

Tech art: scientific, terrific



Gyorgy Kepes, founder and director of the M. I. T. center.

By Jane Allen
and Derek Guthrie

THE Massachusetts Institute of Technology Multiple Interaction Team (M.I.T.M.I.T.) is coming to the Museum of Science and Industry this Wednesday and will stay until Jan. 15, 1973. No, it is not a mission of scientific experts and engineers just back from the polar wastes. It won't even help us reach Mars.

It is an art exhibition mounted by the Center for Advanced Visual Studies under the direction of Gyorgy Kepes, a Hungarian who has devoted most of his life to effecting a reconciliation between art and science. He is particularly pleased that the show's first stop and first sponsor is a science museum.

Funded by a matching grant of \$45,000 to the Museum of Science and Industry from the National Endowment for the Arts, the exhibition will travel to San Francisco, Cincinnati, Philadelphia, and other cities. It includes 15 works by past and present artists of the M.I.T. Center and reflects a range of interests from the more obvious types of technological art to recent experiments with pick and shovel grass-growing environments. Included in the show will be "Pan," an expandable musical sculpture by Michio Ihara and Paul Earls; a new prismatic colored-light ballet by

Otto Piene of Olympic rainbow fame; "Audio-Laser" by Ted Kraynik, a display in which sounds picked up by a microphone are translated into brilliant laser beam patterns, and a slice of original Chicago landscape by Alan Sonfist.

Tech art has been a pervasive phenomena of the '60s, a popular movement which not only encompasses such serious practitioners as the artists of the Center for Visual Studies, but also your local discotheque with its flipping slides, blinking strobe lights, and blasts of electric guitar music. Its holy trinity is light, sound, and movement. To some, the city at night is tech art's highest achievement.

Actually the "technology" of "art and technology" is something of a misnomer, since the name suggests that sculpture made from new materials—plastics, alloys, polyurethane foam—would qualify for the title of tech art. Not so. According to the new mythology, a standing plastic sculpture is as old hat as an antique bronze. To be in harmony with everyday living, tech artists insist that art must utilize the dynamic aspects of technology—blinking lights, moving machinery, switches, sound systems, everything that uses energy.

A series of exhibitions in the last five years has proven the popularity of the new concept with museumgoers. They have flocked to such shows as the E.A.T. (Experiments in Art and Technology) exhibition at the Brooklyn Museum in N.Y.C.; "Options" at the Museum of Contemporary Art in Chicago; "Cybernetic Serendipity" at the

Institute for Contemporary Art in London; "Software" at the Jewish Museum in New York; "Explorations" (also by the M.I.T. Center) at the Smithsonian, and a giant art and technology exhibition in 1971 mounted by the Los Angeles County Museum of Art and underwritten by industry.

In fact one of the more light-hearted surprises of America's trauma laden '60s has been the willingness of giant corporations to spend millions of dollars worth of resources, advanced equipment, and expert man-hours in the pursuit of programmed "art and technology" play.

Item: Under the aegis of artist, Robert Rauschenberg, Teledyne, a California Company which makes such items as super alloys for jet engines and avionics systems for military aircraft, spent upwards of two years developing "Mudmuse," an enclosed 9-by-12-foot mud puddle which bubbles and heaves in tune to the recorded sounds of an owl, the wind, and other natural and unnatural sounds. An electronic feedback system also causes the mud to respond actively to noises from spectators.

Item: For Expo '70 in Japan, the Pepsicola Company shelled out a cool million dollars to E.A.T. (another association which brings together artists and engineers) for the construction of what can best be described as a fun house of the future. Intermittantly shrouded in artificial fog, the Buckminster Fuller-like dome contained an enormous hemispherical mirror with an elaborate light and sound system; a floor divided into differently textured sections accom-

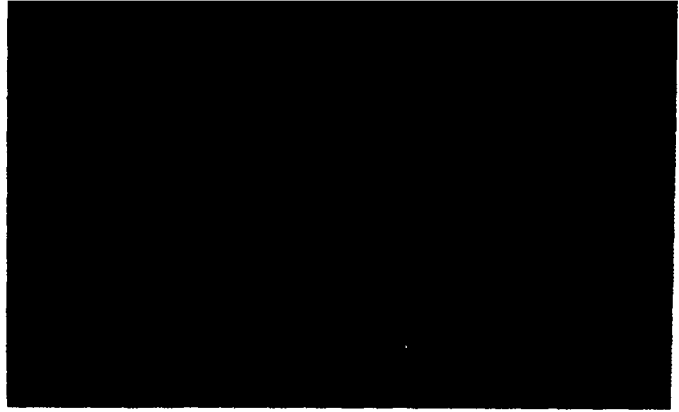
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While photographs of the exact works to be shown in the Museum of Science and Industry exhibit were not available at the time of writing, these are representative of the artists of the M.I.T. Center.

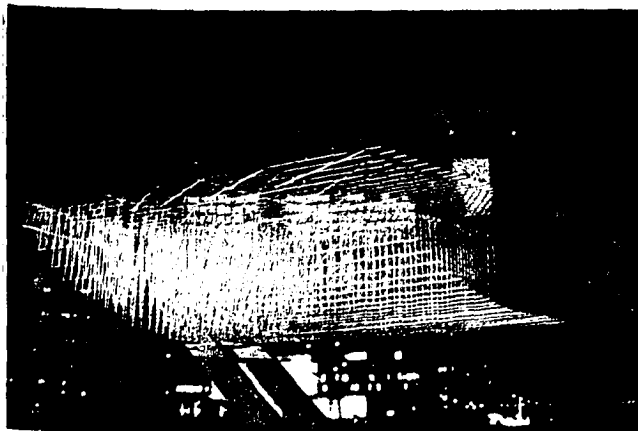
Top: Friedrich St. Florian has used a laser beam to construct "imaginary architecture." When a visitor walks into a darkened room, an electric eye triggers the beam which, bounding off reflectors, draws an imaginary space. Middle: Otto Piene's Olympic rainbow, which holds 48,000 cubic feet of helium when inflated, was commissioned by the Olympic Organization committee to be used on closing day of the XX Olympiad. Bottom right: The "inflatables" shown against the Boston skyline are helium-filled polyurethane. Bottom left: Model of Michio Ihara's "Wind Tree," superimposed on a photograph of Chicago's skyline. The work, 32 by 32 feet by 18 feet high, is of mirror finished stainless steel tubing and is open on the ends to create wind music.

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Get ready for some
new exhibits of technological art,
the movement that
has created a futuristic funhouse
and a mud puddle
that heaves in tune to the
hoots of an owl.



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Even the time-honored vocabulary of artists is changed.

panied by appropriate sounds (i.e. plastic grass swaying to birdsong); and 6-foot sheeplike floats also wired for sound, which almost imperceptibly moved in one direction until they touched something, which caused a demure withdrawal. Visitors were invited to do their own thing.

Appropriately enough to its first location, interaction with visitors is a major theme of the M.I.T. Center exhibition. While new to artists, belief in the value of audience participation is the *sine qua non* of the Museum of Science and Industry, whose vast halls teem with boys and girls feverishly pulling levers, pushing buttons, and experimenting with their voices in the acoustics department. The artists at M.I.T. have decided that what is good for scientific education is good for art as well. Visitor-sensitive light and sound systems built into the works should make small and large Museum of Science and Industry aficionados feel right at home.

The original prospectus of the exhibition went even further in suggesting that the show draw on "regional resources and creative talents." While this idea was unfortunately rejected by the participating museums, it reflects the philosophy of the Center's director, Gyorgy Kepes who has made the three Cs — communication, collaboration, cooperation—the passwords of his institution.

Opened in 1968 with the intent of providing for "collaborative work relationships between artists on the one hand and scientists and engineers on the other," the Center for Advanced Visual Studies looks as if it houses serious practical research activity. Situated near the center of M.I.T.'s elegant tree lined campus in Cambridge, it is an austere one-story corner building with a flat roof punctuated by skylights.

Inside are a series of large white workshops, one behind the other with a main lobby in the middle. The plant was designed to provide studio space for six Fellows (mature recognized artists), a number of younger associates with the status of postdoctoral students, and a few graduates in architecture, painting, sculpture, film-making, and music.

The fellows are hand picked by

the director in consultation with a committee, and the screening process usually involves a lengthy correspondence with the applicant, touching all aspects of life, beliefs, and current concerns. Sometimes the process is drawn out over years. The most recent arrival is a Norwegian, who in despair at the interminable and inconclusive exchange of letters, suddenly appeared in Mr. Kepes' office with an immense steel trunk and without funds. They let him stay.

Inside the workshops it is considerably easier to see technology than advanced visual studies. Absent is the usual art studio confusion of paints, brushes, rags, shavings, piles of clay, half formed images on easels and pedestals. But pliers, wire, plexiglass and steel rods, electrical connections and diagrammatic plans on the wall are much in evidence. Only the corridors give a clue that this is an art and not a science center, for the walls are covered with photographs and posters of exhibitions.

Conversations with the Fellows reinforce the impression of a changed context. Consigned to history along with the oil paints and easels is the time-honored vocabulary of artists. Such current phrases as "self expression," "formal problems," or "relevant imagery" are not heard. The artists tend to explain their projects in terms of "synergic sequences," "interfacing," "communication systems," all phrases reminiscent of M.I.T. professor Norbert Weiner's book "Cybernetics: Or Control and Communication in the Animal and the Machine."

Based on an analogy between animal and machine, the cybernetic idea appeals to artists because it provides a dynamic

rather than a static model for works of art. Like the working machine, the systems of the living organism are in constant flux. The lungs inhale, the heart beats, the nerves transmit sensations to the brain.

Recent technology has produced machines still more life-like in that they interact with the environment. The most complex relationship between systems is based on "feedback," in which changes in a system's component produce changes in communication between that system and others, which in turn produce still further changes. The science of ecology provides prime examples. Thru a complex chain of events the use of DDT raises the water table. Tech artists often try to introduce "feedback" elements in their work, seeing in the complex reciprocal relationships, not only a higher aesthetics, but an instrument of social progress as well.

Prod a Fellow at the Center and you'll quickly discover a utopian. Whether the subject be a moving sculpture with built-in stereo effects; a glass tube with bubbles ascending at intervals, or photographs of large blocks of ice arranged in patterns, all seem to drift back, at least in conversation, to notions of civic awareness and public participation.

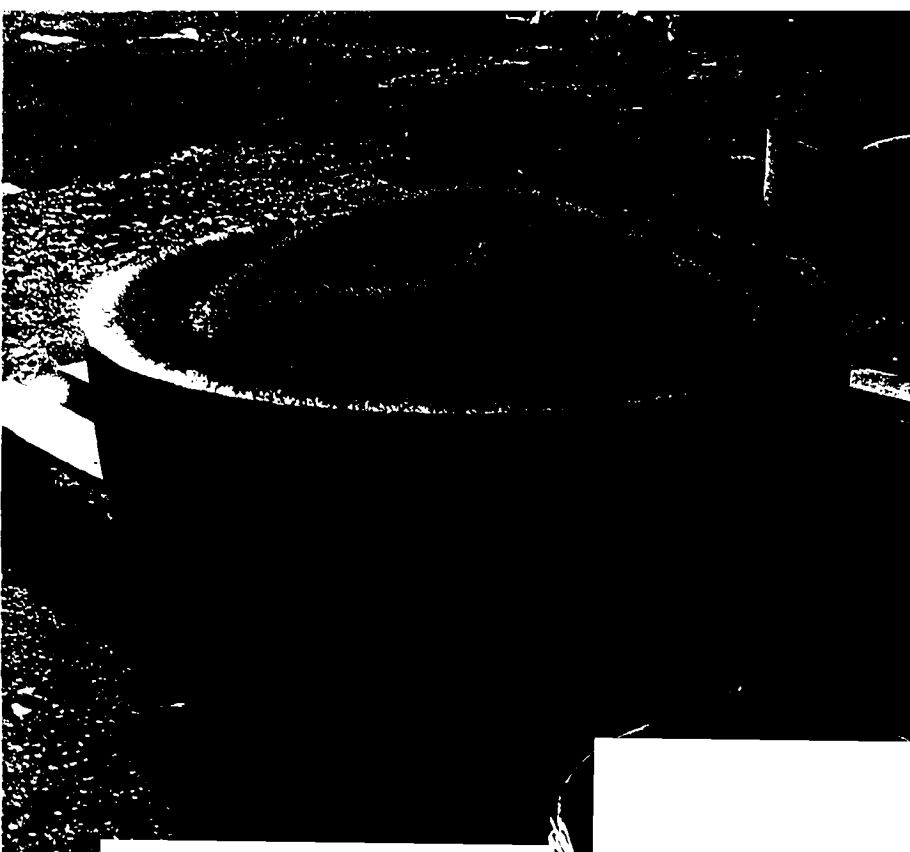
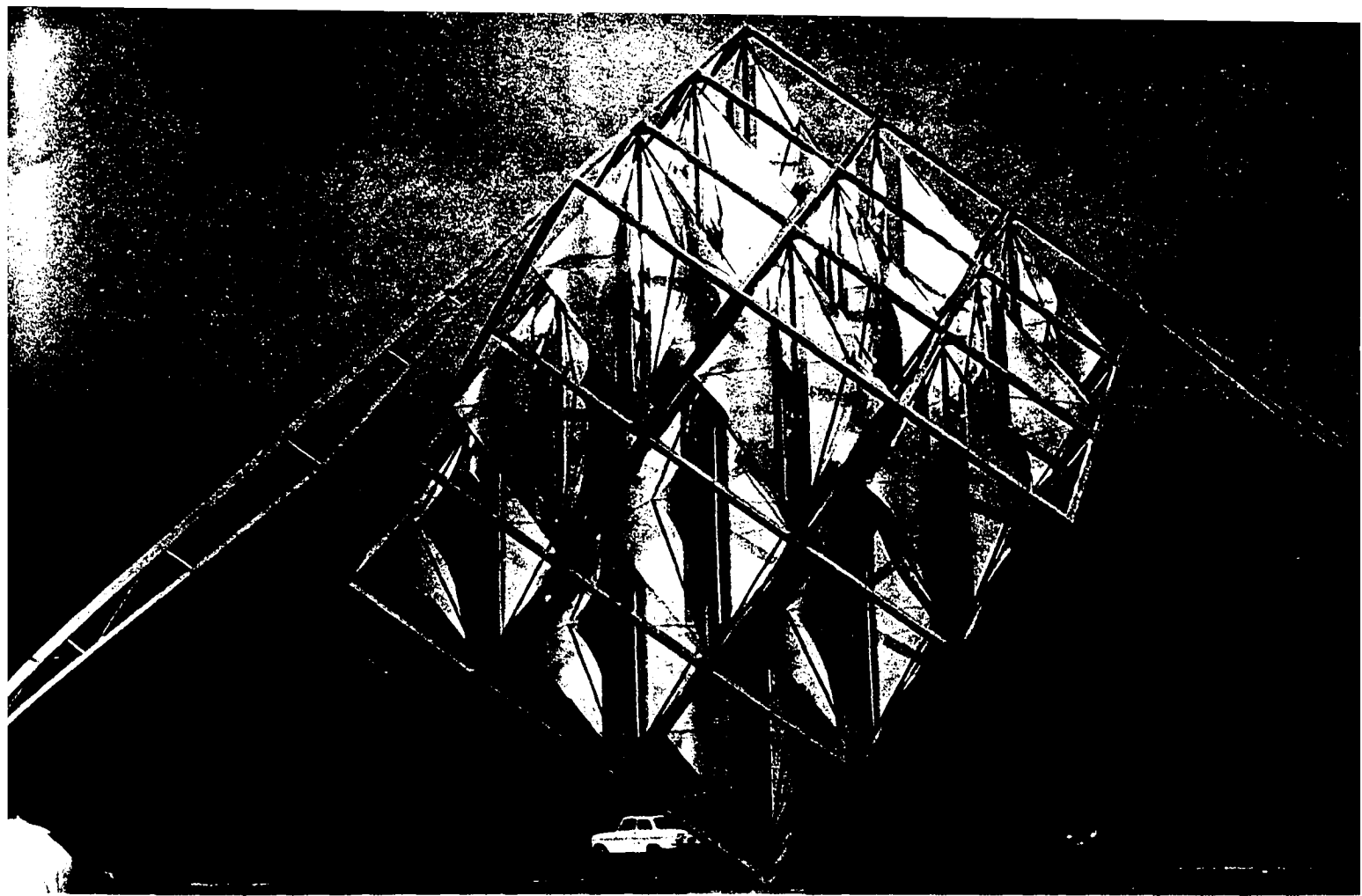
Some of the projects are truly ambitious. Friedrich St. Florian proposes the erection of huge luminescent forms (holograms) hovering permanently above Boston Harbor. Ted Kraynik suggests a city-wide happening in which myriad Bostonians would switch their house lights on and off as directed by air-borne radio, while watching the resulting spectacle on

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Top: Alejandro Otero's "Integral Vibrante," is a steel frame structure with four stainless steel sails which vibrate when the wind blows. Middle right: "Flame Orchard," by Gyorgy Kepes. Flames flicker when electronic music is played thru a speaker on each of six gas-filled boxes, causing a membrane to vibrate and the gas to expand and contract.

Bottom right: Mauricio Bueno's "Water Veil" is a plexiglass panel within which water is pumped to the top, where it falls in a continuing stream thru perforated holes in the hollow square shaped frame. Bottom left: This concrete, earth, and grass construction is a study for a children's park. Its creator, Stan Resnikoff, would like to plant different grasses on the sides and top of the volcano-like form so that children could become more sensitive to its configurations.

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Mauricio Bueno (left) and Michio Ihara in one of the studio workshops of the Massachusetts Institute of Technology Multiple Interaction Team.

TV. Fully in keeping with the Center philosophy was the giant rainbow erected at the closing ceremony of the Olympic Games in Munich by former Center Fellow, Otto Piene.

To the outsider the logic linking such projects and "civic awareness" is a little tortuous. It seems to emanate from a feeling that modern man lacks communication with his fellows and is alienated from the urban environment. Rather like parades and fireworks, technological art on a large scale can help to reintegrate urban life.

Many of these ideas on the use of art in the city of the future spring from the founder and director of the M.I.T. Center, Kepes. They are the accumulation of a lifelong career of studying the relationships between art and science. He came to America in 1937 at the invitation of fellow Hungarian, Moholy Nagy,

who founded in Chicago a new world center for the Bauhaus idea that the most important task for architects, artists, and designers was to use the new techniques of production to create beautiful buildings and objects in keeping with the machine age.

Mr. Kepes headed the light and color department of the Institute of Design. After Moholy Nagy's death in 1946, he became professor of visual design in M.I.T.'s school of architecture. Since then the Hungarian artist and author has consistently proselytized the art and science idea thru exhibitions, seminars, and books. His "Vision and Value" book series, virtually an encyclopedia of the relationships between science, art, and design has profoundly influenced a generation of younger artists.

For a man who has spent more than 30 years trying to get closer to

science, however, Kepes' thought remains remarkably fluid and metaphorical in character. The greatest influences on his mental development were not scientists at all but an unlikely pair of creative spirits: The Hungarian composer, Bela Bartok, and the English social critic of the Romantic age, William Morris.

He says, "Bartok had the ability to fuse in his music, historical memories of the Hungarian people, the nervous troubled spirit of the 20th century, and a strong commitment to human society in the broadest sense. He was not enclosed in the world of music. For example when a friend published a book on the life of the Hungarian peasant, and was arrested, Bartok wrote an open letter demanding that he, too, be arrested."

Like Morris, Kepes believes that industrialization has fragmented modern civilization and robbed society of the organic relationships that prevailed in earlier times. "Morris had a clear understanding of arts in the environment. I was taught by him to recognize that man and the environment are one. Personal involvement in life is really the seed of vision."

For Kepes art has the social function of restoring the balance between the individual on the one hand and the overwhelming dynamism of the machine on the other. But art can only achieve this end if it masters technology. "In 'The New Landscape in Art and Science,'" he almost suggests that modern society is cancerous but art coupled with technology will provide the cure.

This is an optimistic attitude obviously shared by the Museum of Science and Industry, if viewed from the other side of the fence. For Center artists, science comes to the aid of art; for the Museum, art comes to the aid of science. Each needs the other in order to communicate to a mass audience.

One of the most stimulating aspects of the exhibition, in effect, will be the opportunity it affords for comparing the latest in technological art with regular museum

exhibits which utilize many of the same techniques. One suspects that Center Fellows, not familiar with the Museum, will find much to admire. The steel mural which changes according to lighting and the random distribution panel of the mathematics exhibition are only two examples of educational exhibits which greatly resemble tech art.

We wonder if there is a great difference, and if so where the difference lies? Museum of Science and Industry displays are designed to make clear scientific concepts and complicated industrial processes. They use design, color, lights, motion, and audience participation techniques to get their message across. Tech artists are handicapped not only by the more limited funds at their disposal (each M.I.T. artist was given \$2,500 to fund his work—a lot in traditional art terms, yet by comparison with museum exhibits it's peanuts) but also by more diffuse goals.

If the artists were simply trying to create beautiful objects or even beautiful systems, their task would be easier. But as Kepes himself has said, the social philosophy which accompanies technological art is as yet not supported by the objects it produces. There is no more reason to suppose that pressing buttons and speaking into the microphones of the M. I. T. Center exhibition will be a more integrating experience than doing it in the museum at large.

The unique quality about works of art is their capacity to involve the whole man simply thru the power of concept and design, no matter what the medium. We wonder whether Center emphasis on audience participation and social engineering isn't unnecessarily defensive and patronizing.

Both critics and fans of art and technology will have an opportunity to speak out at two symposiums arranged by the Chicago New Art Association at the museum on opening day, Wednesday at 2:30 and 5 p.m. Participating will be Gyorgy Kepes, Fellows of the Center, Chicago critic and teacher Harold Hayden, and others. ■