the President at his 20-acre Bedford Hills, N. Y., estate, at which the guests were the Deweys and Mr. and Mrs. DeWitt Wallace, co-founders and co-owners of Reader's Digest.



The New York Times

Hobart Lewis

The Nixon-Kendall friendship dates from the opening of the Moscow Fair in the Soviet Union in the summer of 1959. Pepsi-Cola International, of which Mr. Kendall was then president, had a kiosk at the fair as part of an effort to break into the Eastern European soft-drink market.

According to Mr. Kendall, who is 48 years old, he was under pressure from the home office to score a spectacular success. "I knew I had to get a Pepsi in [Premier Nikita S.] Khrushchev's hands," he says. "I had to get a picture."

Mr. Kendall says he took his problem to Mr. Nixon, then in Moscow for a tour of the fair with the Soviet leader that culminated in the so-called "kitchen debate" over capitalism and Communism. Mr. Kendall recalls the Vice President assured him, "Don't worry, I'll bring him by [the Pepsi exhibit]."

And indeed he did, according to Mr. Kendall, who took the occasion to press several drinks of his beverage on Mr. Krushchev as the cameras clicked.

Born in Sequim, Wash., Mr. Kendall is a graduate of Western Kentucky State College. He joined Pepsi as a syrup salesman in 1947 and by 1963 was president of PepsiCo, Inc. But because he regards the Moscow Fair incident as crucial to his career, Mr. Kendall says that he "owes my job to Nixon."

Out of their friendship and mutual interest in foreign affairs grew an offer, in 1961, for Mr. Nixon to head Pepsi International. Although that suggestion came to nothing, Mr. Kendall says he gave Pepsi's law business to Mr. Nixon's concern in 1963, and Mr. Nixon "did quite a lot of traveling for us."

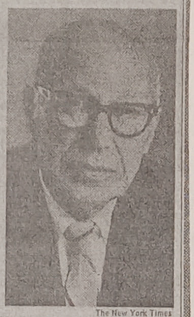
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Father-Son Relationship

Perhaps the closest of Mr. Nixon's friends is Mr. Bobst (pronounced with a long "o"), for whose 85th birthday the President gave a private White House party on Dec. 16. The honorary chairman of Warner-Lambert pharmaceuticals, who lives in Spring Lake, N. J., and winters in Palm Beach, says the President "is like a son to me." Julie and Tricia, the Nixon children, "call me Uncle Elmer," he says.

A burly six-footer who is sometimes referred to as "the vitamin king," Mr. Bobst began his business career as a $3-a-week drugstore clerk. Largely self-educated, he joined the Hoffman-LaRoche drug company in 1911 as a salesman and by 1928 he was the concern's president. Three years before he retired in 1944 he was fined $3,000 in Federal Court on a charge of conspiring with German and other European interests to restrain the import and manufacture of medical hormones.

A year after leaving Hoffman-LaRoche, Mr. Bobst took



The New York Times

Elmer H. Bobst

over presidency of Warner-Lambert, and helped raise its volume from $30-million a year to $350-million. His wealth was a $700,000 room apart Place.

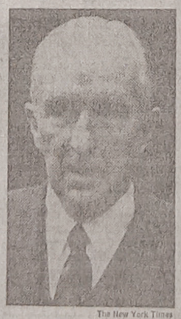
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In additio White Hous says he wr quite often, on his thou



The New York Times

George Champion



The New York Times

George Murphy

SALE! Reduced to $2.9
Giant
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Inner Circle Here Still Playing a Part in His Private Life



The New York Times

Gabriel E. Hauge

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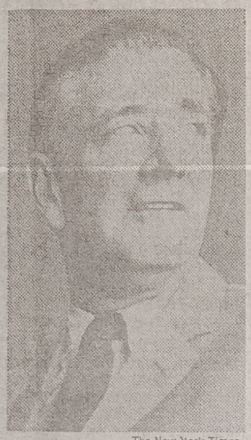
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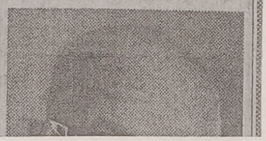
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wealth was such that he had a $700,000 yacht and a 15-room apartment in Sutton Place.

Mr. Bobst, who first met Mr. Nixon at a dinner in 1953, contributed (how much is his secret) to Mr. Nixon's 1960 campaign. After the 1962 defeat in California, Mr. Bobst says, he had considerable influence in bringing his friend to New York and installing him as senior partner in the law firm of which Warner-Lambert was a client and that became Nixon, Mudge, Rose, Guthrie & Alexander.

In addition to his frequent White House visits Mr. Bobst says he writes to Mr. Nixon quite often, offering Mr. Nixon his thoughts on the economy, on Congress, politics and such other matters as come to his mind.

Mr. Bobst, who was finance chairman of the Republican party in New Jersey in 1953, also says he had "something to do" with persuading Mr. Nixon to campaign in that state last fall for Governor-elect William T. Cahill.

He gives his policy ideas "as one friend to another," Mr. Bobst says, and never asks what the President does with them.

"Mr. Nixon seeks advice from all in whom he has confidence," according to Mr. Bobst. "He may not take it, but he will weigh it before deciding to go the other way."

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fore closing last week. But a play by Archibald MacLeish is an event despite the length of its run, and at least a brief report is in order.

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—Bill Marvel

Water curtains three-dimensional flowers in a Warhol creation.

The Art Picture

Art and Technology Unite—to Varied Ends

By Bill Marvel
FROM LOS ANGELES

The beams of a laser instead of the usual Hollywood searchlights pierced the dank night skies here last week as the Los Angeles County Museum of Art unveiled and plugged in its long-awaited Art and Technology exhibit. The show is one result of an ambitious five-year project in which the museum paired up, or attempted to pair up, prominent contemporary artists and some space-age industries. Some of the resulting works were shown a year ago in Japan at *Expo '70*, although almost all the works that appeared at *Expo* have been revamped for the California show.

Though the project has involved some 80 artists and 37 corporations at one time or another, the exhibit includes only 19 works by 16 artists. Maurice Tuchman, the museum's senior curator of modern art and the man who dreamed up the project, told critics during last week's opening that the scant number of works actually completed in time for the show does not bother him. Some works are still in progress, he said. Others may never be built. What matters, he insisted, is the collaboration between artist and technologist itself.

If anything, the exhibit here proves what many critics had begun to suspect—just because artists and technologists are brought together does not mean that a new esthetic is about to emerge. There are works in which artists investigate the properties of exotic materials with almost childlike joy, and other works bristling with hostility toward the very idea of technology.

Among the artists who accepted the project at its face value was Newton Harrison, who worked with Jet Propulsion Laboratory to create a work based on the principle of the northern lights. Mr. Harrison's work consists of five large plastic columns filled with rare gases that emit a ghostly glow in response to an electric current. Colors range from gold to aqua to violet, depending upon the gas used; the columns flash, shimmer, or break up into thin disks of light depending on the current.

Pure, unadorned light is also the subject of Rockne Krebs' two laser environments, *Night Passage* and *Day Passage*. In *Night Passage*—visible for three miles, according to Mr. Tuchman—Mr. Krebs has bounced a blue-green laser beam off the top of the 34-story Mutual Benefit Life Building, across Wilshire Boulevard from the museum, and sent another pulsing out over Los Angeles like a stream of tracer bullets. *Day Passage*, which takes place inside the museum, reflects red, blue, and green laser beams between a series of mirrors, forming a luminous web just above the visitor's head. Working with technicians from Hewlett-Packard, Mr. Krebs has programed the lasers to switch on and off at random intervals so that whole sections of the work disappear and reappear.

Other artists have used modern technology to investigate the nature of perception. Robert Whitman and Philco-Ford, for instance, have created a mirror-lined room in which a television set, an ivy plant, a brick, and other items seem to hover in space like objects in a Rene Magritte painting.

Mr. Whitman's piece prods the visitor with a visual enigma: By contrast, Boyd Mefferd's strobe environment overloads the eyes and fuses the circuitry of the brain. The visitor first enters a room so dark he has to feel his way around. Behind each wall is a bank of strobe lights set to flash at unpredictable intervals. Each flash leaves the visitor with a kind of "snapshot" of his surroundings imprinted on his retina. Gradually, this changes color and fades. But after several flashes, a number of these after-images are piled on one another until the eye sees a collage of silhouettes and colors. One is unsure what one is seeing and what one merely remembers seeing.

Artists such as Boyd Mefferd, Robert Whitman, and Newton Harrison are pushing art across new frontiers. But there is another use for technology. An artist can use it to transform an old idea, boosting it in scale.

Using modules — cardboard tetrahedrons fastened together with tape and glue —Tony Smith has constructed a much-enlarged version of one of his minimal sculptures. Lit by a few shafts of dim light, Mr. Smith's work, with its maze of passages, becomes a kind of cardboard cave, a space so complex it cannot be comprehended at one time.

Ironically, although Pop artists were among the first to use mass-production techniques to make art, the "old masters" of Pop have proved the most conservative of the artists here. Only Robert Rauschenberg has gone beyond his usual images as well as his usual media — painting, collage, construction. With the aid of Teledyne, Mr. Rauschenberg has created a large bin full of mud that bubbles in response to sound. The artist, born in Port Arthur, Texas, says his mud is the same kind used in oil drilling; the work also bears more than a passing resemblance to the famous La Brea tar pits adjoining the museum complex.

Roy Lichtenstein, on the other hand, has transferred images familiar in his paintings and lithographs to a new medium, film. His movies are, in fact, like projected paintings with motion added. The lower half of a frame might show real waves, for example, while the upper half shows a painted Lichtenstein sunset and the whole scene rocks back and forth as though photographed from a boat. Similarly Andy Warhol has produced a Pop landscape by carpeting a gallery with artificial turf and letting an overhead sprinkler system dribble a curtain of water in front of three-dimensional photographs of flowers.

Claes Oldenburg does just the opposite in his giant animated *Ice Bag*, the hit of the show. A consumer item come to life, his bag—all 18 feet of it—writhes, stretches, sags, and in general behaves as though it were about to creep down the museum steps and out into the street like a monster in a horror film.

At the Theater: Archie MacLeish Meets 'The Devil'

By Haskel Frankel
FROM NEW YORK CITY

Scratch lasted only four official performances at the St. James Theater before closing last week. But a play by Archibald MacLeish is an event despite the length of its run, and at least a brief report is in order.

The drama is based on Stephen Vincent Benet's short story *The Devil and Daniel Webster* (you may recall Walter Huston in the movie version), and is faith-

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Opera Elitist?

By Michael Putney
FROM JACKSON, MISS.

Its historical antecedents notwithstanding, opera in America has largely been an art form for the privileged few: elitist, expensive, and white.

Here in the capital of Mississippi, a fledgling opera company called Opera/South, made up of three small black colleges under the leadership of a doughty Roman Catholic nun, flies in the face of all that. It is accessible, inexpensive, integrated, and off to a promising start.

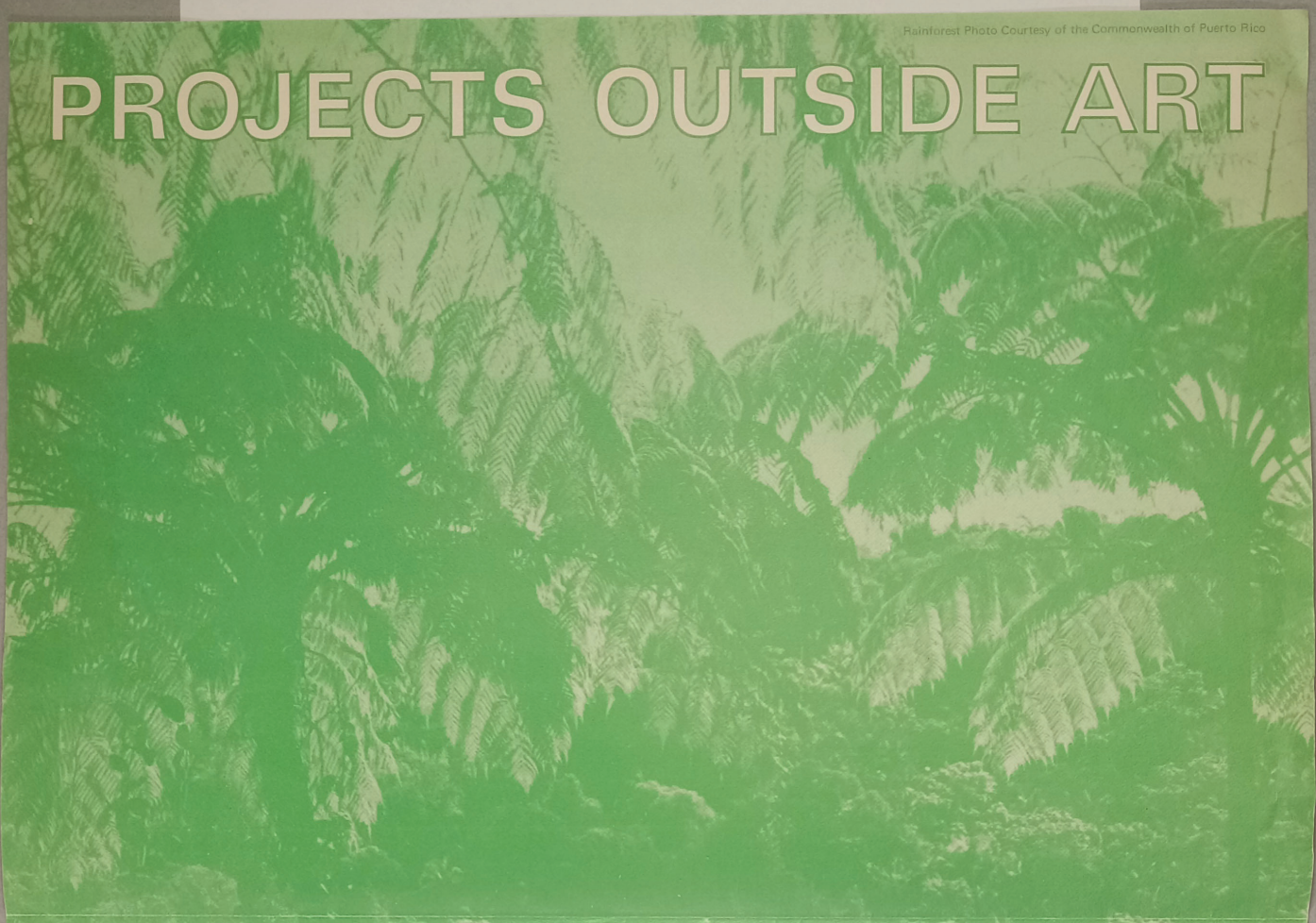


Opera/South made its debut in Jackson's handsome Municipal Auditorium with a stunning production of *Aida* that brought down the house (more than 1,000 attended) and also brought this racially troubled community closer together. The lone performance of Verdi's tale of enslavement and ill-fated love also meant a giant step toward fulfilling what Managing Director Sister M. Elise calls "our primary objective of giving young black singers who are just starting out in their professional careers and students an opportunity to work in a truly professional opera."

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Rainforest Photo Courtesy of the Commonwealth of Puerto Rico

PROJECTS OUTSIDE ART

Experiments in Art and Technology announces an exhibition of realizable projects in the environment, to be held at Automation House, 49 East 68th Street, New York City, opening October 22, 1970.

PROJECTS OUTSIDE ART will consist of five projects presented by five teams, each composed of artists, scientists, engineers and other professionals working in collaboration. The projects will deal with such areas as education, health, housing, environmental control, transportation, communication, food production and distribution, leisure activities and entertainment. Presentation will be in the form of files, tapes, models, movies or any other suitable materials.

The five teams will be assembled on the basis of submitted ideas and material. Individuals who wish to participate in a project should submit their ideas in the form of either short descriptions, published articles or granted patents. We ask that those who submit these preliminary ideas keep in mind, as much as possible, the following requirements which will characterize the final projects: utilization of available technology and existing scientific knowledge; recognition of the scale required to make the project effective under existing social and environmental conditions, ecological effects and organizational methods necessary for execution of the project. Projects may be planned for anywhere.

The written description of ideas must be no longer than 1000 words (drawings may be included). Copies of published articles or granted patents may also be used for submission. On the basis of the material received, E.A.T. staff, in consultation with professionals in proper fields, will choose five broad project areas and assign selected individuals to the five collaborative teams. The teams will begin work by June 15 and the members of the teams will collaborate to develop the final projects and determine their presentation. All submitted ideas are to be published with a reference list of articles and granted patents. This publication will be available when the exhibition opens.

Preliminary ideas for projects should be submitted to E.A.T., 235 Park Avenue South, New York, New York 10003 by May 1, 1970.

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LEO CASTELLI

Next exhibition:

ROBERT RAUSCHENBERG

electronic pieces

May 15 - June 12, 1965

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ORACLE

OUT OF THE BLUE, HERE IS A MAJOR UNDERTAKING IN SCULPTURE BY RAUSCHENBERG. FIVE PIECES, IN THE ROUND, WITH SOUND, CALLED ORACLE. FIVE WHEELED VEHICLES, RESPONSIBLY PLUMB AND ELECTRONICALLY NEAT, OR CANTED, ASKEW, SUBTLY AGED WITH THE RAUSCHENBERG PATINA OF METROPOLITAIN FALLOUT AND GUTTER GANGRENE. FROM EACH A SHINY CHROME TAIL PROTRUDES, AN FM ANTENNA, NO LESS, BECAUSE THE SOUND PART IS SERIOUS AND COMPLEX. (WELL, NOT SERIOUS, BUT COMPLICATED.)

THAT SPECIAL SENSE OF HUMOR IS OPERATING AGAIN. HOW CAN ONE CONVEY THE IRONY, THE WRY UNDERSTATEMENT, THE HILARIUOS SENSE OF ABSURD JUXTAPOSITION OF THINGS, THE ROCK SOLID NOTION OF BIZARRE APPROPRIATENESS ? WHO EVER HEARD OF SUCH OBJECTS (A CAR DOOR, A TYPWRITER TABLE, THE MOST OUTRAGEOUSLY TEXTURED PIECE OF METAL SINCE THE INVENTION OF ABSTRACT EXPRESSIONISM) COHABITING ?

LAST SUMMER IN VENICE, THE EUROPEANS (FOR THEM, POP MEANS USING OBJECTS), SEEING HIS MOST RECENT PICTURES, THE PURE SILK SCREEN PAINTINGS OF 1963-1964, SAID THAT RAUSCHENBERG HAD TRANSCENDED POP, EVEN THOUGH HE INVENTED IT. HE CERTAINLY SEEMED TO HAVE PUT ASIDE HIS INVOLVEMENT IN THE COMBINE-PAINTING THROUGH THIS LONG EPISODE OF FLAT PAINTING. BUT NOW THAT IS OVER; HIS RESTLESS INVENTIVENESS REQUIRES HIM TO KEEP MOVING, AND WE SHOULD NOT BE SURPRISED TO SEE HIM BECOME INTERESTED IN OBJECTS AGAIN.

ACTUALLY, THIS PROJECT HAS A LONG HISTORY, EVEN IF RAUSCHENBERG MAY HAVE FINISHED THE WORK AT THIS TIME BECAUSE OF A RENEWED ENGAGEMENT WITH THE PROBLEMS. THE IDEA ORIGINATES IN HIS FIRST SOUND PAINTING WITH RADIOS, BROADCAST, OF 1959. IN THAT PIECE, KNOBS PROJECTING FROM THE SURFACE PERMITTED ONE TO TUNE AN ENSEMBLE OF RADIOS, PRODUCING A COLLAGE OF SOUND. RAUSCHENBERG FELT THAT BROADCAST COULD NOT FUNCTION FOR THE VIEWER/LISTENER AS WELL AS HE WOULD HAVE LIKED BECAUSE ONE HAD TO STAND SO CLOSE TO TUNE IT. HE ENVISIONED ANOTHER PROJECT WHICH COULD BE REMOTELY CONTROLLED, SO THAT YOU COULD SEE AND HEAR THE RESULT FROM A DISTANCE. HE SETTLED ON A SCHEME OF FIVE INDEPENDENT PAINTINGS ("FIVE IS THE FIRST COMPLICATED NUMBER; IT'S NOT TWO PAIRS, THREE OR A COUPLE "). THE FIVE PANELS WERE STRETCHED, BUT THE ELECTRONIC PROBLEMS BECAME SO COMPLEX THAT THEY HELD UP THE PROJECT. TYPICALLY, THE CANVASES SOMEHOW PROMPTLY DISAPPEARED INTO ACE, ONE OF HIS BEST AND LARGEST (20 FEET) PAINTINGS OF THE PERIOD.

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THE RADIO PARTS IMPOSED A CERTAIN DEPTH ON THE PAINTINGS IN THIS SCHEME (BROADCAST IS SEVEN OR EIGHT INCHES DEEP), AND IT OCCURED TO RAUSCHENBERG THAT SCULPTURE WOULD OFFER MORE INTERESTING POSSIBILITIES THAN THE FLAT SURFACES. AS A RESULT, HE BEGAN TO WORK ON THE FIVE PARTS OF ORACLE IN THE SPRING OF THAT YEAR, 1962, BUT THE PROJECT WAS INTERRUPTED BY A TRIP TO AMSTERDAM THAT SUMMER. UNTIL THIS WINTER, THE WORK HAS PROGRESSED VERY SLOWLY, CONSTANTLY DELAYED BY PAINTING AND BY RAUSCHENBERG'S DANCE ACTIVITIES. THE PIECES HAD BEEN CLOSE TO THEIR PRESENT STATE FOR SOME TIME, BUT ONCE MORE ELECTRONIC COMPLEXITIES HELD UP THE JOB.

BILLY KLUVER, THE EDISON-TESLA-STEINMETZ-MARCONI-LEONARDO DA VINCI OF THE AMERICAN AVANT GARDE (ALMOST ALL THE GADGETRY WHICH HAS FIGURED SO PROMINENTLY IN OLJECT ART DURING THE PAST FIVE YEARS WAS ENGINEERED AND EXECUTED BY KLUVER, A BELL LABORATORIES RESEARCH SCIENTIST), DESIGNED AND BUILT THE RADIO SYSTEM, WHICH SEEMS SIMPLE BUT IS REALLY QUITE ELABORATE. FROM THE CONSOLE UNIT FIVE RADIOS CAN BE CONTROLLED, FOUR IN THE OTHER PIECES VIA TRANSMITTERS FROM THE CONSOLE; ON FIVE DIFFERENT FM FREQUENCIES, SIGNALS FROM THE PANEL GOVERN THE VOLUME AND SPEED OF CONTINUOUS TUNING OF THE FIVE RADIOS. THE RESULT IS A COMPLEX SPECTRUM OF SOUND WHICH CAN BE CONSTANTLY ALTERED BY ONE PERSON AT THE CONTROLS. TECHNICAL DIFFICULTIES WHICH HAD TO BE RESOLVED INCLUDED PROBLEMS LIKE THAT OF INTERFERENCE AMONG THE TRANSMITTERS; FURTHERMORE, THE APPARATUS HAD TO BE FOOL PROOF AND STABLE IN PERFORMANCE.

MOST DIFFICULT OF ALL, OF COURSE, WAS THE CONDITION THAT THE PIECES HAD TO BE WHOLLY MOBILE; OTHERWISE THEY MIGHT SIMPLY HAVE BEEN CONNECTED BY CABLES. EACH OF THE UNITS IS SELFCONTAINED AND BATTERY OPERATED. TIME HAS HELPED TO SOLVE SOME OF THE PROBLEMS. THE TRANSMITTERS USED WERE SIMPLY NOT AVAILABLE WHEN THE PROJECT WAS STARTED THREE YEARS AGO; THE PRESENT ELECTRONIC SYSTEM IS THE THIRD SINCE THE WORK BEGAN.

APART FROM THE ACCIDENTAL MELANGE OF SOUND PRODUCED BY THE RANDOM TUNING OF THE RADIOS, THE QUALITY OF SOUND VARIES FROM PIECE TO PIECE ACCORDING TO THE ACOUSTICAL PROPERTIES OF EACH, SO THAT THEY BOOM, RATTLE OR TRUMPET THROUGH THEIR INSANE GIMCRACKERY OF COMPULSIVE METALWORK DUCTING AND MISCEGENATED VEHICLES. THE ELECTRONIC IMPURITY OF THE SOUND SUFFERS ADULTERATION FROM ONLY ONE SOURCE, THE ABSOLUTELY IDIOTIC WATERWORKS WHICH MAY WELL BE THE ONLY MOBILE FOUNTAIN IN EXISTENCE.

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RAUSCHENBERG CONCEIVED THE ENSEMBLE AS BEING FREELY ADAPTABLE TO ANY SPACE AND CIRCUMSTANCE. THE UNITS MAY BE PLACED ANYWHERE WITHIN THE RANGE OF THE TRANSMITTERS; THEIR MOBILITY ENCOURAGES REARRANGEMENT. THE PIECES SEEM DAFTLY ON THE GO. ONE WISHES THE CONTROLS ALSO OPERATED MOTORS. WHAT AN ANTIC TRAFFIC JAM THAT WOULD MAKE ! BUT YOU CAN BE SURE THAT HE WILL HAVE SOMETHING EVEN MORE UNPREDICTABLE GOING . WE'LL JUST HAVE TO WAIT AND SEE.

ALAN SOLOMON

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WALL STREET JOURNA

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ACIFIC COAST EDITION WEDNESDAY, MAY 5, 1971

All did not go well, however. The middle-management men charged with actual responsibility for the projects sometimes sabotaged the artists, Mr. Tuchman says. "Middle management is a frightened breed," he declares. "They just wouldn't believe that their companies really wanted the crazy artists running around their factories."

Some artists did have crazy ideas. George Brecht of Dusseldorf proposed moving the whole land mass of Britain into the Mediterranean Sea. James Byars of New York, who was placed in Herman Kahn's think tank, the Hudson Institute, wanted to produce the world's first edible book, containing the world's 100 most important questions.

Mr. Kahn didn't think much of that. Mr. Tuchman quotes him as saying: "Why are we bothering with Jim? After all, I want the organization to run right."

Some sponsoring organizations treated the artists like extra-terrestrial visitors. Robert Whitman, an optics sculptor from New York, says that when he went to Philco-Ford in Long Beach, "they introduced me to all the guys with beards." Fortunately, says Mr. Tuchman, the guy with the longest beard was John Forkner, an optics engineer who teamed up with Mr. Whitman to produce a striking optical "environment" of 1,000 corner-shaped mirrors that focus on the viewer and repeat his image over and over.

"Very 1953"

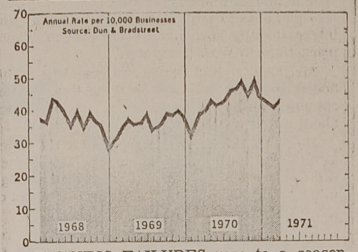
John Chamberlain, a New York artist matched with Rand Corp., was less fortunate. He got nowhere at first, perhaps because he suggested that Rand try something fresh and new—like dissolving the corporation, cutting off the phones for one day, or having everybody come out on the patios for a fiesta of picture-taking. Finding Rand "uptight" on these proposals, Mr. Chamberlain sent a series of questionnaires to Rand personnel and wrote a piece on his findings. Rand didn't publish it and neither did the museum. Mr. Chamberlain concluded: "They (Rand) are very 1953. . . . You know, like the girls wear too much underwear."

Other collaborations proved surprisingly fruitful, and they are represented in the coming show. But even some artists who produced works don't have a lot of nice things to say about corporate America. Says artist Boyd Mefferd:

"Individual flair seems to have been lost somewhere in corporate thinking and nobody in these companies seems to feel much compulsion to do anything with much style. Companies seem to have forgotten about the value of independent operators. Nobody seems to remember that the men who started our giant corporations were all small and independent, more like artists than the people who run the companies now."

The companies have not spoken up, by and large. But curator Tuchman notes that almost none of the sponsors has exercised his option to keep the work of art produced by collaboration with an artist.

Business Failures Up



BUSINESS FAILURES rose to a seasonally adjusted rate of 43.9 per 10,000 in March from 41.8 in February, Dun & Bradstreet Inc. reports.

What's That Thing Resembling a Giant, Salmon-Hued Ice Bag?

* * *

Los Angeles Museum to Show What Happens When Artists Are Let Loose in Companies

By Earl C. Gottschalk Jr.
Staff Reporter of The Wall Street Journal

LOS ANGELES—People passing it on the sculpture plaza of the Los Angeles County Museum of Art nudge their friends and chuckle or just stop in their tracks, goggle-eyed.

They can't believe it. It looks like a giant, salmon-colored ice bag.

In fact, it is a giant, salmon-colored ice bag. But it isn't an ordinary giant, salmon-colored ice bag. This giant, salmon-colored ice bag is a dancing giant, etc. etc. When the museum's exhibit on Art and Technology opens next Monday, the "kinetic sculpture" will repeatedly perform a 20-minute dance number, writhing, twisting and sensually stretching to its full height of 16 feet. Then it will tilt its cap to the audience, settle back and rest until the next performance. Even while resting, however, it will make breathing motions.

"Giant Icebag," a pop monument by sculptor Claes Oldenburg, is a product of the first large-scale attempt by a U.S. art museum to act as a matchmaker between contemporary art and contemporary industry. In all, 37 U.S. companies and 80 artists collaborated in the project. The result is 19 works by such eminent artists as Mr. Oldenburg, Roy Lichtenstein, Andy Warhol and Robert Rauschenberg. ("Giant Icebag" has been seen before; it was loaned to the world's fair in Japan last year.)

If 37 companies and 80 artists combine to produce only a score or so of works, one could assume that the museum's matchmaking wasn't a complete success. It would be a safe assumption. Maurice Tuchman, the museum's young curator of contemporary art who conceived of the program, is frank to admit that the encounter between art and technology often was a collision of talents, not a blending of them.

"A Frightened Breed"

Mr. Tuchman found industry's top executives enthusiastic once he gained entry to them. Such big corporations as IBM, Kaiser Steel, Litton, Lockheed and Philco-Ford all agreed to be sponsors, each donating $7,000 and taking an artist into residence for at least 12 weeks to give him the chance to work with corporate personnel, facilities and materials.

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UNIQUE EXHIBIT

A Blending of Art, Technology

BY WILLIAM WILSON
Times Staff Writer

The Los Angeles art world is preparing to kick the gong around in a week of premieres for the County Museum of Art's most venturesome contemporary project to date, "Art and Technology." And international art pundits are tripping in to admire and wrangle over results of a unique match-making experiment between corporate industry and the Taj Mahal of Hancock Park.

A series of galas will precede public unveiling next Friday. The public will see room-size works never imagined by a beard-and-beret easel painter.

Artists of heavy repute like Andy Warhol, Roy Lichtenstein and Robert Rauschenberg will be represented among the works made of twinkling mirrors, cardboard caverns, laser beams, moving paintings and waterfalls.

Range of Exhibit

The exhibition will range from a space where emptiness gets emptier and silence quieter to a 16-foot lox-colored Oldenburg icebag that dances, then naps between performances.

The exhibition is the brain child of senior curator of modern art Maurice Tuchman, aided by the museum's mod squad — Betty Asher, Jane Livingston and Gail Scott. Tuchman decided to open the floodgates dividing the whirlpool of art from the ocean of corporate industry. The idea was less to produce an exhibition than to create a dialog between polarized points of view.

The pilot project, started four years ago, finally involved 80 corporations and 40 artists. The tangible exhibitable results, which Tuchman insists were not the major point, amount to 15 oversize works.

Please Turn to Pg. 7, Col. 4

EXHIBIT

Continued from First Page

For some artists like Robert Irwin, who worked with Garret Corp's. Dr. James Wortz, the experience opened doors on both sides. In other instances the main result was a mutual case of paranoia.

Artists accused corporate middle-management of "sabotaging" projects. Corporations did not look kindly on suggestions like the one made by sculptor John Chamberlain that they dissolve their organizations.

Abrasion notwithstanding, the exhibition represents a unique wedge opening possibilities of new patronage for art, fresh air in smoke-filled corporate sanctums and a breakthrough in the role and function of the museum as midwife to art.

Dozens of hands that push the buttons and shift the gears that operate the art scene are arriving to see "A&T" results and bask in the hospitality of LACMA's Contemporary Art Council, invitational previews and a series of members previews.

A few of the out-of-town inner-circle celebrants are James Fitzsimmons, Leo Castelli, Charles Cowles, Hal Glicksman, Walter Hopps, Alfred Frankenstein, Billy Kluver, Peter Selz, Donald Brewer, Hershel Chipp, Hilton Kramer, Pierre Restenay, Henry Hopkins and supporting battalions.

Artists represented in the exhibition include James Lee Byars, Jean Dupuy, Oyvind Fahlstrom, Newton Harrison, R. B. Kitaj, Rockne Krebs, Boyd Mefferd, Jesse Reichek, Richard Serra, Tony Smith and Robert Whitman in addition to those already cited. Most will be on hand for opening festivities.

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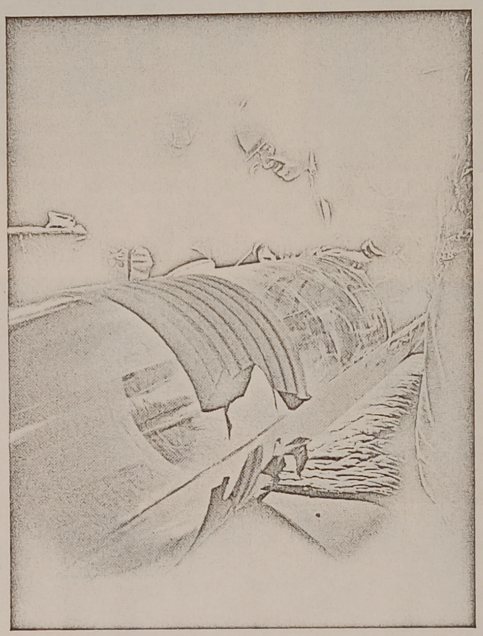
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ART

Man and Machine

Amid the crack of 450-volt xenon strobes, the silent zap of lasers and an unprecedented clicking of turnstiles, the Los Angeles County Museum's exhibition called "Art and Technology" is under way at last. It will run through August, and it affords a revealing spectacle of the stimuli and problems that rise out of a major encounter of art and industry.

The "A. and T." program was conceived five years ago by Maurice Tuchman, the museum's 34-year-old senior curator. His idea was to persuade U.S. firms to place their technical resources and a bit of their cash at the disposal of a group of artists in order to give those artists a chance to construct ambitious works beyond the technological limits of their own studios. A total of 76 artists were introduced to a list of companies that ranged from Kaiser Steel to Ampex, from General Electric to Disneyland. Reactions to the proposed matings ranged from disdain to alarm. But eventually some 20 projects were realized.



HARRISON & TUCHMAN AT JET PROPULSION LABORATORY
Out of the factories, a key document.

New Metaphor. Ever since the Futurists declared a racing car to be more beautiful than the *Winged Victory* of Samothrace, artists have thought about connecting their work to the Faustian energies of 20th century technology. Never has the dream become more urgent than in today's electronically conditioned society. It is a fundamental issue because the very idea of "experiment," endlessly declared to be the founding principle of modern art, is really a metaphor drawn from science and industry. The problem is that industrial experiment radically changes the world, whereas artistic experiment does so only marginally and for a minority. In 1500 an artist like Leonardo could know, and even contribute to, the whole technology of his culture. Not today; the roles of artist and technologist have split, so that art —like kinetic art in the '60s—has had to feed off scientific scraps. One of the revealing ironies of the "A. and T." program was that some artists who moved into areas like aerospace and computers could not even form the necessary questions, let alone use the results, of advanced research. Hence the need for collaboration if art is not to remain in an inefficient relationship with technological culture. This was the rationale of "Art and Technology"—to widen artists' choices and enrich the vocabulary of art.

Many of the initial "A. and T." projects did not jell. Some were enchantingly eccentric, like George Brecht's suggestion that the Rand Corp. help him move the land mass of the British Isles into the Mediterranean. Others, like Iain Baxter's dream of a radio-controlled inflatable cloud patrolling over Los Angeles, never got off the ground. Some business firms became nervous and balked. Claes Oldenburg's collaboration with Disneyland began with his intense curiosity about "what people who have been making animals without genitalia for 30 years are like," and ended with Disneyland abandoning his project for a giant, hydraulically operated icebag; Oldenburg, it was feared, might impair the playland's image as "a family-oriented operation." Fortunately, the Gemini company (TIME, Jan. 18) stepped in to sponsor the icebag. Puffing and rearing to its full 18-ft. height like some cross between Mount Fuji, a tomato and a dinosaur, it has turned out to be one of the key works in Oldenburg's brilliant career.

Etching on the Eyeball. Those projects that do triumph come out of a real interaction with, not mere use of, industrial facilities. Boyd Mefferd's room (made with the help of Universal Television) is a stunning perceptual experience: a pitch-black chamber lined with strobe lights. When they flash, the effect is engulfing and somewhat unnerving: silhouettes etch themselves on the retina as on film, and afterimage sheets of brilliant color drift and flower across the entire field of vision. Mefferd's piece is unique in that it is wholly objectless art —everything happens on and to the retina without mediation.

Equally remarkable light-pieces were developed by Newton Harrison (Jet Propulsion Laboratory) and Rockne Krebs (Hewlett-Packard Co.). Harrison's room is dark, and in it stand five tall plastic cylinders. They are filled with helium, argon and other gases. When an electric current passes through the cylinders, the ionized gas lights up—rose-white, orange, deep blues, greens and purples. By controlling the gas flow, Harrison produces extraordinary changes of form in the light—bubbles, disks, even artificial lightning. The effect is solemn and exquisitely meditative; it is also wholly pictorial, without a hint of gimmickry. The room is Harrison's private homage to Mark Rothko: "I made a very specific reference to him," he says. "This was my way of acknowledging a man who I thought was involved in a kind of magnificent and very lonely vision."

Rockne Krebs' laser room is a sharper affair: intense beams of red, green and blue light slice through the darkness, rebounding from concealed mirrors to form an intricate lattice that almost abolishes any sense of bodily space. Indeed, one of the general effects of the "A. and T." show is to shift the focus from art as object to art as environmental sensation. The visitor is always being encompassed —by gas lighting or lasers or, in the case of Tony Smith's piece, by several thousand cardboard tetrahedrons and octahedrons supplied by the Container Corp. of America. Taped together, they form an immense, gloomy brown cave pierced by Wagnerian shafts of dim yellow light. With its emphasis on internal space and disregard of volume, it is his best sculpture in recent years.

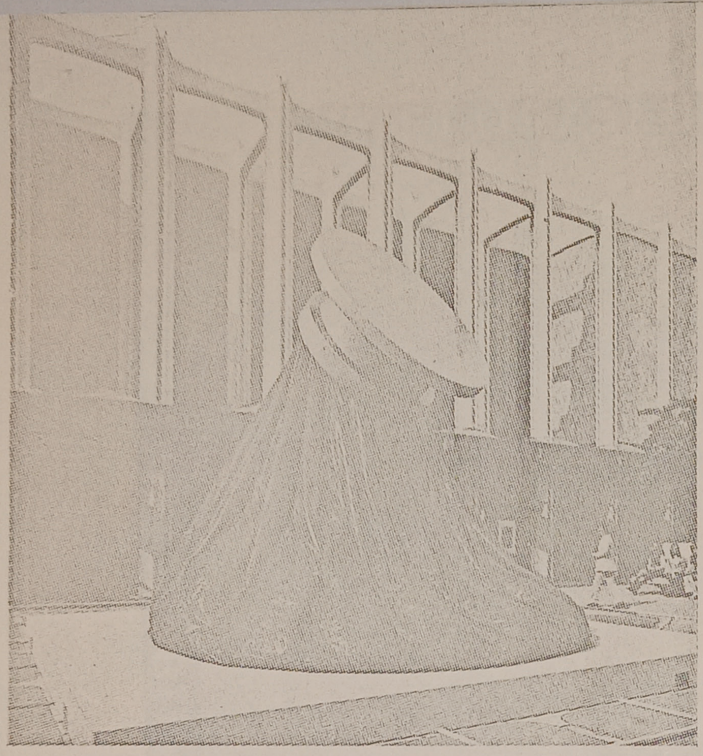
Electronic Mud. One of the most popular exhibits is Robert Rauschenberg's *Mud Muse*. It is a tank filled with sloppy, coffee-colored drillers' mud supplied from one of Teledyne's offshore oil rigs. Pipes in the floor of the tank emit air bubbles, which plop to the surface at random with a kind of lazy flatulence. The pipes in turn are controlled by an elaborate electronics system, which converts signals from taped music and random noise in the room into a pattern of air release. "I think," says Rauschenberg, "you immediately get involved with *Mud Muse* on a really physical, basic, sensual level as opposed to its illustrating an interesting idea, because the level of the piece, on the grounds of an idea, is pretty low. It was to exhibit the fact that technology is not for learning lessons but is to be experienced." R.B. Kitaj offered the perverse idea of employing the facilities of Lockheed to produce a historical mediation on the 19th century Industrial Revolution, the aim being to examine the first era in which "a modernist presence has taken shape." Kitaj's room is a bizarre assemblage of model lighthouses, smokestacks, machined bas-reliefs of railway trucks, photographs of "The Father of Aviation" together with "The Mother and Daughter of Aviation." There is even a 6-ft. diorama of a mine tunnel with a mouth that is inscribed with uplifting Victorian mottoes: THRIFT, DUTY, SELF HELP and so on. Kitaj ended up as a dissenter from the whole concept. His experience at Lockheed, he reported, proved "a confirmation of the utter boredom I always feel when art and science try to meet—the feeling of very slender accomplishment in those forms of art which pretend to operate scientifically."

The Catalyst. It is an honestly stated dilemma, for art is not science and cannot mimic its processes. But one aim of "Art and Technology" was to show that a feedback can occur, and that its very unpredictability can be stimulating. In this, the show is a revelation. And when it closes, it will have left behind one of the key documents in recent American art: the catalogue compiled by Maurice Tuchman in which all the ambitions, negotiations, blocks and frustrations involved in this immense project are set down, without fear or favor. "Art and Technology's" real importance is as a catalyst of a possible future. No Jerusalem has been founded among the white hygienic mills of Southern California, but the practical experience of "Art and Technology" may very well point the way to future, and much easier collaborations.

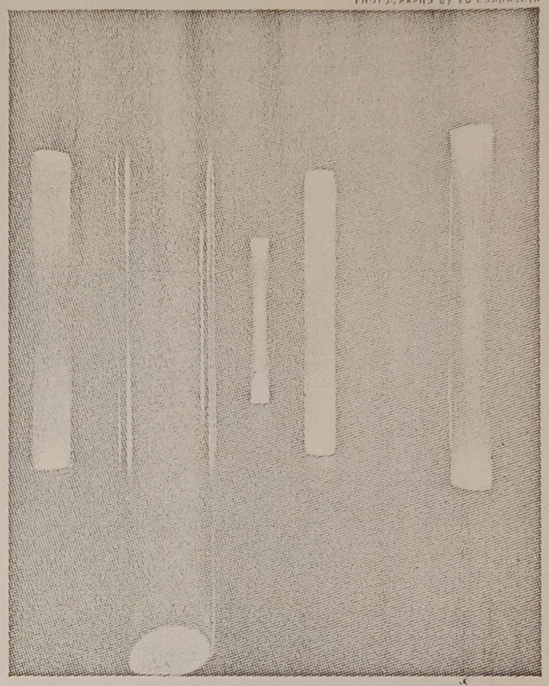
TIME, JUNE 28, 1971

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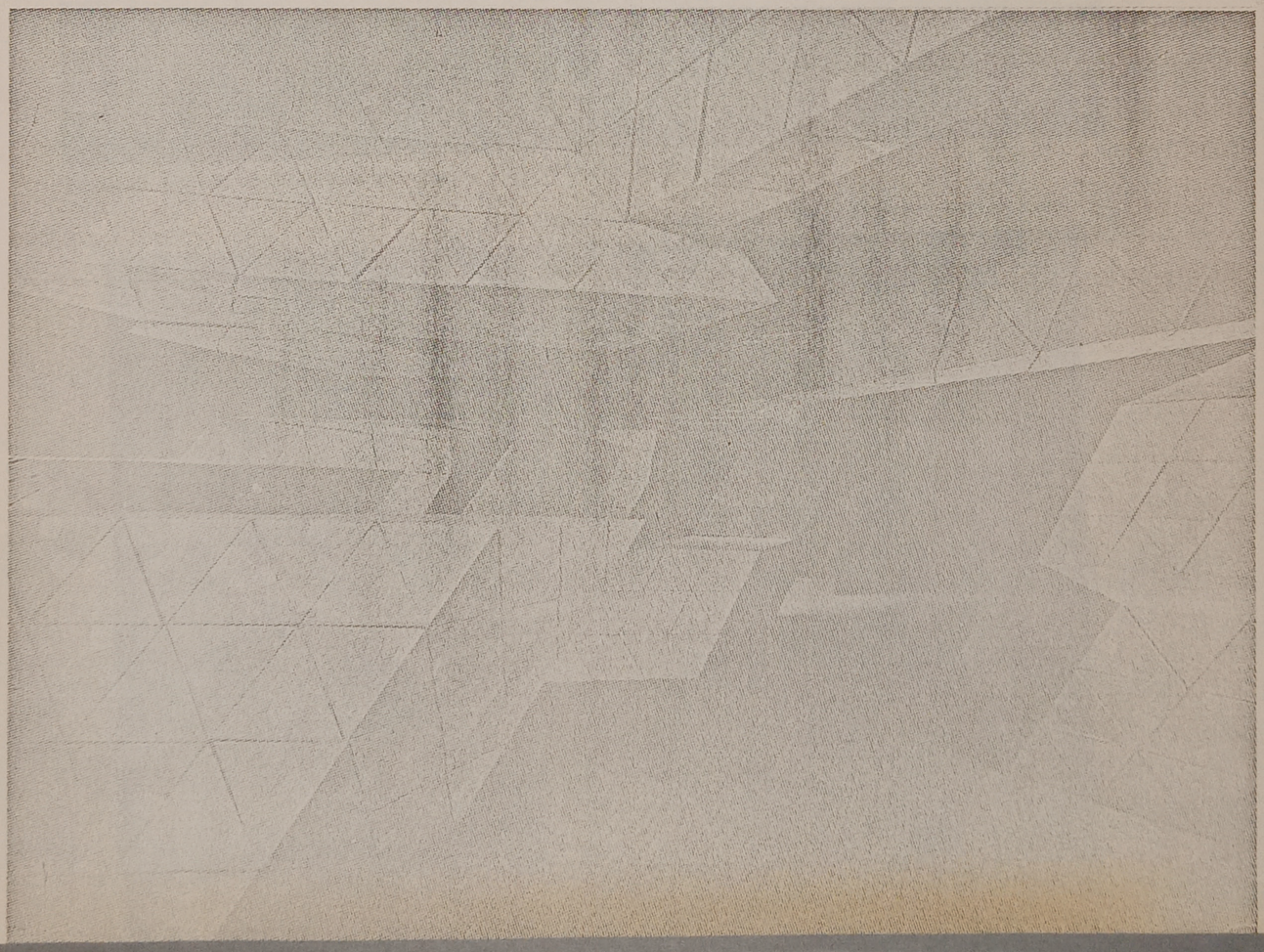
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PHOTOGRAPHS BY EG CONNACHIO

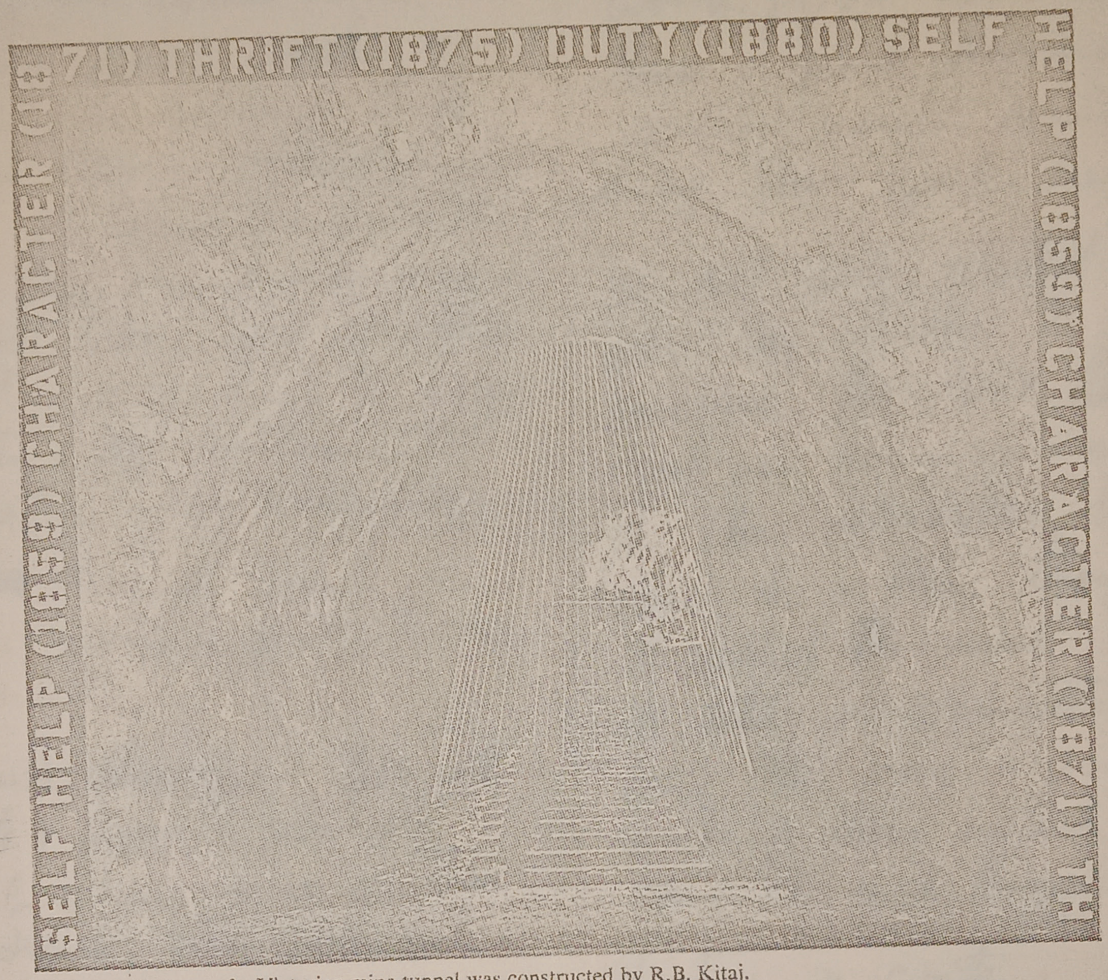


ART AND TECHNOLOGY AT LOS ANGELES: Claes Oldenburg's motorized 18-ft.-high icebag commands the central courtyard; inside, Newton Harrison's cylinders of ionized gas glow weirdly, and Sculptor Tony Smith makes a dim cave for cardboard tetrahedrons.



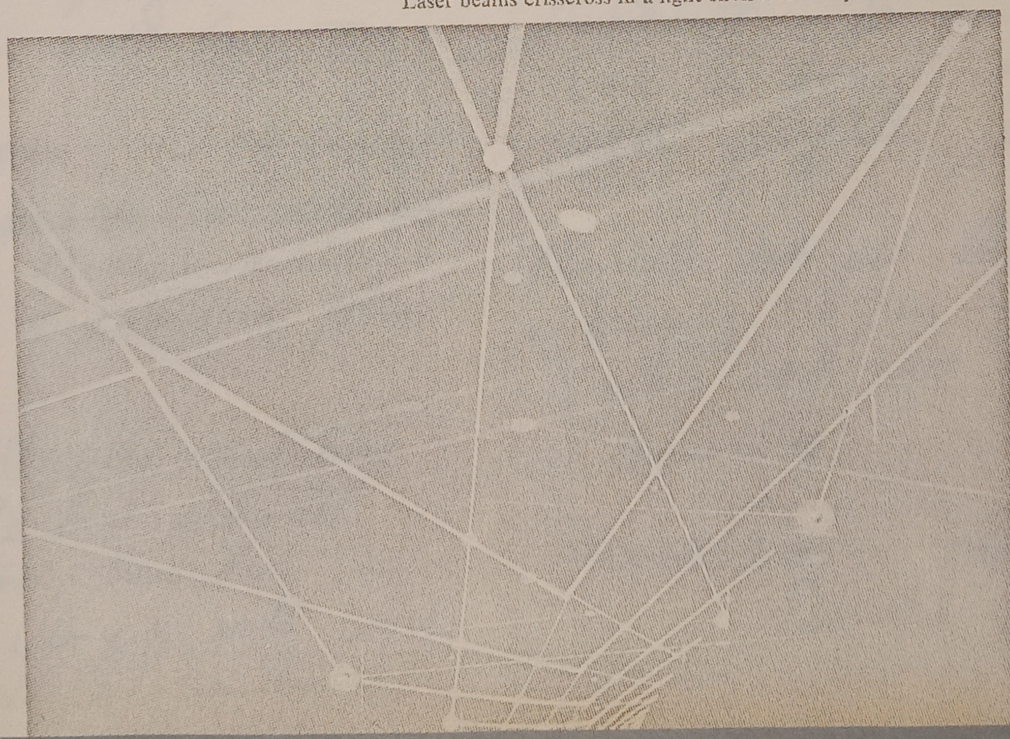
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Elaborate diorama of a Victorian mine tunnel was constructed by R.B. Kitaj.

Laser beams crisscross in a light-environment by Rockne Krebs.



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Sculpture capital Cmte
Moore Double Oval, 3
Stone, or concrete bed
22 Tons. ~~Only one~~
on A Cmte continent.
We Thot nice beside main
made lake. Set should
50" in air, have to keep
frozen or/ inclement
weather – ice skaters.

~~60,000~~ thousand people –
here weekends just look
around.

Board Room – table with
bottle + Dixie + glass at
each chair, one or two
undrunk. Wall slides back
for rear projection screen;
another wall holds TV.

117 acres; 12,500 employees
~~100 + 100 visitors weekends~~
2 of the Moores – reclining
woman + interlocking forms.

Kendall likes sculpture.
Wants to have internatl.
sculpture show here –
2 yrs (Aug.), with work
from all 121 countries in
which Rockefellers do biz.
Have a good beginning –
sculptors would want to
have their work here.

Kendall only started buying
when They moved to
Purchase. The Moore Double
Oval was commissioned
for Chase Manhattan, but
David R + Others thought
it looked too much like
the kids or something;
while they were trying to
make up their mind I
came in and bought it.

Mixture of contemp. +
traditional – too much
mod. in board room
might frighten people.

Kendall does all ~~picking~~
+ buying 50/50 – but
I guess will have to get
a committee.

MOMA/Breer – Mrs.
Donald Straus

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Kluver

Title	Patent	Issued
Electron Tube Delay Device	3,153,742	10-20-64
Electron Beam Device Having Means Bending Beam into Critical Curvature, Thereby Maintaining Transverse Coherency of Electrons in Beam Cross-Section	3,258,638	6-28-66
Electron Gun for Reducing Trochoidal Motion of Electrons	3,259,789	7-5-66
Electron Beam Device	3,316,429	4-25-67
Low Noise Laser Amplifier with Plural Sections Respectively Between Confocally Spaced Focusers with Screens	3,302,120	1-31-67

Participated in Initiating and/or Arranging the Following Exhibitions

"Art in Motion" (Rörelse i Konsten), Stedelijk Museum, Amsterdam Moderna Museet, Stockholm, Louisiana Museum, Denmark, March-November 1961

"4 Americans" (4 Amerikanare) Leslie, Stankiewicz, Johns and Rauschenberg, Modern Museet, Stockholm, May 1962

"Art 1963 - A New Vocabulary", Arts Council of YMHA, Philadelphia, October 25-November 7, 1962

"Popular Image Exhibition" Washington Gallery of Modern Art Washington, D.C. April 18-June 2, 1963

"American Pop-Art" (Amerikansk Pop-Konst), Moderna Museet, Stockholm February 29-April 12, 1964, Also at Stedelijk Museum Amsterdam, June 22-July 26, 1964

COLLABORATED WITH THE FOLLOWING ARTISTS

Jean Tinguely, "Hommage a New York" March 17, 1960

Jasper Johns, "Field Painting" and "Zone" 1962-1965

Yvonne Rainer, Dance "The House of my Body" 1963

Robert Rauschenberg, "Oracle" 1962-1965

John Cage, "Variations V" Lincoln Center, June 1965

Andy Warhol, "Pillows" 1965-1966

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Nine Evenings: Theatre and Engineering

Coordinator for Nine Evenings: Theatre and Engineering
January 1966-October 1966

Performances - October 13 through October 23 which included works of ten contemporary artists collaborating with forty engineers and scientists. The artists included:

Steve Paxton, Alex Hay, Deborah Hay, Robert Rauschenberg, David Tudor, Yvonne Ranier, John Cage, Luginda Childs, John Cage, Robert Whitman, Oyvind Fahlstrom.

Staff: 160 People
Engineering Time: 4000 hours
Audience: 10,000

Non-Technical Articles

"Fragment on Man and the System" The Hasty Papers, New York p. 45, 1960

"The Garden Party" Published in ZERO I, Munich, Germany, 1961; "Rörelse i Konsten" Moderna Museet, Stockholm, 1961; and "The Machine" Museum of Modern Art, New York 1968

"Happenings" Konstrevy, Stockholm, Vol. 38, p. 58, 1962

"Art 1963 - A New Vocabulary" (with Allan Kaprow), Arts Council YHMA, Philadelphia, October 1962

""Oyvind Fahlström" Konstrevy, Stockholm, Vol. 39, p. 155, 1963

"The Factualists" Preface to International Anthology of Contemporary Engraving Vol. V, Milan, Italy, 1964

"Faktualisterna" Amerikansk Pop-Konst, Moderna Museet Stockholm p. 25, 1964

"Bakelsen some konst" Vi, Stockholm, p. 11, No. 51, 1964

"Teknologi for Livet" Konstrevy, Stockholm, p. 56, No. 52, 1966

"Det Stora Strömavbrottet i New York" (The Great Northeastern Power Failure) March 6, 1966 Dagens Nyheter, Stockholm, Translation of a talk given at the meeting of the College Arts Association January 28, 1966.

"Nine Evenings: Theatre & Engineering" Nine Evenings: Theatre & Engineering Program, p. 2, October 1966; reprinted in Literarische Messe 1968 Offenbach/Main (Germany)

"Theater and Engineering: An Experiment, Notes by an Engineer: Billy Klüver" Artforum, p. 26, Feb. 1967

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"Theatre Outside the Theatres" Theatre Design and Technology, October 1967, p. 48 (Discussion)

"E.A.T. - Experiments in Art and Technology" Paletten, Lund No. 4, p. 30, 1967

"The New Combine," Douglas M. Davis; Conversations with Gyorgy Kepes, Billy Kluver, James Seawright, Art in America, Special Section: Art and Technology, Jan/Feb. 1968, pp. 28-47

"Art, Technology and the Architect" Architectural and Engineering News, Vol. 10, No. 2, p. 36, February 1968 (Discussion)

Articles By Others (partial list)

"Filmfans i fem länder" Veckojournalen, Stockholm no. 28 1950

"Till Europas filmarkiv i buss" Filmjournalen, Stockholm No. 31 1950

"Beyond the Machine" Profile on Jean Tinguely by Calvin Tomkins, New Yorker, Feb. 10, 1962; Also reprinted in "The Bride and the Bachelors" Calvin Tomkins, Viking Press, New York, 1965

"Billy Kluver" by Jill Johnson, Village Voice, August 12, 1965

"Scientist Brings Art to his Work" by Grace Glueck, New York Times, December 17, 1965

"Technology and the Arts" by Gloria Bryant, Reporter, (Bell Telephone Laboratories) March/April 1966

"Sculptures in Motion" by David Bourdon, Life, August 12, 1966

"A Wacky Collaboration of Science and Art" Fortune p. 100, Jan. 1967

"Nine Evenings: Theater and Engineering" Mizue (Tokyo), Fujiko Nakaya, p. 2-10, June 1967

"Art and Science Proclaim Alliance in Avante-Garde Loft" New York Times, p. 49, October 11, 1967

"Art and Technology Make It Official" The Wall Street Journal October 11, 1967

"Science for Art's Sake," Business Week, p. 56, October 21, 1967

"Konst Och Teknik i Modern Syntes" Svenska Dagbladet (Sweden) p. 5, November 27, 1967

"Nine Evenings: Theater and Engineering" Americas, Maria Clara Mayano, January 1968

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"E.A.T. Gives Audience Electrifing Experience" The Globe and Mail, Toronto p. 10, March 7, 1968

"We're Not Interested in Art, the Man Said" The Christian Science Monitor, Boston, p. 4, May 11, 1968

Unpublished Article

"The Ghetto and the Technical Community: An Opportunity for Collaboration"

Miscellaneous

"Record of interviews with artist participating in popular image exhibition, The Washington Gallery of Modern Art, April 18-June 2, 1963" 331/3 rpm recorded March 1963, private edition in collaboration with the Washington Gallery of Modern Art.

Internation Anthology of Contemporary Engraving, Vol. V, 1964 with T. Sauvage Edition Galleria Schwarz, Milano, Italy

Published E.A.T. News - Vol. 1 #1, Vol. 1#2, Vol. 1 #3
Vol. 2 #2

Non-Technical Talks and Panels

"Contemporary Voices" Panel Discussions at seven New York State Colleges with John Cage, Jack Tworkow, Robert Creeley, Stan Vanderbeek, Merce Cunningham, Len Lye, Jan./Feb. 1967 Sponsored by New York Council on the Arts.

"Interface: Artist/Engineer" M.I.T., April 21, 1967 and WBAI, June 1968

Also talks and panels on Art and Technology at:

Pratt Institute
University of Michigan
Museum of Contemporary Art in Chicago
Miami Art Center
Sight Sound Systems - Toronto
Mc Gill University - Montreal
Inter-Society Color Council
College Art Association Meetings, 1966 and 1968
University of Denver
Institute of Theater Technology, New York
Rhode Island University
Wheaton College
Massachusetts Institute of Technology
Washington, D.C.
National Academy of Art-Stockholm

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Technical Articles

"Small Signal Power Conversation Theorem for Irrotational Electron Beams" J. Appl. Phys. 29, 618, 1958

"A representation of the boundary conditions at the surface of a slow wave circuit" Proceedings of the symposium on Electronic Waveguides., Polytechnic Institute of Brooklyn April 8-10, 1958

"An analysis of electron beam interaction with emphasis on the crossed field problem" University of California Report, Oct. 1958

"Aspects of M-type interaction with particular reference to the backward-wave magnetron amplifier" Proceedings of the Institution of Electrical Engineers Vol. 105, Part B, 605, November 1958

"Analytical representations of thick magnetron beams" University of California Report April 1959

"An M-type Fast Cyclotron Wave Coupler" Proceedings of International Convention of Microwave Valves, Munich, Germany, p. 367, June 1960.

"On E.L. Chu's Definition of Small-Signal rf Power of Electron Beams" with D.L. Boboroff and H.A. Haus J. Appl. Phys. 32, 749 1961.

"Parametric Coupling between the Transverse Waves on C- and M-Type Beams" J. Appl. Phys. 32, 1111, 1961

"On the Small Signal Power Theorem of Electron Beams" with D.L. Bobroff and H.A. Haus, J. Appl. Phys. 33, 2932, 1962

"Potential form of the small signal power theorem" J. Appl. Phys. 33, 2943, 1962

"An Electronically Variable Delay Line" Proc. IEEE, Vol. 50, No. 12, p. 2487, December 1962

"Elimination of Slip and Instability Effects in Certain M-type Electron Beams" Proc. IEEE Vol. 51, No. 5, p. 868, May 1963

"A Crossed-Field Gun" Proc. IEEE Vol. 51 No. 10, October 1963

"A Low Noise M-Type Parametric Amplifier" IEEE Transactions on Electron Devices Vol. ED-11, p. 205, May 1964

"Dichroic Calcite Polarizers for the Infrared" with T.J. Bridges, Appl. Optics Vol. 4, p. 1121, September 1965

"Laser Amplifier Noise at 3.5 Microns in Helium Xenon" J. Appl. Phys. 37, 2987, 1966

Articles in Preparation

"Experimental Measurements of the Gain Profile in the 3.5 Micron Helium Xenon Laser

"Line Broadening of the 3.5 Micron Line in the Helium Xenon Laser"

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Technical Memorandur - Bell Telephone Laboratories

"On the Power Conservation Theorem for Electrodynamical Systems"1959

"Amplification of the Fast Cyclotron Wave in a Beam Focused by Crossed Electric and Magnetic Fields"1959

"Transverse Field Interaction at Low Space Charge Densities" 1959

"An M-Type Coupler"1960

"The General Determinantal Equation for O-Type Interaction" 1960

"Parametric Coupling between the O and M type Beam" 1960

"Theory of the Cavity-Type M-Type Parametric Amplifier" 1962

"A Low Noise M-Type Parametric Amplifier" 1962

"Elimination of Slip and Instability Effects in M-Type Beams" 1962

"Potential form of the Small Signal Theorem" 1962

"Dichroic calcite Polarizers for the Infrared" with T.J. Bridges 1964

"Laser amplifier noise at 3.5 Micron in Helium Xenon Lasers" 1965

Technical Film

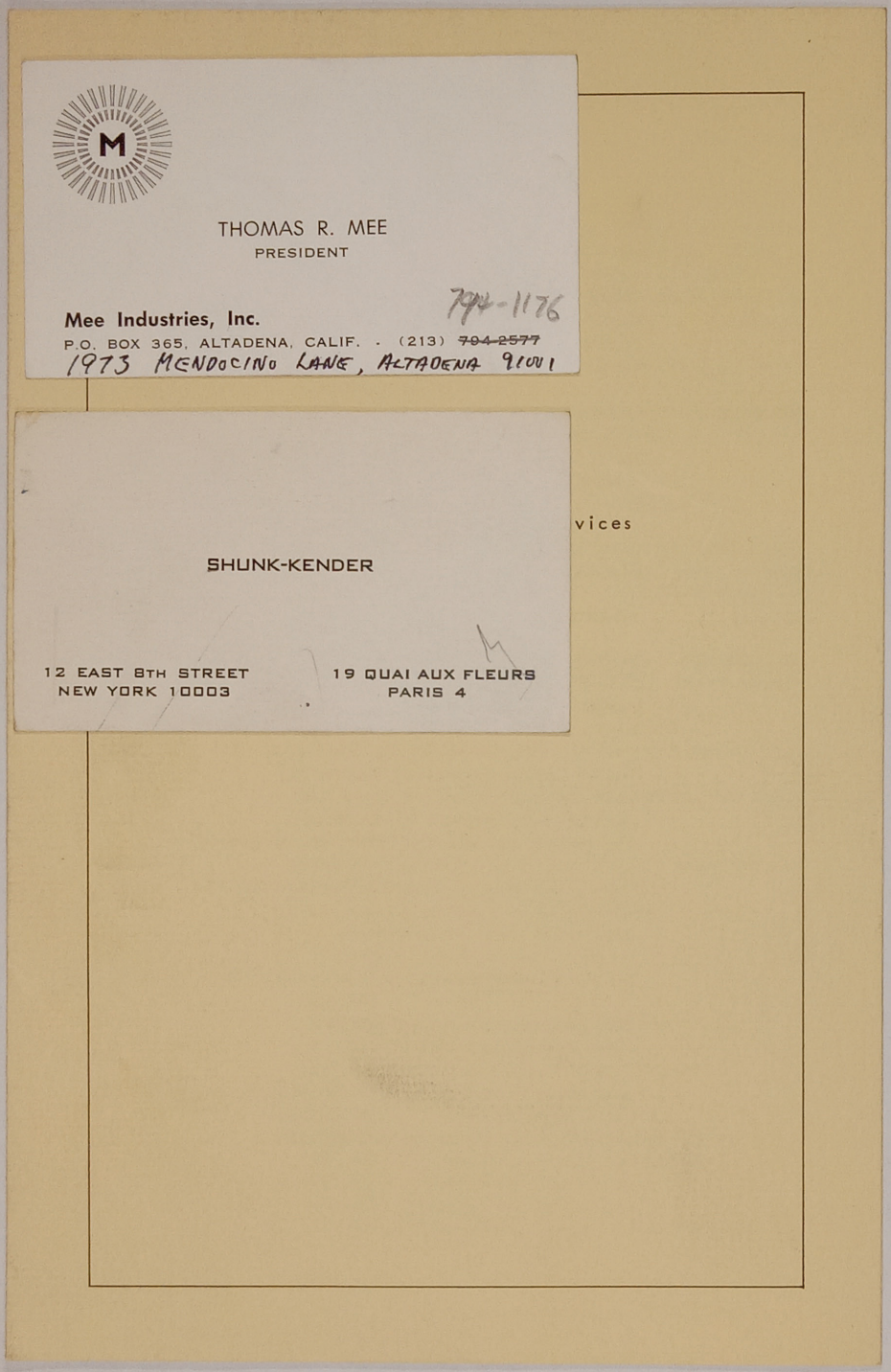
"Motion of Electrons in Electric and Magnetic Fields", 16 mm sound, animated, 15 minutes, English and Swedish versions, 1951

Patents

Title	Patent	Issued
Traveling Wave Tube	2,999,959	9-12-61
Pre-Interaction Cycloidal Beam Deflection in Crossed-Field Tube	3,189,785	6-15-65
Crossed Fields Electron Beam Parametric Amplifier	3,227,959	1-4-66
Cyclotron Wave Parametric Amplifier with Decreased Magnetic Bias	3,075,154	1-22-63
Synchronous Mode Amplifier Without Slow Wave Circuits	3,176,234	3-30-65

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THOMAS R. MEE
PRESIDENT

Mee Industries, Inc.
P.O. BOX 365, ALTADENA, CALIF. · (213) ~~794-2577~~ 794-1176
1973 MENDOCINO LANE, ALTADENA 91001

vices

SHUNK-KENDER

12 EAST 8TH STREET
NEW YORK 10003

19 QUAI AUX FLEURS
PARIS 4

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Consulting Engineering Services

JOHN L. RYDE

4241 Glencoe Avenue
Venice, California 90291
(213) 397-8691

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John L. Ryde 4241 Glencoe Avenue Venice, California
(213) 397-8691

QUALIFICATION SUMMARY

business experience
Thirty-three years of engineering management and executive experience including company presidency, complete engineering department management, engineering research programs, patent department management, and quality control innovations.

education
University of Illinois
B. S. in Engineering Physics (cum laude) 1933
M. S. in Mechanical Engineering 1934
Modern Physics Courses - U.C.L.A. 1949
Law Studies 1963

personal data
Born May 3, 1912, Illinois
Married, three children

security
Secret security clearance

directorships
McCulloch Corporation since 1946

manufacturers of chain saws, aircraft engines, and outboard motors.

Pacific Optical Corporation 1956 - 1960

chairman and president
Photographic and telescope lenses, optical components.

Traid Corporation, Encino, California, since 1958

cameras and photo instrumentation.

Subminiature Instrument Corp., Riverside, Calif., since 1959

precision potentiometers and switches
electronic components.

McGaffey, Taylor Corporation, Los Angeles, since 1965

oil well service and special oil well tools.

Activities in Detail

1964 to present — CONSULTING ENGINEER - on engineering and research management problems - also on specific problems involving mechanics, electronics and optical engineering. Served as technical expert and witness in a number of litigations involving patent and engineering questions and in other cases resolved out of court.

1960 - 1964 — McCULLOCH CORPORATION - Los Angeles, California
vice president
Organized and managed an entire new division for Special Product development involving new concepts in power production and applications.

1956 - 1960 — McCULLOCH CORPORATION - vice president and concurrently
PACIFIC OPTICAL CORPORATION - president
Engineering and manufacturing photographic lenses and high-grade optical components. Pacific Optical was merged with a Midwest camera manufacturer in 1960.

1947 - 1956 — McCULLOCH CORPORATION (McCulloch Motors)
vice-president, director of quality control, patent department, product engineering department.

1940 - 1947 — McCULLOCH ENGINEERING (McCulloch Aviation)
Milwaukee, Wisconsin
chief engineer, aircraft engines, high-speed, two-stroke engines, diesel engine superchargers.

1935 - 1940 — FAIRBANKS MORSE & CO., Beloit, Wisconsin
assistant manager of engineering
diesel engines, pumps, electrical equipment

patents granted

2,393,116	Rotary Blower
2,406,404	Engine Cylinder
2,421,346	Valve
2,448,901	Interengaging Rotary Impeller
2,450,750	Piston for Rotary Engine
2,491,678	Grit Blasting - Rotor Housings
2,730,143	Saw Chain
2,770,363	Liquid Delivering Device
2,790,125	Variable Speed Electric Motor Drive
572,852	(Canadian) Variable Speed Motor
157,861	(Australian) Chain Saw Device
158,688	(Australian) Chain Saw
715,827	(Canadian) Constant Torque Propeller

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620 Michel

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Anthony Martin

HISTORY, OUTLINE OF ACTIVITY 1955-1970

1955-1959 University of Michigan - Modular sets for theater

Art Institute of Chicago - Painting

1960-1962 Boreas, Batman Galleries, paintings, one-man shows.

San Francisco Museum of Art, Interaction Maze for Watchers, Walkers, Touchers

1962-1965 COMPOSITIONS, PERFORMANCES:

Visual environments sonics series, Tape Music Center, San Francisco:

Desert Ambulance, Mandolin, Tarot, with M. Subotnick, Ramon Sender

After General Booth Enters Into Heaven

Giatree and Light - Voice and tamboura with light improvisation

George Washington Slept Here I and II, with P. Oliveros

Light Piece for David Tudor, with P. Oliveros

Performances with Music from the French Studios...Arel, Boulez

Light score and performance of Action Music for Piano by Alvin Lucier

1963- City Scale - an event for the city, Tulane Drama Review, 1964

1964-1965 COMPOSITIO S, PERFORMANCES:

Light sculpture for KPFA

Composition for Terry Riley - In C

Room - 1964 Film, TV, 2 watchers and 3 instrumentalists

Lamps - 1965 for 6 floorlamps, 6 instrumentalists and interactive score

Composition for Michael McClure - The Beard

1966-1967 Visual Director at Tape Music Center, Mills College, Oakland, Calif. - developed electronic light control console.

1967-1970 Master Artist in N.Y.U. School of the Arts Intermedia Program

Light Compositions for Works of Mel Powell

Dance-Light Collaborations with Jean Erdman

Electronic Chamber - Museum of Modern Art and Electric Ear Series

Silent Light - Whitney Museum, New York, February 1969

Many of the works listed above and others have been performed at the following places:

Los Angeles County Museum; San Francisco Museum of Art; Univ. British Columbia; Mills College; Portland State; Pomona; McAllister College; Grinnell; Washington University; St. Louis; Weslyan; Haverford; Ball State Teachers College; U.C.L.A.; University of Illinois; Cornell; Colgate.

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Anthony Martin 2

FILMS:

Room

Desert Ambulance, with Ramon Sender

Play I, Play III, Play IV, Tarot, with M. Subotnick

The Wild Bull with M. Subotnick (Electric Ear, Cornell, Colgate Festival)

ARTICLES, PUBLICATIONS:

Tulane Drama Review, Vol. 10, #2, 1965

Time Magazine, May 3, 1968

Art News, April 1968

1968 Book of Knowledge Annual

Horizon, September 1969

Kinetic Art

Films, Sheldon Renan

Reviews - Alfred Frankenstein, San Francisco Chronicle, 1962-1965

Grace Glueck, Henahan, New York Times, 1967-1969

TEACHING POSITIONS:

Painting Studio, San Francisco - 1962-1964

Mills College, Oakland California - Visual Director, Mills Tape Music Center, 1966-1967

Master Artist at N.Y.U., School of the Arts Intermedia Program, 1967-1970:

Seminar in Collaboration

Perception Class

Workshop in the use of light

RECENT WORKS - INSTALLATIONS:

The Game Room, 1968-Room size interaction space for 1 to 8 people. This work provides 4 basic themes that are revealed in projected images in various combinations in a relationship entirely determined by the participants. There are about 1000 combinations possible as people interact and shape the materials.

Showings: Howard Wise Gallery, N.Y.C., 1968

Milwaukee Art Center Museum, 1968

Chicago Museum of Contemporary Art, 1968

Transposition Plane - La Jolla Art Museum, 1969

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RECENT WORKS - INSTALLATIONS cont.

Works for Interaction - Howard Wise, N.Y.C., October, 1969:

Well

Door

Column

Faces

Waveforms

Interior Light System and Performance Composition for E.A.T.-

Pepsi Pavilion, Osaka World's Fair, Japan 1970

This project has offered a situation where I can perform in an environment shaped of very current ideas, principles, and apparatus in a collaboration of art and technology.

CURRENT WORKS - COMPOSITIONS:

Recent compositions provide combines of various areas of content and means. The components are various uses of light, sound, movement (2 or more dancers), and words. It is the manner in which these are combined which interests me most. Anxiety, learning, questions of identity, empathy, contact, abuse, agreement, a chance of spiritual receptivity, are all possible as people are active among the various modes.

Seven Intermedia Pieces which can be done in the home (dwelling)

2 are for couples

4 are for families of 3 to 7

1 is for a single apartment dweller

Two Arrangements for temporary set-up based on interaction situations (five areas of diverse content for free access).

INSTALLATION:

Moral Ecology - room size space combining 5 modes, interactive circuitry and light of 5 sculptural areas.

FOUR CONCERT WORKS:

American Folk or Experiment in Cancer, 11 min. restlessness

View From the Carcass or To All of You at Home or Broken Noses, 25 min., about Western Civilization

Stage Pool or Preview or Darshan, 17 min. (a glimpse of the God that is within)

Tensions and Cook or: INSTANT RAP OR INSTANT RAPORT

EXPLANATION OF MEDIA; PALLETTE:

Projection techniques, reflection, image forming, electronic systems, laser optical arrangements, environmental elements and shaping, VIDEO2222

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DE FOREST, & DUER

COPY

April 24, 1970

W. Perry Keats, Esq.
PepsiCo, Inc.
500 Park Avenue
New York, N. Y. 10022

Dear Perry:

I have your letter of April 20th, terminating the services of Experiments in Art & Technology, Inc., in connection with the operation, programming and maintenance of the Pepsi Cola Pavilion at Expo '70 in Osaka, Japan.

Your letter does not state the facts as I understand them.

At the request of, and with authority from your client, EAT was engaged to and in fact has been operating, programming and maintaining the Pepsi Cola Pavilion since before the opening of Expo '70.

We shall expect your client to honor all commitments made by EAT prior to April 24, 1970 in the performance of its duties on your behalf; to pay a reasonable fee to EAT for the services rendered by it; and to be responsible for all damages that ensue from your action.

Yours very truly,

Robert H. Mackintosh

RHM:MM
cc-Dr. Billy Kluver, President
Experiments in Art & Technology, Inc.

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PEPSI-COLA
(JAPAN), LTD.
BLUE BLDG. 11-46, 1-CHOME, AKASAKA
MINATO-KU, TOKYO, 107 JAPAN
PHONE : 584-7341/5
CABLE : PEPSICOLA TOKYO

RECEIVED
APR 29 1970
DE FOREST & DUER
REFERRED TO

April 25th, 1970

Robert Mulreany, Esq.
De Forest & Duer
20 Exchange Place
New York, New York, U.S.A.

Re: Experiments in Art & Technology, Inc.

Dear Bob:

This is with reference to the failure of your above client to negotiate a contract acceptable to our company, to furnish us programming services at our Pepsi-Cola Pavilion at Expo '70 in Osaka, Japan, and to the consequent withdrawal of its offer on April 25th. Accordingly, please be advised that in no event will charges incurred by your client on and after that date be honored by our company.

Very truly yours,

W. Perry Keats

W. Perry Keats
Counsel,
Pepsi-Cola (Japan) Ltd.

WPK/ke

cc: Experiments in Art & Technology, Inc.
Attn.: Dr. Billy Kluver

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Telephone 212 677 3750 235 Park Avenue South New York New York 10003 Cable EATCENTRAL

E.A.T.

EXPERIMENTS IN ART AND TECHNOLOGY, INCORPORATED

May 4, 1970

Mr. Peter Warren
President
Pepsi-Cola International
Purchase, New York

Dear Mr. Warren:

Last Thursday you assured me that you would make time available at the earliest possible moment to meet with us to consider pressing matters concerning the relations between Pepsi-Cola and E.A.T. Now we have been told there can be no meeting until Mr. Pottasch returns from Japan and have not been told when he is expected to return. Meantime we are being pressed by the artists, engineers and industries who rendered services for Pepsi-Cola's benefit and have not been paid. There are also pressing and urgent tax obligations to Federal and State governments which likewise have not been paid.

We are a non-profit organization seeking to promote a better understanding between business and the arts. We entered into our agreement with Pepsi-Cola to promote this objective. You have gotten in the form of an international acclaim the benefit of the artists and engineers we got to design, construct and operate your Pavilion at the Fair.

Now for reasons best known to persons in your organization, you have terminated your relationship to E.A.T., thereby leaving us with debts incurred in your behalf and no place to turn to meet these obligations. This is hardly the way to promote better understanding between the business community and the arts.

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We want to settle any differences between us in an amicable way. You leave us no alternative but to commence legal action and report your failure to honor commitments made in your behalf to appropriate Government authorities. Unless we are able to meet forwith, with you, as President of Pepsi-Cola International, in whose behalf the the obligations were incurred, we will be reluctantly required to bring this entire matter to the attention of the Attorney General of the State of New York. Please advise me that you will meet with us at once.

Sincerely,

Billy Klüver

Billy Klüver
President
Experiments in Art and Technology, Incorporated

JWK/th

CC: Robert Mulreany
Theodore W. Kheel

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Telephone 212 677 3750 235 Park Avenue South New York New York 10003 Cable EATCENTRAL

E.A.T.

EXPERIMENTS IN ART AND TECHNOLOGY, INCORPORATED

May 5, 1970

Mr. John Hightower
Director
The Museum of Modern Art
21 West 53rd Street
New York, New York

Dear Mr. Hightower:

The Pepsi Pavilion was designed and built by a collaboration of Japanese and American artists and engineers organized by E.A.T. We also made a commitment to 26 Japanese and American artists to program the Pavilion during the term of Expo '70.

As you know, our programming and operation of the Pepsi Pavilion was abruptly ended on April 20, 1970 by a letter from the Pepsi-Cola lawyer, a copy of which I am enclosing. I am also enclosing a copy of the answer by our lawyer, Robert Mulreany. Since then, we have attempted to sit down with Donald Kendall, President of Pepsi-Cola, and Peter Warren, President of Pepsi-Cola International, to resolve our differences and minimize the damage done to the artist-business relationship we worked so hard to establish. Our attempts have been unsuccessful, and yesterday I found it necessary to send the enclosed letter to Peter Warren on the advice of Theodore Kheel and Robert Mulreany.

Previously, on April 8, 1970, I had sent a letter to Donald Kendall in an attempt to establish the Pavilion as a work of art and a space for artistic performances. This letter reflects a basic issue in the art-business relationship: the need to combine business support of the contemporary artist with understanding that will preserve the integrety of the artist and his work. It is this issue that is at stake in the current situation.

Continued

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Because of Pepsi-Cola's actions, E.A.T.'s existence is in grave danger. We need the support of a person with high standing in both the art and business world who understands and appreciates our role and contribution, and who will intercede with Mr. Kendall on our behalf.

Sincerely,

Billy Klüver
President
Experiments in Art and Technology

BK:sk
Encls.

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RCASF 701 1043+

EATCENTRAL NYK

BILLY KLUVER

PRESIDENT EAT

DEAR BILLY

WE ARE DEEPLY DISAPPOINTED NOT TO BE ABLE TO FULLFILL OUR ARTISTIC AND CULTURAL COMMITMENTS IN A MOST INTRIGUING SPACE RICH WITH POSSIBILITIES CREATED BY EAT IN THE PEPSI PAVILION. PSYCHOLOGICAL AND SPIRITUAL LOSS OF THE ARTISTS CAUSED BY THIS SUDDEN DENIAL IS EXTREMELY GREAT. WE FEEL THAT THE LOSS IS NOT ONLY TO THE INDIVIDUALS BUT TO THE SOCIETY. THE COLLABORATIVE EFFORT OF AMERICAN AND JAPANESE PROGRAMMERS HAD GREAT POTENTIAL IN OPENING UP NEW POSSIBILITIES BETWEEN THE TWO COUNTRIES. SE REGRET THAT SUCH OPPORTUNITY IS TOTALLY LOST BY PEPSIS IMPRUDENT ACTION. ALL PROGRAMMERS WISH EARNESTLY TO PARTICIPATE IN THE SIMILAR COLLABORATION INT HE FUTURE WITH YOU WHEN OPPORTUNITY ARISES EITHER AT EXPO OR ELSEWHERE.,

SINCERELY. TOSHI ICHIYANAGI, TAKEHISA KOSUGI, JOINED BY ALL PROGRAMMERS

MAY 4, 1970

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Experiments in Art and Technology
Pepsi Pavilion 803
Expo 70, Suita-shi
Osaka 539, Japan

April 8, 1970

Mr. Donald M. Kendall
President
Pepsi-Cola Company
500 Park Avenue
New York, New York

Dear Mr. Kendall:

I appreciate your personal enthusiasm and interest in our work for the Pepsi Pavilion for Expo 70. An issue of great importance has developed that relates both to procedures to be followed in connection with the project and to the general area of relations between industry and the contemporary artist. I am asking you to participate in its resolution.

As you know, the Pavilion and the programming were designed through a collaboration of a large number of contemporary artists, engineers, scientists, and other professionals. The question that has arisen comes from the legal distinction between a work of fine art and a commercial product, or more specifically, between the creative artist and the commercial artist or designer.

Our legal relationship to Pepsi-Cola has developed so that the artists are put in the category of commercial artists designing a commercial product. One consequence of this is that we must obtain rights from all artists and engineers and others involved, particularly with regard to use of the Pavilion after Expo 70. Of course, there is no question of Pepsi's ownership and right to use and exhibit the Pavilion during Expo 70. Our dilemma is whether the artists have created a work of fine art or a work of commercial art to which there are rights which must be guaranteed.

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Traditionally, the artist claims no "rights" to his work: his commitment to originality is unquestioned and he contributes his work to the world when it is finished. It is created for the benefit of the individual who experiences it, and its benefits are free for everyone to use.

The Pepsi project was undertaken in this spirit; and it was this sense of commitment and energy among the artists and engineers that you commented on to me during your visit. The individuals participating in this project have created a large and complex work of art. To the Japanese and American art critics who have seen the Pavilion, the ability of the contemporary artist to participate in a project of this scale is an outstanding achievement and radically expands the social possibilities of art.

I am asking you to have Pepsi-Cola treat the Pavilion as a work of art.

If Pepsi-Cola agrees that its relationship to the whole project is that it has commissioned a unique work of art to be exhibited during Expo 70, there then would be no thought of its being used in another context, commercialized or reproduced beyond Expo 70; and releases for rights would not be required. My thought is that the Pavilion could be physically dismantled. The unique technical systems, for example the fog or the sound system, could be donated to a university or to tax-exempt research facilities that could make significant use of them. After the close of Expo 70, the Pavilion will exist only on film, tape, and in art history books.

The reason I am asking you personally to articulate this position is not primarily for legal or procedural reasons -- since temporary solutions can always be found -- but because I feel this situation raises a policy question that goes beyond the current project and affects the over-all relationship between industry and the arts.

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All activity in contemporary art today points to a closer interactive relationship between industry and the artist -- very different from the traditional system of passive art patronage. The problem of establishing viable forms for industrial participation in art is of growing concern to many people and a great deal of effort is going on to define and develop these new relationships. An important example of this effort is David Rockefeller's creating the Business Committee for the Arts.

A decision to recognize the Pepsi Pavilion as a work of art and to treat it as such will set a much-needed precedent in this area. The project will be a model for future industrial participation in projects where the artist moves into society and involves increasing numbers of people in his work. Pepsi-Cola will be recognized and appreciated not only as a major art patron of our time, but more important, as an outstanding innovator in the contemporary arts.

I will be in New York early next week, and would welcome an opportunity to discuss this with you.

Sincerely,

Billy Klüver

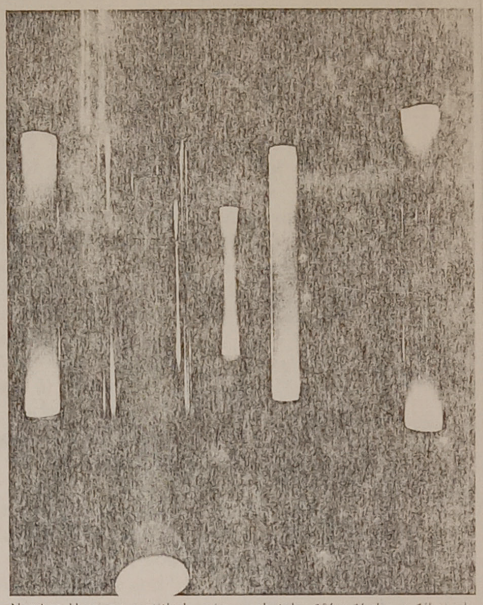
Billy Klüver

BK:jm

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ARTFORUM
Oct 1971



Newton Harrison, untitled, m/m, each tube 13' x 1' dia. x 1" thick. 1971.

CORPORATE ART

JACK BURNHAM

All art implies some technology. But at what point does the working relationship between the artist and sophisticated technology preclude the synthesis of art? I suspect that the Los Angeles County Museum's recent four-year project, culminating with the May 10—August 29 "Art & Technology" exhibition, provides a variety of clues.

Although certainly a problematic undertaking "Art & Technology" represents the most technically proficient exhibition of its kind to date. The enormous amount of money and organizational effort poured into A&T dwarfs by several magnitudes the preparation needed for any major art exhibition of traditional media. While this doesn't necessarily make it better it does make A&T more confusing, because *the preparations in a sense become the art* — and this is something that can be shared only fragmentarily with the viewer. For instance, I remember being served cocktails as banks of helium balloons, each trailing a red plastic A or T, floated overhead, while outside Rockne Krebs' lasers pulsated through the dark. I'm sure the last was meant to be art and the other, opening night decoration, but in the heady atmosphere of Los Angeles that evening, both blended as a predictable background for corporation bigwigs, local socialites, art freaks, and sundry museum members. It really didn't make any difference.

From the start there was something immensely immodest about Maurice Tuchman's efforts. With varying financial support from 37 corporations, mostly situated in Southern California, Tuchman (LACM's Curator of Modern Art) invited artists from all over the world to submit proposals. In the end, no Europeans, and few artists outside the New York City area were included. The selection procedure, usually a reasonable curatorial task, was in this case so Machiavellian and deviously competitive, that it ended in hard feelings for many rejected artists, some of whom waited many months for the questionable satisfaction of being formally rejected. A&T was essentially a contest where each participant not only had to pass Tuchman's scrutiny and that of his technical advisors, but also had to satisfy various arbitrary qualifying criteria (technical, financial, and psychological) devised by managements of the supporting corporations. Even after lengthy collaborations, some artists never exhibited, either because working relations deteriorated or because no museum-oriented product was forthcoming.

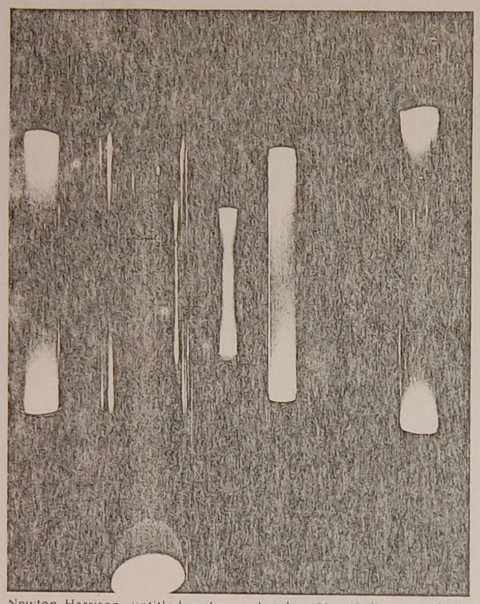
What made A&T attractive originally was that each artist was given the opportunity to work with facilities and research assistance normally out of his reach. The collaboration period was set for three months with options for renewal if both parties so desired. Contractually the corporations agreed to an initial $7000 donation to the museum for planning, maintenance, and installation; artists received $20 per diem and $250 per week honorarium. Upwards of $14,000 was spent by each company on research, materials, and fabrication of the artist's work. Arrangements were drawn up for subsequent ownership of the resulting works. On the whole these seem fair, since they were mainly to assuage the suspicions of artists who feared being ripped-off.

Early on, Tuchman and his assistants realized the strong political implications of their undertaking for the Art World. How many artists would willingly work within the bastions of Capitalism? Quite a few. But in his catalog introduction, Tuchman notes: "However, I suspect that if Art and Technology were beginning now instead of in 1967, in a climate of increased polarization and organized determination to protest against the policies supported by so many American business interests and so violently opposed by much of the art community, many of the same artists would not have participated."

Once committed to the A&T project, none of the participating artists had a public word of criticism for it, although I suspect that more than one or two wondered if they had, in fact, be-

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Newton Harrison, untitled, m/m, each tube 13' x 1' dia. x 1" thick, 1971.

CORPORATE ART

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Once committed to the A&T project, none of the participating artists had a public word of criticism for it, although I suspect that more than one or two wondered if they had, in fact, been presented with a Trojan Horse. In reality the notion of the artist as a symbol of political avant-gardism and independence is tenuous. By its nature, art depends upon social compliance and cooperation. Whether an artist uses the local museum or I.B.M., he is equally in the hands of the financial establishment — how far he becomes enmeshed is just a matter of conscience and practicality.

A&T in Los Angeles has three interesting aspects: a) Tuchman's strategies for meeting some tricky sociopolitical situations; b) the catalog as the most revealing document yet published on the art and technology symbiosis; and c) the exhibition itself. The exhibition is almost an afterthought to three years of intensive public relations and volatile associations between artists, Big Business, and the Museum. Some of the most subversive and interesting "works" never appeared, although they are occasionally alluded to in the catalog. Generally, the catalog records a sizeable collection of correspondence and recollections. In some instances the corporations appear shoddy as, less occasionally, do the artists. And while both may blame the museum for bad-mouthing, the degree of candidness is unusual for a museum document and is to the editors' credit. Yet in print Tuchman and the museum appear unscathed and free from soul-searching, although from what I understand there were a certain number of rejected artists who, with no editorial control over the use of their proposals or correspondence, had an entirely different slant on what went on behind the scenes in Los Angeles. One would therefore deduce that candidness is self-serving unless it is vented in all directions.

On a subtler level, the entire A&T selection process represents an elaborate attempt to avoid being mousetrapped by the shifting predilections of the Art World. As lessons in what not to do, Tuchman had the examples of virtually every previous art and technology exhibition. By the end of 1968 so-called Teckart had begun to look less and less like a hot item. Consequently Tuchman deliberately ignored many of the more established technology-oriented artists for high art Superstars. In terms of art politics this makes sense, but in reality the idea of choosing even the best artists and fabricators to make and exhibit art together is laden with innumerable dangers. Predictably the Superstars come off well when they do their regular thing, while they appear banal when involved with unfamiliar technology.

Whether out of political conviction or paranoia, elements in the Art World tend to see latent fascist esthetics in any liaison with giant industries; it is permissible to have your fabri-

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cation done by a local sheet-metal shop, but not by Hewlett-Packard. The real issues are mostly personal, since some corporate research centers demand an inordinate degree of regimentation, far more than most artists want, even temporarily. This very serendipity by the artists is what makes most art and technology exhibitions unmitigated disasters. The disciplined engineers, on the other hand, sensing their indispensability, salve their egos with demands for more money or better billing. Tuchman has wisely bypassed these problems by insuring that the engineers were still, in effect, working for their corporations. A&T should therefore remain in functioning order.

The lack of West Coast names connected to the A&T project (ultimately Newton Harrison was the only one) marks another potential pitfall. Tuchman might have involved some of the younger, more experimental talent out there. But with all the chips in the pot, he went for New York. The possibility of a local boycott or picket line was expediently defused at the last minute by a double opening that included a hastily organized second exhibition of local talent entitled "24 Young Los Angeles Artists."

In my estimation Tuchman's greatest unseen feat was the ability to con so many large businesses into sizeable financial commitments. Except for brief mention in the catalog — with no stress on the particular products of the sponsors — the corporations receive relatively little mileage from A&T. Speaking from sad personal experience, corporations axiomatically measure all such outlays to "the further dimensions," to use John Kenneth Galbraith's delicate phrase, down to the last tax-exempt dollar. Public relations agencies handling art-industry ventures could learn something about subtler hardsell from the Los Angeles County Museum.

No doubt "humanist" art critics are going to pan A&T as another marriage of convenience with industry that fails to measure up to Henry Geldzahler's exalted view of the last 30 years. However, like Dr. Johnson's remarks on the virtues of singing dogs, defending A&T as the "best exhibition of its kind" is also questionable. In any case, due to the peculiar sociopolitical malaise that has gradually engulfed the United States, this show probably will be the last technological attempt for a while. If presented five years ago, A&T would have been difficult to refute as an important event, posing some hard questions about the future of art. Given the effects of a Republican recession, the role of large industry as an intransigent beneficiary of an even more intractable federal government, and the fatal environmental effects of most of our technologies, few people are going to be

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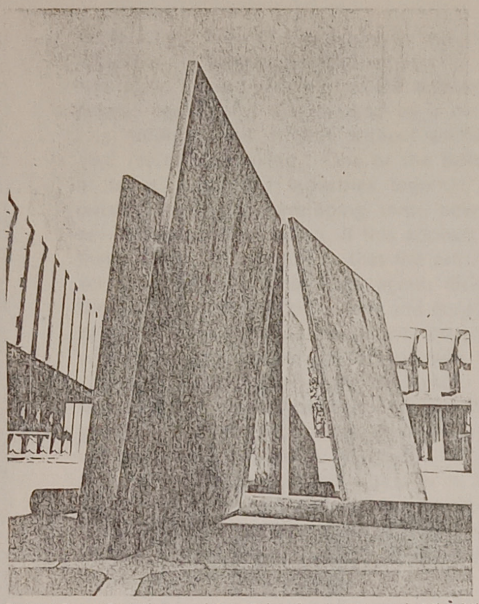
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Richard Serra, *Five Plates and Two Poles (Rue Larrey)*, steel, 10' x 20' x 10', 1971.

seduced by three months of industry-sponsored art — no matter how laudable the initial motivation. Certainly painting and sculpture do nothing to alleviate these conditions, but at least they are less exasperating since they avoid unpleasant juxtapositions.

The best thing to emerge from E.A.T.'s Pepsi-Cola pavilion at Expo 70 was Calvin Tomkins' long and marvelously droll account of the misalliance in *The New Yorker*. With not quite the same degree of intentional humor, Maurice Tuchman has put together a catalog entitled *A Report on the Art and Technology Program of the Los Angeles County Museum of Art 1967-1971*. The volume appears in the form of a shareholder's report, with the dimensions of a medium-sized telephone book. It is what the Germans call a *Gesamtkunstwerk*, a kind of Ring Cycle embracing everything from the anguished cries of artists enmeshed in corporate insensitivity and neglect to careful financial overviews of The State of the Project. Its genesis is Tuchman's introduction:

> During late '66 and early '67, I began studying the nature and location of corporate resources in California. In November, 1967, I went to the Museum's Board of Trustees, members of which were significantly involved with over two dozen West Coast companies, to outline my proposal and to elicit advice and support. As individual entrepreneurs, the Board members were rather indifferent to the experiment . . .

But after various accomplishments, credited mainly to the backing of Missy Chandler,

> In April, 1968, I met with the Board of Trustees for the second time to deliver a progress report. I anticipated that we could enlist the financial support of at least twenty corporations, to the amount of $140,000 as a straight donation to the Museum for use as needed in operating the program — to cover artists' payments, transportation and installation costs. According to my prospectus these twenty companies additionally would each take an artist into residence. I requested $70,000 from the Museum as its share in supporting Art and Technology for the 1968-69 fiscal year. (Perhaps unconsciously, I had adopted the businessman's strategy — but in reverse ratio.) The Board sanctioned the plan, provided that I obtain written agreements from ten corporations before announcing the program officially. I drew up a contract which took into account three different kinds of corporation participation..

In passing, Tuchman reveals certain necessary spin-offs:

> During the past six months, we have made numerous preliminary contacts with corporation presidents in California. These discussions have served to corroborate our feeling that the advantages to participating corporate concerns are manifold. Since the project will be fully documented by CBS television for a network special, as well as being systematically publicized through other media, promotional benefits to industries can be considerable. It is expected that collaborating technical personnel may gain experience directly valuable to the corporation, as indeed has already occurred in the plastics industry. All expenses, including corporation staff time and materials are tax deductible; in addition, Patron Sponsors will have the option to receive a work of art issuing from this collaboration. In many cases, the art works will exceed in value the total expense of the corporation's contribution.

Obviously he's letting it all hang out. A few excerpts from Tuchman's letters to corporate heads exude superlatives and breathless details of media coups, with mention of "breakthroughs" and "lastingly significant works." Some time ago, to the strenuous objections of the artists concerned, I suggested that Seth Siegelaub was the best of the Conceptualists. Quite similarly in A&T Tuchman is the most skillful technologist.

Jane Livingston and Gail Scott are responsible for much of the best writing in the catalog. In her essay "Thoughts on Art and Technology," Miss Livingston gives a clear analysis of the various historical premises that have controlled art and industry collaboratives. She then identifies prevailing philosophies of artists involved in A&T: "First there is the approach taken by

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those artists interested basically in industrial or industrial-mechanical fabrication. Second is that relating to the use of more esoteric technological media; and finally, that marked by a participatory, informational esthetic without primary regard for object-making." One of the lures used to bring artists and industries together is the outside chance of developing some new process or marketable product. If this appears naive, there is also the possibility that the artist could act as a kind of randomizing agent, dislodging the habit patterns of think tanks and corporation research. On the whole, artists are too perverse and technically uninformed to function in this capacity. According to Miss Livingston, there was never any real symbiosis between the two groups — except for the occasional development of a personal friendship. Corporations do not find artists sufficiently valuable either to buy off or to subvert. Nevertheless a decisive ideological schism between the artist and the corporate technocrat is obvious in many of the artists' attidues. Richard Serra writes:

> Technology is a form of tool making (body extensions). Technology is not art — not invention. It is a simultaneous hope and hoax. It does not concern itself with the undefined, the inexplicable: it deals with the affirmation of its own making. Technology is what we do to the Black Panthers and the Vietnamese under the guise of advancement in a materialistic theology.

Boyd Mefferd observes that,

> Individual flair seems to have been lost somewhere in corporate thinking, and nobody in these companies seems to feel much compulsion to do anything with much style. Probably they look to artists for that sort of thing now. Maybe artists will be the last of the big time spenders. Companies seem to have forgotten about the value of independent operators. Obviously they hire people who have little interest in independence, and nobody seems to remember that the men who started our giant corporations were all small and independent, more like artists than the people who run the companies now.

And Kitaj, the most literary of the artists, reminisces about his stay at Lockheed:

> Thinking about it now, so much seems so funny, so ridiculous; maybe that's got to be one of the best results: walking down endless corporate corridors each day, back and forth, miles of modern hallways, wearing a badge or two badges, carrying all kinds of important plans and papers. . . . Then when the hallways reach the more executive parts, the floors become nicely carpeted and indirectly-lit old prints and photos of early primitive aircraft, seaplanes, nostalgic passenger planes like from *Lost Horizon* spaced along the walls. And the kind of *fake* and ultimately meaningless (for my own life) encounter over those weeks with the really enormous tidal wave of machinery and a massive technology I could never hope to approach intelligently let alone fathom. Maybe the heart of the experience lies there for me—a confirmation of the utter boredom I always feel when art and science try to meet—that is to say, the feeling of very slender accomplishment in those forms of art which pretend to operate scientifically.

Since art and technology only coalesce on the most trivial levels, we might ask ourselves if it is because of a fundamental difference of method and purpose between the two. Both, in a concrete sense, operate as evolving sign systems — and this accounts for much of the confusion. Invention and change seem to be as natural to art as to technology. But as I have previously tried to show (see *The Structure of Art*, Braziller, 1971, and "Unveiling the Consort" in *Artforum*, March and April, 1971) the sense of change or advancement in art is illusionary, and I suspect the same is true for technology. Our ideas concerning the limitations and meaning of technology are still naively optimistic. Within the present socioeconomic structure we tend to look at technology as an open-ended source of exploitative activity; yet it becomes increasingly apparent that sophisticated technology can only be conducted under strictly adhered to principles. We know little about these and have even less chance of using them under present conditions. The artist intuitively, if not consciously, feels this — just as he knows that the creation of art is a process representing that missing conceptual and physical stability.

Richard Serra comes out relatively unscathed in the A&T venture. He remains close to formulas proven successful for his past art. In the Museum's central plaza, one-inch thick upright steel plates are slotted into solid steel columns laying on the cement; structurally, his piece is elegantly daring but for my tastes it begins to appear too formally arranged for Process Art. Serra worked in the Kaiser Steel stockyard directing heavy-duty moving equipment, and photographs of this in the catalog appear considerably more exciting, but apparently this work was impossible to move to the Museum. During the opening, at the rear of the museum, Serra directed construction of two semicircular retaining walls of sheet steel keyed into buried concrete footings. I did not stay to see it finished, but one gathers that he is interested in the contours of the steel wall in relation to the surrounding sloping ground.

The plaza also houses an unabashed Cummins V-470 engine "modified" by Jean Dupuy. According to the artist's symbolism, operation of the engine produces evidence of the four prime elements: fire, earth, water, and air. These are revealed by glass sleeves and containers displaying internal functions. Jane Livingston remarks that Dupuy's relationship with the sponsoring company was one of the most friendly and rewarding during the A & T project. Often this seems to be the only advantage of such collaboration, since the resulting products are so inconsequential.

Tuchman devotes 30 catalog pages to Claes Oldenburg's kinetic *Icebag*. The piece occupies an honored outdoor position, and the curator (from $25,000 to over $1,000,000). Other projects were not considered by the sponsoring corporation because they involved too many subcon-

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is quite serious in asserting that "to have an artist of Oldenburg's importance and prestige working under the project was critical at this early moment. . . . " As presiding Superstar, Oldenburg was kept very visible for the opening. Actually I've seen few things as absurd as a group of businessmen intently watching a 16-foot simulated icebag, driven by a metal cap attached to an almost scrotumlike bag, undulate. There is no earthly reason why an icebag should move, and perhaps this is what he is trying to say in a more general sense about art.

While Oldenburg's drawings of common objects dominating entire city blocks are entirely successful, they seem to lose their artistry when actually installed in public places (I'm thinking here of both the Yale *Giant Lipstick* and the A&T *Icebag*). In this environment the scale lacks a necessary gigantic quality; the works become less overwhelmingly banal and simply stereotypes of contemporary high art. Success does spoil Claes Oldenburg.

A&T's *Rain Machine* is undoubtedly the strangest and least unified Warhol ever. Two overhead sprinkler pipes, animated by a small cam mechanism, pour sheets of water into a trough. The entire unit is exposed, including Teflon recycling hoses. Daisy panels, supposedly 3-D, are in the background; water drops into plastic grass. This sounds rather phlegmatic, but that's the way it looks. The machine has some of the perverse antinaturalism one finds in the little Polaroid mechanism controlling the waterfall in Duchamp's *Etant donnés*. . . . There the waterfall is deliberately mechanized and predestined *not* to work as art. (One also remembers the tableau of rain falling on false grass which Duchamp designed for the Surrealist exhibition at the Galerie Maeght in 1947.) Could Warhol have shared the same intention?

As painters, Oyvind Fahlstrom and R. B. Kitaj have never inspired my admiration. Fahlstrom's plastic figures for A&T are a loss, but Kitaj has produced a room-sized homage to the history of industry and "progress" which possesses considerable wit and charm. Fahlstrom suffers from literary aspirations in the same way that Kitaj seems to be able to use his. In this case Fahlstrom has plugged into the characters of R. Crumb from *Zap Comix*. His sign company fabrications do nothing for the R. Crumb mystique and less for Fahlstrom.

As a painter, Kitaj epitomizes the *bricoleur*, the collector of disparate objects and impressions who welds them together into new syntheses. Kitaj's room evades precise description. It poses a kind of nostalgic juxtaposition between 19th-and early 20th-century Big Industry and the artistic spin-offs from these pioneer form-makers: photographs of early modern sculptors studios, models of factory chimneys and mine shafts, a wall tapestry both faintly oriental and *de Stijl*, stills from early constructivist movies, wooden precision models of ma-

escalation of costs once an artist decides to move away from basic shop fabrication or modified assembly-line products.

It seems certain that little major art lends itself to conversion of mediums — the medium *is* essential to the art. A painful example is Roy Lichtenstein's three closed-loop movies. Two movies consist of split-images, Ben Day dots above and naturalistic scenes showing a sunny sky with a few clouds and a close-up of rather gentle waves below. A third split-image film re-

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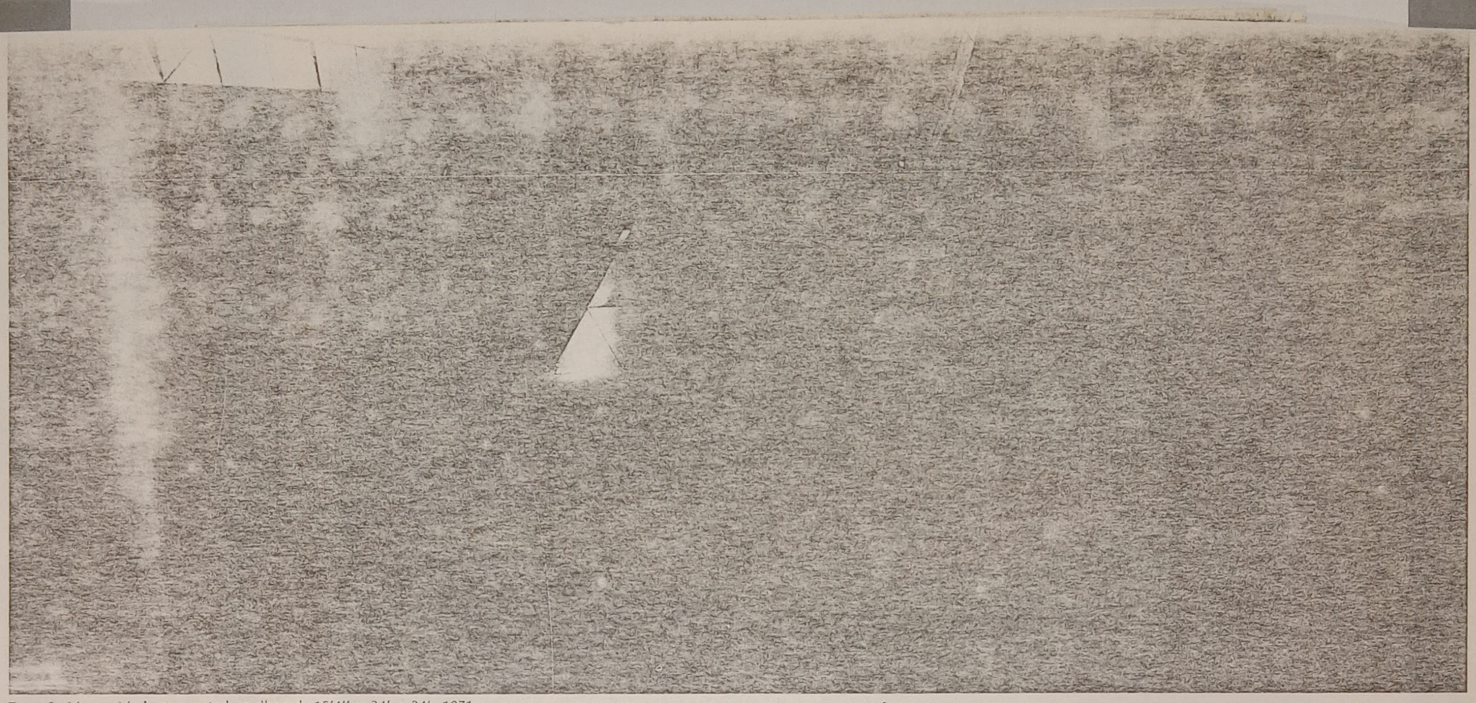
Few really interesting "art and industry" projects are inexpensive. Many of the best A&T proposals were rejected due to excessive cost (from $25,000 to over $1,000,000). Other projects were not considered by the sponsoring corporation because they involved too many subcon-

ing to do with modifying the context of this particular content. Esthetically, these movies are designed to function as two connected subsets, but again, mechanics and electrified motion defeat the intentions of art. Lichtenstein's taste is so often infallible; I don't see how he could have gotten mixed up with this.

During the Fall of 1968 Jane Livingston and I both had a chance to see the Magic Theater in Kansas City, and we were particularly impressed with Boyd Mefferd's *Strobe-Lighted Floor*. His con-

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Tony Smith, untitled, corrugated cardboard, 15'4" x 34' x 34', 1971.

chine parts, photographs of early American and British World War II aviation, mottos of virtue for the working classes, computer drawings and countless strange artifacts and pictures. Possibly these selections lack individual significance, but together they evoke a faintly humorous and philosophical overview of the entire A&T business. It begins to make up for the intense seriousness of everything else, in a way representing the *psychic summation* of an illusion.

Few really interesting "art and industry" projects are inexpensive. Many of the best A&T proposals were rejected due to excessive cost (from $25,000 to over $1,000,000). Other projects were not considered by the sponsoring corporation because they involved too many subcontractors. Still, I suspect that several projects went beyond the proposed $15,000 mark — the Oldenburg sculpture and the Whitman mirror environment come to mind. Few people, unless directly involved, have a clear conception of the escalation of costs once an artist decides to move away from basic shop fabrication or modified assembly-line products.

It seems certain that little major art lends itself to conversion of mediums — the medium *is* essential to the art. A painful example is Roy Lichtenstein's three closed-loop movies. Two movies consist of split-images, Ben Day dots above and naturalistic scenes showing a sunny sky with a few clouds and a close-up of rather gentle waves below. A third split-image film reveals swimming goldfish and flying seagulls. The separations between the top and bottom images rock soothingly from side to side. The imposition of dots appears contrived; by now these are simply a Lichtenstein trademark. They have nothing to do with modifying the context of this particular content. Esthetically, these movies are designed to function as two connected subsets, but again, mechanics and electrified motion defeat the intentions of art. Lichtenstein's taste is so often infallible; I don't see how he could have gotten mixed up with this.

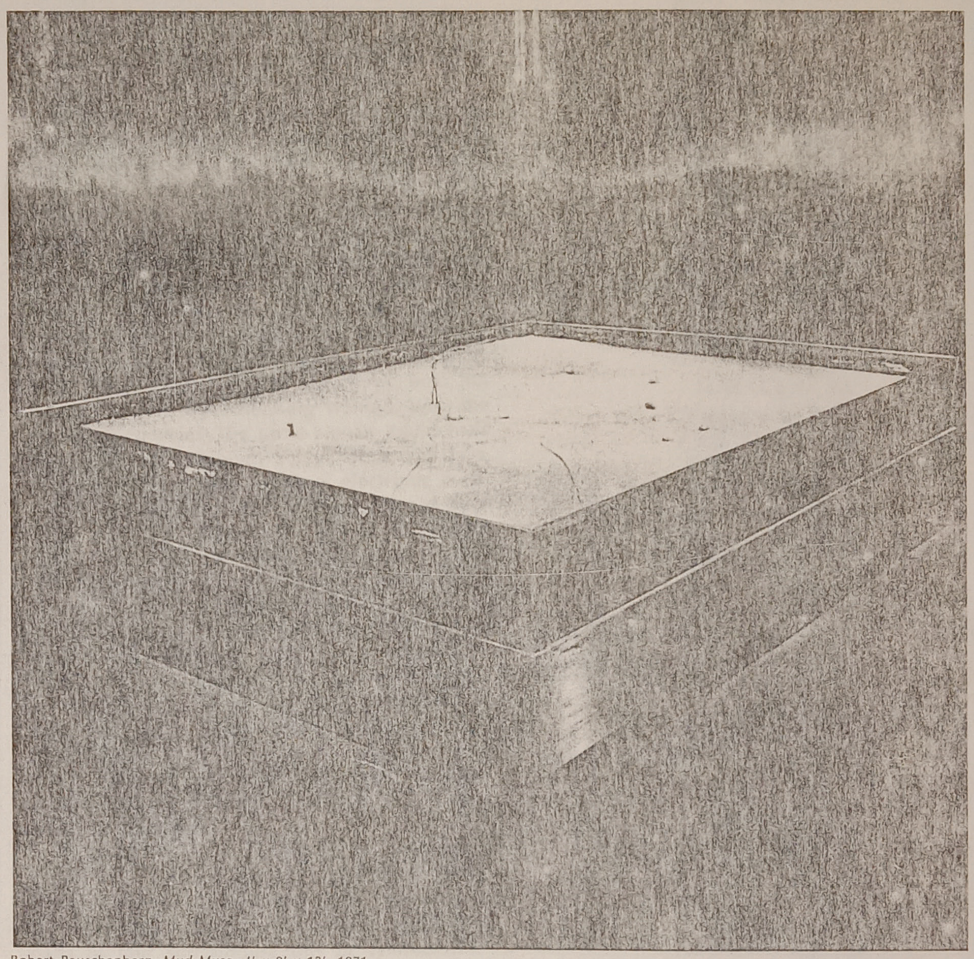
During the Fall of 1968 Jane Livingston and I both had a chance to see the Magic Theater in Kansas City, and we were particularly impressed with Boyd Mefferd's *Strobe-Lighted Floor*. His contribution to A&T is a brighter, more aggressive version of the earlier piece. Now his strobes fire as complete walls of light. The afterimages are incredibly intense; outlines in the room are etched on the retinas for up to 15 or 20 seconds. Flashes occur soon enough after each other so that one begins to carry several superimposed images of the room simultaneously. The constant shift between afterimage and brilliantly illuminated normal image is both hallucinatory and disorienting — by far the strongest and cleanest effect of its kind. Mefferd's *Walls* are an obvious crowd-pleaser, the absolute limit in the contrast between black and white. Gradually I, as well as others, felt disoriented and nauseous. Mefferd plans to do another room with more strobes, both more powerful and more dependable. Art has something hallucinatory about it, permitting the mind to wander and trip; here the tripping is essentially physicochemical. Of all the effects in A & T, Mefferd's is the most decisive, a kind of Op Art overkill.

Robert Rauschenberg's *Mud-Muse* consists of a 9-foot by 12-foot glass tank of tan-colored viscous drillers' mud. Air jets cause the mud to bubble intermittantly, while the sounds produced play back through loudspeakers. I understand this is connected to a double feedback. The location and intensity of the bubbles is (or was supposed to be) controlled by four microphones placed above the spectators. A frequency separating device divides the resulting noise into four channels, each connected to eight air holes. One of the designers at Teledyne, Frank LaHaye, noted:

> It is also planned, though the details have not been resolved, to have a number of special sound

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Robert Rauschenberg, *Mud-Muse*, 4' x 9' x 12', 1971.

tribution to A&T is a brighter, more aggressive version of the earlier piece. Now his strobes fire as complete walls of light. The afterimages are incredibly intense; outlines in the room are etched on the retinas for up to 15 or 20 seconds. Flashes occur soon enough after each other so that one begins to carry several superimposed images of the room simultaneously. The constant shift between afterimage and brilliantly illuminated normal image is both hallucinatory and disorienting — by far the strongest and cleanest effect of its kind. Mefferd's *Walls* are an obvious crowd-pleaser, the absolute limit in the contrast between black and white. Gradually I, as well as others, felt disoriented and nauseous. Mefferd plans to do another room with more strobes, both more powerful and more dependable. Art has something hallucinatory about it, permitting the mind to wander and trip; here the tripping is essentially physicochemical. Of all the effects in A & T, Mefferd's is the most decisive, a kind of Op Art overkill.

Robert Rauschenberg's *Mud-Muse* consists of a 9-foot by 12-foot glass tank of tan-colored viscous drillers' mud. Air jets cause the mud to bubble intermittantly, while the sounds produced play back through loudspeakers. I understand this is connected to a double feedback. The location and intensity of the bubbles is (or was supposed to be) controlled by four microphones placed above the spectators. A frequency separating device divides the resulting noise into four channels, each connected to eight air holes. One of the designers at Teledyne, Frank LaHaye, noted:

> It is also planned, though the details have not been resolved, to have a number of special sound

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tracks playing from under the piece. Selection of one or more sound tracks would tie in with the electronic selector system controlling the pneumatic valves. Typical sounds might include the surf, an owl, the wind, musical notes, etc.

I recall only a few successful works employing audiovisual feedback principles. Usually though these included a deliberately organized circuit between content, signal, and playback. Often some aspect of the situation is converted into a different signal form, thus allowing the spectator some further insight into his personal condition. Nothing of that nature takes place here. Actually, preprogrammed tapes were used to control the piece. The signal has little or nothing to do with the activities of the mud. In effect, *Mud-Muse* is a glorified music box. But if this were all Rauschenberg wanted, why the elaborate console? The same signals could have been generated through a tape deck, speakers, and a hundred dollars worth of electronic parts. I don't particularly mind the spectacle of bubbling mud — although the TV scenes of Mt. Etna lava were far more impressive — but I resent unnecessary mystification. It seems that a few days after the opening a group of kids did incredible wall paintings with the driller's mud in the Rauschenberg room: pictures, graffiti, wiped-out writing, even mud spattered on the ceiling. The results looked not unlike some of the best early Rauschenberg paintings, very gutsy, playful, and involved. In a sense the kids were using mud without pretentions, the way it should be used. Tuchman had the room cleaned up immediately.

Robert Whitman's mirror room involves a similar blurring of purpose. The room is roughly circular, shaped by four-foot high partitions of corner-reflector mirrors. These serve to obscure parts of four surrounding sets of cylinder mirrors which reflect visual images in space towards the viewers. The images are projected from slide projectors behind the corner-reflectors. John Forkner, a physicist and the artist's collaborator at Philco-Ford, had previously tried to use the corner-reflector mirrors to make pseudoscopic images, but after some experimentation these proved to have drawbacks. So the mirror room consists of two unrelated phenomena: the corner-reflector walls providing a multiple reflection of the spectator, and changing overhead pseudoscopic images.

Whitman's room would have been stronger without the lower corner-reflectors and most of the overhead lighting. The scale of the room might have been kept the same by simply increasing the size of the cylinder mirrors, although this may not have been technically feasible. One chronic difficulty with visual "environments" is the disruptive effect caused by crowds. Two or three people fit Whitman's space ideally. Ten or fifteen destroy its subtle illusionism.

Tony Smith's corrugated cardboard "sculpture" is actually interior architecture. Smith re-

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mains one of the few consistently interesting formalists. The cavernlike structure for A&T assembles thousands of tetrahedral modules. If one can imagine Frank Lloyd Wright constructing a fantasy in lightweight blocks on a triangular grid, the results might not be too different. This is not to belittle Smith; his handling of these spatial juxtapositions is masterly. Earlier, for the Expo 70 exhibition, a different structure was planned using slotted and tabbed modules. These proved unsatisfactory, so the module faces were glued together. Still the A&T structure had to be suspended from the ceiling by fine wires; both Smith and the crew of architecture students who put up the piece had very uneasy feelings about this. Made to work with the right materials, this is conceivably one of the best large-scale sculptures to date.

Printing thousands of tapes reading, "putting byars in the hudson institute is the artistic product" was one of James Lee Byars' first gestures as sole member of the World Question Center. In this case Maurice Tuchman was the artist; he made the choice, and Byars would be the first to give him the credit. Ostensibly Byars was sent to Herman Kahn's think tank to delve into the processes of exhaustively organized, high-level thinking. Hudson Institute is a place where seminars on the entire spectrum of global problems and possibilities are conducted almost daily. But as it turned out, Byars the artist and Kahn's strategic thinkers had very little in common. A Hudson staff member commented on the general air of hostility; "A lot of square people . . . felt that what Jim was doing was a waste of his time and their time." In the months that passed, little significant interaction occurred, except for highly lengthy conversations with Herman Kahn who, according to Byars, did not want to be pressed too seriously.

"Why are we bothering with Jim? After all, I want the organization to run right. The presence of someone like Jim is theoretically subversive of that goal," was Kahn's mixed attitude towards the artist. According to Byars, posing questions is in itself subversive, and posing questions to people who pose questions is even more so. His hundreds of calls from the Institute were directed to thinkers all over the country, asking for their single most important unanswered question. The resulting list of 100 questions is remarkably nonacademic and mainly an assortment of the artist's ruminations; they are, in his words, "questions to delight my consciousness." Art, according to Byars, is "persuade me?" A good example is "How do you placate X?," or "If you ask for something that doesn't exist you deserve it on the intelligence of the request?," or "Imagine being possessive of a question?" If you ask Byars why so many of his questions are not worded in interrogative form, his answer is "Who knows what a question is?"

Byars is the only live A&T project, a human computer wearing a red derby in a gold-painted room. Incorrigibly frie ave any Byars was attempting t direction. copies of his "100 Que penetrate the veneer o serves vades the Hudson Instit means and with considerably meen somost of his colleagues. I contain a much older type of a any lanis the art, just as his act antagences into people's lives d years Angeles Museum, Byars certain name and red hat, thus part, and to hand out the "100 (xists an he insisted, "in many tradeoff a man your clothing is recogyour name." are suc-

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room. Incorrigibly friendly and unassuming, Byars was attempting to hand out gold typed copies of his "100 Questions." While failing to penetrate the veneer of rationalism that pervades the Hudson Institute, Byars *is* making art, and with considerably more wit and insight than most of his colleagues. In a sense he represents a much older type of artist, the shaman. Byars is the art, just as his activities induce art experiences into people's lives. Before leaving the Los Angeles Museum, Byars planned to lend his name and red hat, thus producing a new Jim Byars to hand out the "100 Questions." "Why not?" he insisted, "in many primitive cultures giving a man your clothing is, in effect, giving him your name."

Possibly the most beguiling example of Teck-art at the A&T exhibition is Newton Harrison's series of glow-emitting plexiglass columns. Five of them are randomly situated in a darkened room. They are each ceiling-height neon tubes of approximately one-foot diameter. Working with Jet Propulsion Laboratory over a period of a year, Harrison assisted in the development of power supplies, electrodes, and a gas injection system to produce various colored light and wave phenomena. The ionized gases — helium, neon, argon, etc. — emit a wide variety of spectral effects, only a few of which are in the exhibition. Concerning one color configuration with a separated rose and white glow, the artist writes:

> . . . just what Rothko was dreaming about. I knew what he was doing. . . . He was trying to make paint do what paint could never do, although he got his work to cast a light. The far tube to the right I really made a sort of private homage to Rothko. . . . If you looked at the shape on the top, it was a Rothko type shape, a Rothko color shape, a Rothko intensity shape and it was surrounded by a dark field.

Harrison's environment is mysteriously evocative, partly because of its simplicity. But the question — is it art? — still lingers.

If one stops to analyze the implied attitudes of most of the A&T artists to technology, the outlook for any future rapprochement between the two is dismal indeed: Serra actively hates the Technostructure; Warhol continues to tell us that technology is ahuman; Whitman beguiles us with trick optics; Kitaj insists that technology is a campy myth; Oldenburg points out (with an illuminated billboard across the street from his *Icebag* reading: "Art shall hang") that technology has already swallowed us up; Rauschenberg is still trying to figure out what to do with technology; Mefferd is proving that technology can sear your eyeballs; and so it goes. There is so little here not implicitly antagonistic or disparaging of the effects of technology. I hope the business moguls who supported this exhibition get the message, because what the artists are saying is simply this: *no one believes that American corporate interests, controlling the overwhelming portion of our technology, have any real sense of social responsibility or direction.*

At its most essential level, technology serves the same purpose as art: it is simply a means of providing systemic relationships between social units and the environment. Both contain proscriptions and interdictions found in any language system. And while not inherently antagonistic to each other, after four hundred years of gradual separation, they tend to show certain irreconcilable differences in method. In art, and with all premodern technologies, there exists an unalterable reciprocity with nature. The tradeoff between natural law and human law is recognized and protected by the way things are successfully accomplished. The technologies of the American Indians reveal this consciousness. Successful technologies possess the mark of social concensus — they cannot be forced upon people by corporate pressure to consume or to obey the engines of progress. The consensus to use a technology comes out of a period of trial and error as people decide if it is ultimately beneficial or deleterious to them.

At its roots art acknowledges the existence of certain unchanging patterns to natural processes. All successful technologies, such as farming, recognize these cyclical structures. As a cosmic indication of the art process, Marcel Duchamp labeled the plans for *The Large Glass* as an "Apparatus, instrument for farming." In the creation of art one encounters the same cycle of *fallowness, planting, growth,* and *harvest.* In contrast, few modern technologies lend themselves to these patterns of repetition and replenishment.

One outstanding exception at the A&T exhibition is Newton Harrison's "Eco System of the Western Salt Works (with the inclusion of brine shrimp)." Working with the Scripps Institute of Oceanography, Harrison constructed four redwood troughs containing varying solutions of brine and sea water. To each was added algae and brine shrimp eggs. Both the shrimp and algae are forced to adapt to the environment, that is, to differences in the brine solutions. At maturity the shrimp will be harvested. Gradually through the summer the water in the tubs will turn red, yellow-orange, yellow-green, and green, respectively, due to the effects of the salt on the algae. At the end of the summer the artist plans to harvest close to 2750 pounds of salt from 2850 gallons of brine and seawater. Harrison remarked that he likes the idea of working with minimal technology, of "farming" and "harvesting" his art. While this may be construed as systems art, or art which is structured to complete a natural growth pattern, many in the Art World would dismiss it as simple ecological experimentation. What is important, of course, is whether or not Harrison's work conforms to the structural principles of art. If it does, then he has made a profound commentary on the technical hopes and failures of our culture. ■

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ARTforum
Oct 1971

THE MULTIMILLION DOLLAR AR

MAX KOZLOFF

A Report on the Art and Technology Program of the Los Angeles County Museum of Art reveals the underpinnings and negotiations for an exhibition (Summer 1971), more completely than we have ever gleaned before in a catalog, or from hearsay. It comes to us almost as if it were sensitive material suddenly declassified. Readers are given to understand, quite correctly, that the deals, researches, and compromises, all of which usually stay behind the scenes of a show and are now revealed, hold more importance than the art eventually displayed. They compromise the real subject and true interest of the event.

The outstanding feature of the program was its experiment in patronage. How novel for a museum to have dispensed with the gallery system, the erstwhile cohort that had for so long acted as the storage depot and screening agency for new art. And just as unusual was the spectacle of a museum that acted *publicly* (rather than covertly) as a broker between what it unilaterally designated as the patron — the giant American corporation — and the artist. Having secured the prior consent and funding of the patron, the museum directly commissioned a number of artists of its choice to create work with the resources and in the actual plants of industrial firms. Entirely new ground had to be explored in the area of contracts, payments, work allocations, and property rights; for this was an enterprise conducted in the spirit of research and development, whose guidelines had never been established, and whose results could not be predicted. It is impossible to imagine the affairs between any *individual* artist and collector to be as elaborate and protective as those at Los Angeles. The artist became a nominal, if semidetached and temporary employee of a company. His status resembled that of an industrial intern. The museum assumed for itself the role of agent and impresario, rather than conservator, of art. And the corporation had to think for some months that any of its precincts might be used as a studio for useless dreams.

To what purpose were all these innovations fomented? Since the mid-sixties, it had become evident that artists had more than flirted with business and government patronage, but that no genuine rapport existed between the two parties. A case could be made for the sense of the artists' work as a weird celebration of American corporate activity, its effects and often enough, its processes. Yet, a piecemeal and sporadic courtship had never been consummated. The convenience of the partners was served at a distance. It was under the conviction that he was fulfilling an historical destiny that the most creative ideas might result, both in art and technology, that Maurice Tuchman, the museum's Curator of Modern Art, conceived of bringing them together, legally, for a special occasion. It was he who engineered the meetings and coddled the sensibilities of the artists and the executives. He, it was, who had to wheedle the "dowries" singlehandedly, and secure the cooperation of trustees and board members of every imaginable persuasion. If advanced science and art, for this one sustained instance, could be kept intimately on tap for each other, the old breach between them might be closed, and the progress which each represents might blend in an emboldened confluence of mutual discovery. It happened instead that everyone got screwed.

For the show even to have been imagined, there were three necessary preconditions. The first was a subsidized corporate economy, what has been called only recently, a "socialism for the rich," replete with tax write-offs, a bull market, hyped-up consumerism, bailed-out cost overruns, limitless credit and expense accounts. In other words, that phase of late capitalism in which there no longer exists any plausible relationship between profits and production, or clear distinction between big private enterprise and the state, because government paternalism has underwritten an increasingly inefficient business system. As described by Andrew Hacker, in *The End of the American Era*, it is a state of affairs in which any vestigial concept of the public interest subsides in the general momentum of indifferent, relentless turnover. . . . The second precondition was the weakening of the radical morale as well as formal conscience of an artistic avant-garde that was becoming enticed by a feckless experimentalism. Despite the war protests and peace auctions, the decrepitude of its social alienation was acute. Many artists did not understand that they had grown to be licentious at the cost of their independence. They wanted the opportunity to create with the help of, but really to fall back on, exotic and costly technical systems, not realizing that the means of production — and hence, control — would forever remain in the hands of the ruling classes who owned them . . . and lastly, the third precondition, correlating with the first two, a psychological confusion about true priorities and needs that springs out of the national dedication to

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In short, industrial management and art had reached comparable stages of decadence. They acknowledged no goal other than self-proliferation; and they had converted the tolerance of laissez-faire into an apathy in which no project had to be justified if it made work, however marginal, unproductive, or gratuitous.

This is the meaning of the attempt to spur a corporate patronage of art. It is perfectly true that the realization of art is a superfluity, that it traditionally gilds the affluence of the elites in bourgeois culture. But that culture always tended to sanction its art under pressure because art (aside from its intrinsic beauties) was also a form of critique — dissenting, anarchic, at times outrageous. It was to the credit of the bourgeois philosophy, liberalism, to think of that critique, no matter how reluctantly, as useful. If, on the contrary, the corporate mind were to hold durable sway, one would be immersed in an era in which critical reconstruction counts for little, and few people effectively care. How to calculate the opportunities for meaningful change when the typical expedient by which the American system placates the noisier or more unruly members of its minorities is to give them jobs . . . or to commission reports? In that atmosphere, charades of concern and evasions of purpose are the order of the day. Real problems do not make contact with real power, but rather

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In *The End of the American Era*, it is a state of affairs in which any vestigial concept of the public interest subsides in the general momentum of indifferent, relentless turnover. . . . The second precondition was the weakening of the radical morale as well as formal conscience of an artistic avant-garde that was becoming enticed by a feckless experimentalism. Despite the war protests and peace auctions, the decrepitude of its social alienation was acute. Many artists did not understand that they had grown to be licentious at the cost of their independence. They wanted the opportunity to create with the help of, but really to fall back on, exotic and costly technical systems, not realizing that the means of production — and hence, control — would forever remain in the hands of the ruling classes who owned them . . . and lastly, the third precondition, correlating with the first two, a psychological confusion about true priorities and needs that springs out of the national dedication to glance off each other in frustrated deflections because there is no longer any genuine *center* of response to social stimuli. Art can be accommodated in this situation far more readily than in the past, and count for far less.

Under these circumstances, it was quite proper of the curator not to touch upon, or to touch only lightly, the historical precedents of his project. In no sense would they have legitimized it. The collectivist, synthetic, art-for-people-and-life positions of the Constructivists and the Bauhaus, with their assumptions about the welding together of the economic means of production and the guiding procedures of the artist, could only have been maintained before the advent of a technology scaled large enough to realize them. For the necessary assembly line, communication, and distributing systems were finally to emerge under political conditions blasting any hope that artists could restructure society by their own example. That hope was pitiful from

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the start. But it was engendered by democratic impulses for which artists made huge sacrifices; and, in turn, it inspired the most idealistic energy that resulted in important theory and coherent works.

By contrast, today's artists, living in a Western world of unparalleled prosperity, are as modern in their indifference to socialist esthetics as they are hip with the media. Even if we are generous to the feeble cliques arising out of Experiments with Art and Technology (E.A.T.) or Pulsa, it can still be said that no present artistic groups have concerned themselves with any rapprochement with the masses by using the machine in lowering art prices or standardizing forms. And certainly the same applies to the artists influenced by or sympathetic to the doctrine of Jack Burnham, which tends to view the history of art as a history of techniques and their consequences. This perspective determines that the electronic methods of modern technology demand a comparable development in art, which must now transcend its handiwork commitment to the work as a physical object — not merely to bear witness to the laser-computer age, but to embody it. Such cybernetics-oriented art pays tribute to certain elderly ideas of progress in that it feels beholden to keep in step wth fast-paced science. But since it is throughly elitist, upholding no values other than the tedious complication of its engineering, or the amorphous spread of "information," it had to downgrade the Utopianism that kept the techno-euphoria of some earlier modern art in thrall.

Into this disarray of forces, Maurice Tuchman entered with a smile. We can assume that few of the 200 artists he either recruited, or who got associated with his program, shared its official rationale. And this for the reason that there is no rationale to be found in the Report whatsoever: no specific concept of the project's goal, no insight into the artist's relations with society, no grasp of the history of modern art, no convincing argument as to the pertinence of having artists working in manufacturing plants, no statement detailing the public need or the timeliness to current art which the enterprise might graph. Indeed, it was the entirely opportunistic, unprincipled and arbitrary character of the undertaking, made seductive by copious publicity, that lent it a most up-to-date tone.

From the first, it was also to be problematic in structure. The brochure to the prospective sponsors — presumably hard-nosed business types — announces that artists will be selected on the basis of their "expressed interest in specific technological processes," while elsewhere, the exact opposite is stated to the readers of the Report. Artists, known and unknown, of every imaginable idiom, and many nationalities, were approached (excepting blacks, Chicanos, and women). The "Art and Technology" program, therefore, did not mean to chart a particular sensibility, illustrate a theme, or even provide a heterogeneous survey of going effort. Its *raison d'etre* was to provide a series of encounters from which might be furnished promotional benefits for industry, and some exhibitable art. (To be fair, the museum also thought that artists might get good ideas.) Though the institution matched or channeled certain artists into particular corporations, it cannot be accused of having a point of view or of desiring to stamp any unity on what it had begotten. In this it acted like a private, research-granting foundation, rather similar to the Guggenheim or Ford, but was at the same time accountable for the results and output imposed upon a public agency.

A similar conflict arose out of the notion of art as someone's property. The museum assured its clients that they would have the option of receiving a work evolving, if it did, out of collaboration with the artist (and exceeding in value the amount of the company's contribution). To forestall legitimate grievances of artists that they were obliged to hand over free art gifts to a company, the museum advised them to work in series — not because seriality might be integral to their work, but because they would acquire most of the results. In one of the most delightfully imperious letters ever written by a modern artist, Claes Oldenburg blew the whistle on this duplicity and told Tuchman he would not submit to manipulative arrangements in which he was deprived of tax breaks or a sale, was made to work at reduced salary for three months, and forced to travel coach instead of first class. Jean Dubuffet, for his part, considered himself so patronized that he would rather have contributed his monument at his own expense than be the recipient of payment generously "corresponding to the cost of my cigarettes." At first Robert Irwin seemed to have feared exploitation, too, for he was quite against the production of an object when there was so much to be gained from a purely "interactive" situation at the Garret Corporation. This attitude did not prevent him from hastening to exhibit one of his acrylic pylons in the final show, though it had nothing to do with his project.

As for the "Art and Technology" venture itself, no better introduction to its buffetings can be imagined than the cover of its Report. It purveys 64 photographs of participants — artists and engineers or managers, equally divided. Even the most casual viewer would have no difficulty distinguishing, on the basis of shaggy versus close-cropped, who was who. This difference of mien and style all but announces the general falling out of the collaborators and the ultimate realization of a mere 16 projects. Though theoretically asked to make only modest sacrifices, with tremendous financial inducements, many of the corporations fought shy or had to be pressured or specially gulled by the boondoggle. They had no settled idea, and rather unhappy suspicions about what would be

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heterogeneous survey of going effort. *Etre* was to provide a series of en- om which might be furnished pro- efits for industry, and some exhibit- To be fair the museum also thought might get good ideas.) Though the atched or channeled certain artists ular corporations, it cannot be accused point of view or of desiring to unity on what it had begotten. In ed like a private, research-granting , rather similar to the Guggenheim ut was at the same time accountable its and output imposed upon a pub-

conflict arose out of the notion of one's property. The museum assured that they would have the option of work evolving, if it did, out of col- with the artist (and exceeding in amount of the company's contribu- orestall legitimate grievances of artists were obliged to hand over free art company, the museum advised them series — not because seriality might to their work, but because they ire most of the results. In one of the htfully imperious letters ever written n artist, Claes Oldenburg blew the this duplicity and told Tuchman he ubmit to manipulative arrangements ne was deprived of tax breaks or a made to work at reduced salary for ns, and forced to travel coach instead ss. Jean Dubuffet, for his part, consid- elf so patronized that he would rather ntributed his monument at his own than be the recipient of payment y "corresponding to the cost of my ." At first Robert Irwin seemed to have ploitation, too, for he was quite against uction of an object when there was o be gained from a purely "interactive" at the Garret Corporation. This attitude prevent him from hastening to exhibit s acrylic pylons in the final show, had nothing to do with his project. the "Art and Technology" venture better introduction to its buffetings can ined than the cover of its Report. It photographs of participants — artists ineers or managers, equally divided. most casual viewer would have no distinguishing, on the basis of shaggy ose-cropped, who was who. This dif- nien and style all but announces the falling out of the collaborators and the realization of a mere 16 projects. heoretically asked to make only modest , with tremendous financial induce- many of the corporations fought shy or be pressured or specially gulled by the gle. They had no settled idea, and nnappy suspicions about what would be asked of them aside from money. Nor would the artists have imagined how much red tape, unnecessary channels of control, inflexible modes of fabrication, and stubborn resistance to concept they would encounter when they left the studio for the factory. For the artist, the unaccustomed medium of corporate production seemed to thicken before his eyes into an intransigent glop. For the engineer, the planning of the artist thinned out often into the most hare-brained and ludicrously expensive schemes. There were companies that withdrew because the artist would not meet implementation halfway; and there were artists who wandered for months in the corridors of industrial power without finding people with whom to connect or any appropriate means to materialize their goals, if we assume they had any clear-cut notion of them in the first place. Requests that companies send rockets into outer space or to Mars were turned down. And everywhere there ensued chronic searches for answers, some in good faith, others, often enough, in bad. One remembers John Chamberlain addressing scores of memos to "Everyone at Rand," stating simply, "I'm searching for ANSWERS. Not questions!," and getting back emotional but unrevealing responses. Or the truly witless James Lee Byars, at the Hudson Institute, asking "What's the most important question of the 20th century?," to which the thoroughly humorless Herman Kahn, the Report goes on to say, replied "Well, this question is on three levels. First of all there are cosmic questions like, How is the world created, does God exist and this sort of thing. We can dismiss those."

Predictably, then, the conflict was between literalists and visionaries, between those who would shrink all questions about phenomena to a matter of testing know-how, and those who would expand all affairs of making into pure conditions of being and concept. The two types got along infamously with each other. Even on a workaday level, artists strived to gain more shop latitude for various capers from engineers and researchers engaged in trimming down budgets, gaining executive assent, squelching put-ons and catching up with rip-offs (such as Dan Flavin's at G.E.). Through the portals of Kaiser Steel, Litton Industries, Lockheed Aircraft, and Teledyne, traipsed some of the most playful men of the Western world.

Oldenburg makes the most poignant chart of the internal contradictions of their experience, by pairing off the attitudes and qualities of the artist in the studio and in the collaborative situation: "1. intolerant — tolerant, 8. violent — restrained, 10. vindictive-paranoid — forgiving, 15. drunk or high (looking for sublimity) (custodian of the sublime) — sober (indifferent to the sublime, like airplane pilots) . . . etc." If these opposites are inaccurate, or apply only to the creator of the giant ice bag, it may be because proximity with the factories seems to have pro-

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duced a certain megalomania in many artists ordinarily less obsessed than he.

One reads the Report only to see them behave as would-be magi, con-men, fledgling technocrats, acting out mad science fiction fantasies, such as Jackson MacLow's abominable idea that I.B.M. should construct a vast computer environment "for accepting and feeding out massive amounts of information based on the ecology of the Los Angeles metropolis." It is possible to sympathize with technicians who doubtless were beginning to wonder into whose hands they had fallen, and who had to confront a barrage of ignorant directives and willful misapplication of resources. Here the Report, otherwise extremely matter-of-fact in style, can best be seen as a comedy detailing the clash of ego and suppressed ego, quickly or eventually bringing out the worst in both — that is, accentuating the capricious, the esoteric, and the juvenile in the one, and the philistine and the flunky in the other. The permissive atmosphere in the art world, that which licenses and sanctions the artist's most extravagant conceits, evaporates as soon as his context is changed to one where men are supposed to be doing things seriously and for purpose. Bob Morris, for example, did not gain favor by wanting to construct "an environmental situation involving temperature control systems" with a division of Lear Siegler, which would "bury all this technology right in the ground and have nothing there but a little more weather than was there in the first place — what miniature gold did for the game this piece might do for the National Parks." If Gemini Director Ken Tyler's idea is just — the idea that the whole project was a species of living theater ("For me the technicians are the stage designers, the set builders, the choreographers and our guys like Claes are the actors."), then it was theater in which technology is typically entombed or sent off into the heavens, a theater in which the disproportion between inordinate means and foolish or aborted results cancels out the drama. Thus, finally, the two parties, the artists and technicians of society, were brought together in a long hoped-for union, only to produce a *folie à deux*.

There were those, of course, who found harmony in realizing mutually comprehensible aims. But the presence of such techno-artists as Rockne Krebs, Boyd Mefferd, and Newton Harrison only highlighted a prime esthetic dilemma of the program. To the entrenched style of the Pop artists and minimal sculptors, industry offered either a more durable and gussied packaging of their efforts, not very interesting in itself, or a surrender to the prerequisites of machines which might entail the sacrifice of intelligible syntax and hard-won control. These artists placed themselves in the position where "conservative" and "progressive" stances held little meaning and much danger for them. For they had allowed an entirely false premise to be imposed upon them, namely *that what had been invoked by a will to form was to be furthered by resort to electro-mechanical means which could only activate or atomize form.* Sensation and effect would be sorry recompense for the loss of shape and structure.

On the other hand, the type of artist infatuated with technical process would be all the more encouraged, through force of bias, to the sensational, to art as short term entertainment or mystification. Between the option of getting technology out of sight or making it extremely manifest, his choice was clear. He had no vocabulary or style to compromise, but also no point of view to propose or express. The climate of expectancy generated by the show was to penalize both the "straight" and "novelty" solutions to any problem. Pity the artist doomed either to disappoint or titillate. It was Jim Turrell, withdrawing from a project where he had been led by Robert Irwin to perform some cruel experiments in sensory deprivation, who gave the most thoughtful critique of the program. Speaking of a "Pavlovian approach into spirituality," he continues: "We're very physical. When we want to go into the universe, we can't look at a rock, like the Japanese. We have to actually go to the moon. We're so literal. . . . There are actually meditative sciences, or sciences of the soul. We have devices, sensors, alpha conditioning machines . . . we can't meditate without having this thing strapped on us." His is not a complaint about gadgetry as such, but about the illusion that a kind of soul hunger and quest for faith might be *literally* satisfied by chemical

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assistance or electronic innervation. Turrell's is the only voice in the Report to speak against the whole affair as a perversion of artistic values. For there was something metaphorically sublime in modern art's longing for synesthesia which the A&T program makes literally ridiculous, and something consciously liberating in the contest between the artist's mind and hands which the program would now automate.

There was nothing left, when the show was finally installed, but to catalog a list of dismal surprises. The laser beams of Krebs, the strobes of Mefferd, and the mirror projections of Robert Whitman were as imaginatively pointless as they were physically disembodied. And if the availability of new hardware was to invoke any change in esthetic kind, this had not been proved by the characteristic efforts of Richard Serra, Tony Smith, or Jesse Reichek. As for Newton Harrison's rather lovely columnar plastic tubes, radiating color glows electronically discharged from various gases, they gave rare refreshment in the circusy surround. Among the others on the roster, derision ruled. Rauschenberg's tank of flatulent mud vindicated Teledyne's sporting spirit. Kitaj appears to have enjoyed himself by using Lockheed's Burbank facilities to produce a kind of 19th-century museum of industrial memorabilia. Fahlstrom's "Meatball Curtain" metallized imagery from *Zap Comix*. Andy Warhol's 3-D photographs of daisies, seen through the illuminated squirtings of a rain machine, demonstrated a certain frivolity. There was a certain pleasure to be derived from the thought of the thousands of work hours and dollars expended on these fey and whimsical contraptions. For here the artists wriggled free from their highfalutin methodology by demeaning it. Little enough can be said for the intrinsic qualities of their work; but some credit must be given to its malice. The way the museum installed it, highlighted in hallowed, darkened sanctuaries, approached the ecstatic.

But such ironies were small retaliation for a larger defeat. The show unfolds a bankruptcy of character which time, if nothing else, had inflicted on '60s art. The show was conceived in 1967 and belongs to its decade even though it was terminated only last summer, 1971. As a monstrously inflated event, it resembled that other white elephant, Henry Geldzahler's "New York Painting and Sculpture: 1940-1970" at the Metropolitan, with the difference that having far less merit, it went further in unconscious celebration of the demise of the avant-garde tradition. In 1967, the American economy could be superficially represented by the term, "all systems go," for the big corporations were enjoying a surge of barely challenged optimism and confidence. In 1971, unemployment, recession and inflation had so decimated the economic prospects of masses, including those in the California aerospace industry, that even the most rabid conservatives realized that capitalism was suffering a possibly mortal disease. It was then that the art world mounted an enterprise, actually outdated even before it began, designed to congratulate us on our technical prowess and rosy future. Nor was its general foolishness allayed by having been suffused by the quack theories of Fuller, McLuhan, and Cage, the gurus of '60s far-out.

An even more important deficit arises from the political implications of the project. Tuchman writes: "I had expected resistance from artists . . . on 'moral' grounds — opposition, that is, to collaborating in any way with the temples of Capitalism, or, more particularly, with militarily involved industry." Aside from the significant omission of what he himself felt about instigating that collaboration, the fact remains that only one of the artists he approached, Peter Voulkos, objected to it. Now, as he had to admit, most would. Some of the companies involved by the museum are as follows (quotes are from the Report itself): The Garrett Corporation ("has been designing high-performance jet engines for military aircraft); General Electric ("has its own think tank, called TEMPO, which runs seminars on nuclear weapons"); Hewlett-Packard Company ("radar, guided-missile control"); Jet Propulsion Laboratory; Litton Industries ("builds submarines, amphibious assault ships, and advanced guidance and fire control systems"); Lockheed Norris Industries ("a major ordnance manufacturer since World War II"); North American Rockwell, and The Rand Corporation. In short, it is a rogue's gallery of the violence industries. Subsidized decisively by the American government, they had grown to their present bulk through the business of slaying. The show epitomizes the fact that our most prominent visual artists had been offered an extremely direct contract to be of service to the prestige of these industries (in return for access to various hard and software), and had accepted. During the term of the project, there occurred the My Lai massacre, the Chicago Democratic Convention riots, the assasinations of Martin Luther King and Robert Kennedy, the invasion of Cambodia, and the student killings at Kent and Jackson State. While these convulsions were taking place, inflaming the radicalism of our youth and polarizing the country, the American artists did not hesitate to freeload at the trough of that techno-fascism that had inspired them.

It is true that several innocuous and honorable companies had been enlisted into the program. And artists are hardly exceptionable, no more than the rest of us, in being entangled in a thousand everyday complicities with the destructiveness of the American war machine. But there exists a huge difference, that does not require a fine measure, between these involuntary dependencies that will endure short of total boycott or revolution, and active, knowing connivance, freely entered into without pressure or need. By refusing the overture of the Los An-

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geles County Museum, the artist would surely not have engaged in any move of political impact. But he would have added his voice to the growing constituency of dissent. He would serve notice that he could no longer be considered a dupe or a lackey.

It is amazing to recall that the museum's policy was to hide nothing from the artists, and that as late as the decision to boost the whole affair by opening it prematurely at Osaka's Expo 70, when everything was practically guaranteed to go on the blink, the participants did not withdraw, even though their work would be seen at maximum disadvantage. And if it was too much to expect them to heed their own interests as artists, they were surely insensitive to the crassness with which they were exploited as enthusiasts of American economic imperialism in an international setting. The world was there to see that American government and industry were perhaps somewhat benign after all, since American artists, members of the intelligentsia, were displaying their knickknacks under official auspices.

The aftermath of this muddle is still in progress. The curator who hopefully hatched it, and catalyzed it with such dazzling energy, has obviously reached the apex of his career, and is being carried upward with very pleasant notices in the press. As for the museum, which for four years ignored the majority of the young, struggling, and talented artists in its own region in favor of pursuing benefices from industry, I only hope it can avoid the poetic fate of going into receivership. The artists, finally, seem woozy, disenchanted with their star system, balking at every little thing. A new generation of them has a bad taste in its mouth.

Ultimately, the Report seems to me like a microcosmic analogue of these recent disclosures about American foreign policy in the Vietnam war—the Pentagon Papers. Both documents offer a candid history of bad faith and mutual deceit, of deepening mistakes and misunderstandings, and, above all, a collision of cultures. They reveal how an organization tried to weld together an alliance between incompatible peoples with radically different interests for the purpose of colonizing a new territory. The theme that runs through the two publications is an impulse to expand the market of American technology, to engage its ever more cancerous resources, despite whatever effect this may have on the quality of human life or the ideals of political liberty. These annals of corporate overkill offer all the excitement of truly indecent reading matter. In them is shown how men lose sight of a rational link between available means and ends, and how they substituted for it a grandiose, self-serving vision which moved towards a failure of credibility, gratuitous waste, the abuse of power, and the collapse of the original effort itself, under the weight of its own misconception. ■