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Cyrille-Paul Bertrand

In the different World's Fairs over the years, people have always been in contact, at first hand, with new machines and processes. During the nineteenth century, World's Fairs celebrated the civilization of the machine and the new applications of steel, glass, rubber, elastic band, and aluminum. In 1876, telephone, typewriter and the sewing machine were presented to a puzzled public. Two years after, in Paris, Edison's gramophone emitted music as the automobile and the electric bulb fascinated the audience. The Eiffel Tower was built in 1889 for the Paris World's Fair, celebrating the French Revolution.

During the twentieth century, technological information had spread all around the world. It emphasized the individual's relationship to the environment and changed the attitude towards the object, its engineering, its operations and functions. One century later, the Brussels World's Fair (1955) took stock of the past to show that a better future was possible, thanks to technologies (e.g.: color TV, atomic energy). In Montreal (1967), the theme, inspired by the French writer Antoine de Saint-Exupery, was "Land of Men": the world became a brotherhood of men, connected by common values (e.g.: peace and harmony with nature). Nowadays, any object involves aesthetics, human motivation, and even pleasure, interest, excitement.

What underlines the World's Fairs is the radiant faith in progress, the inexhaustible crucible of inventions, which links revolutions in the methods of manufacturing with an aim of reducing work, to multiply the wealth *ad infinitum*, to improve the standards of living and to generate peace between the countries. In this context, the artist is seen as a positive force: he is able to translate technology into new environments, in order to serve needs and to provide enrichment to our everyday lives. He is perhaps the only one who can transcend cultural aspects and recall what the ideology of technical progress really is: incorporating humanistic values into the realm of industrial societies.

Osaka World's Fair – Expo'70 – opened in March 15th 1970. 183 days later, Expo'70 was closed (September 13th). Its symbol was a cherishing flower. Expo'70 was set in the hills of Senri (Kin-ky district). The development of this area was a key element for the development of transport facilities (highways, trains ...). The surface of Expo'70 was 350 acres. 77 countries participated. More than 64 million people went to Expo'70. Expo'70 master plan was designed by Japanese architect Kenzo Tange. Expo'70 stood in the same line of faith in presenting human achievements in various spheres of industrial, economic, scientific, technological and artistic activities.

It was an attempt to mark the history of human civilization by a series of strong symbols, to position projects on new topics which would connect East and West by respecting the practices and the achievements of the last World's Fairs. Expo'70 expressed the desire to seek what was most basically human by aiming at the promotion of reciprocal exchanges in a mutual spirit of comprehension and tolerance.

Because of its theme – “Progress and Harmony for Mankind”¹ – and its sub-themes², the Osaka World's Fair represented an interaction between artists, engineers, architects, designers, professional marketing men, construction engineers and builders. Expo'70 was the first of its kind to be held in Asia, and it was bound to have a significant impact on the spirit of its time and the rest of the world.³ 32 pavilions were built to be the agent of international firms: Fuji, Hitachi, I.B.M ... and Pepsi-Cola. The program of events and of each pavilion were designed to make up such a forum for comprehension and mutual friendship. More obvious than on any other previous World's Fair, the participants in Osaka demonstrated a withdrawal from the exhibit-focused presentation of national economic achievement in favour of an attempt to determine the commercial appeal of “images” and of “corporate identities.” These were supposed to distinguish themselves beyond product accumulation, through artistic and popular-entertaining productions. More than in any previous exhibition, references to Expo'70 exhibitors were created only by information via entirely abstract presentation forms that established more or less obvious association links. Movie projections, sound installations and mainly game-like access to computer-based information demonstrated the changed exhibition standards.⁴

Pepsi Pavilion was set in a specific area called Expoland, south-west of the Expo'70 master plan. Expoland was more or less an amusement park, designed to experience the “Joy of Participating”.

Billy Klüver wrote:

The initial concern of the artists who designed the Pavilion was that the quality of the experience of the visitor should involve choice, responsibility, freedom and participation. The Pavilion would not tell a story or guide the visitor through a didactic, authoritarian experience. The visitor would be encouraged as an individual to explore the environment and compose with his own experience.⁵

Pepsi Pavilion is based on a definition of “environment” as a compound of mutually generative, penetrative and reflective areas. The visitor would be encouraged as an individual to explore the

1 Translated from Japanese: “Jinrui no shinpo to chowa”.

2 “Four Pillars”, “New Ways to Improve Nature”, “For a Better Organization of Life” and “New Mutual Comprehension Between People”.

3 After Tokyo Olympic Games in 1960, Expo'70 was a new appearance of Japan on the international stage, proving this country had come a long way since Hiroshima and Nagasaki.

4 Rudolf Walter Leonhardt, “R. W. Leonhardt Eastern Diary (III)”, *Time*, April 10th, 1970.

5 In *Techné*, n°2, 1970, p. 1.

environment and to compose his own experience.⁶ Art, through technology, became a living experience, based on a series of environments and processes.

Art and technology, Billy Klüver and Experiments in Art and Technology (EAT)

To some extent, we are aware now of the fact that, in the twentieth century, art, like society, courted technology with conflicting emotions, with the mixture of passion and love, loathing and fear. All those feelings have formed a continuing body of literature and artistic belief, a complex conceptual web. By the terms of Donald Schön's definition, artists have always been involved with technology, with the use of new tools, methods, and knowledge, to extend their work or "human capabilities" as Schön said, beyond the limits allowed by traditional means.⁷ Technology's influence upon the way the artists paint, sculpt, dance, compose and so on is indirect as well as direct, unseen as well as seen, unconscious as well as conscious.⁸ Thus, step by step, a difference of degree occurs: man is creating new tools and methods far more faster than before, and at a rate unmatched in the past.

In several ways, the relationship between art and technology is not new. There is, first, the use by artists of materials produced by recent technology (acrylic paint, acrylic plastic, Styrofoam, photocells). Second, there is the use of method derived from technology (vacuum forming, optical coating machine, and digital computer). Third, there is the use of method derived from new knowledge, drawn from science and all its related discipline (studies of anatomy, reading of physics, optical science). Fourth, there is the use of new imagery suggested by both science and technology (the use of TV images in collage, the IBM 440 in painting). Technology is the environment, the encompassing landscape inside which "art" takes place. But opposed to former epochs, a new general relation occurred: new means have steadily altered not only our sensibilities but also the purpose of the art itself. New tools and knowledge no longer hide from the artist: they surround him.

What happened in the mid-1960's, at least in the United-States, had as much to do with processes as with ideas, brought about by the growth of a new computerized, transistorized and televised landscape. In the process of trying to make art based on this landscape, younger artists discovered more and more about the new ways open to them, from the mundane to the esoteric. During the late 1960's, American art devoted itself to technology far more explicitly and self-

6 Joseph Beuys, one of the key figures of the European avant-garde, stated: "Man is only truly alive when he realizes he is a creative, artistic being." In: Willoughby Sharp, "An Interview with Joseph Beuys", *Artforum*, December, 1969, pp. 45–46.

7 Donald Schön, *Technology and Change: The New Heraclitus*, Oxford, Pergamon, 1967.

8 The ancient Greeks used one word – *techné* – to stand, roughly, for both "art" and "technics".

consciously than before.⁹ In 1966, an effective relation between art and technology occurred: Swedish engineer J. Wilhelm “Billy” Klüver created EAT, the “Experiment in Art and Technology”. A couple of years later, EAT undertook the design and constructions of Pepsi Pavilion at Expo’70 in Osaka.

Born in Monaco in 1927, Ph.D. in electronics (Berkeley University, 1957), Billy Klüver was a technical adviser for the Bell Telephone Company, based in Murray Field (New Jersey). In 1964, he became director of the Bell Laboratories and initiated meetings inside the Bell Laboratories for artists interested in new technologies. Billy Klüver helped several artists during the 60’s. On March 17th 1960, he designed Jean Tinguely’s *Homage to New York*, mostly composed of parts and materials picked up in New Jersey dumps, connected for timing and triggering devices to release smoke, to start a fire, to make some music and noises ... Bell Laboratories designed two neon sign-letters emitting color of pure gas discharge: a mercury discharged letter ‘A’ (blue) for *Zone* (1962) and a neon ‘R’ (red) for *Field Paintings* (1963–1964) by Jasper Johns. With the dancer Yvonne Rainer, Bell Laboratories made a small transmitter attached to the dancer’s belt, and a contact microphone on her throat to pick up the sounds of her breathing for the dance *At the House of my Body* (1964). In John Cage’s *Variation V* (1964), Bell Laboratories set up a system of directional photo-cells so that dancers who were moving in front of them switched sounds on and off. At the 47th Street Factory, Andy Warhol and Billy Klüver worked together to create *Silver Pillows*, displayed at Leo Castelli’s gallery in New York (1966). Just to show the wide array of adapting art to technology, and to create a new kind of art, in the final.

By 1966, the idea that technology represented an essentially alien, anti-human, and anti-art force had been cast in doubt. In retrospect, the time appeared to have been ripe for the project launched by Robert Rauschenberg and Billy Klüver. They collaborated on the following major works: *Oracle* (1963), *Solstice* (1968), *Soundings* (1968) and *Mud-Muse* (1971).¹⁰ Based on this collaboration, Robert Rauschenberg and Billy Klüver were convinced that a dialogue between artists and engineers was now possible on a truly larger scale. *Nine Evenings: Theater and Engineering* opened October 13th 1966 at the 69th Regiment’s Armory in New York. Robert Rauschenberg called it an *intermedial* show.¹¹ The artists who took part in this show mostly came

9 In 1966, Dr. Robert Jastrow, director of the Goddard Institute of Space Studies, made a speech to the alumni of Columbia University. Entitled “Science, Politics and Art”, it attempted to persuade the layman that the difference between the artist and the scientist are less clear-cut than he thinks. Both artist and scientist operate on the basis of hunch, intuition and imagination, Jastrow insisted. The “truth” of any scientific proposition is finally as subjective and tentative as the “quality” of any work of art.

10 Billy Klüver, Julie Martin, “Four Difficult Pieces”, *Art in America*, vol. 79, n° 7, July 1997, pp. 80–99.

11 ▪ Lucy R. Lippart, “Total Theater”, *Art International*, vol. 11, January 20th 1967, pp. 39–44 ; Simone Whitman, Billy Klüver, “Theater and Engineering. Notes by Participants. Notes by Engineers”, *Art Forum*, n° 56, February 1967, pp. 26–33.

▪ In 1913, the Armory Show was organized in the same building. At that time, Marcel Duchamp presented his first ready-made called *Urinoir*.

from the Black Mountain College and the Judson Dance Theater.¹² More than thirty engineers, physicians, electricians and chemists coming from the Bell Laboratories were attached to this project.

The objective of *Nine Evening* was to give the artists the possibility to experiment with new technologies, often sophisticated, in a series of creations, presented live to an audience. Billy Klüver often said this was made to share cooperation between art and technology, to show how artists use technology as any material.¹³ In a conversation, later published in *Art in America*, he went further: "The relationship between art and technology should be experimental and intuitive, in the same sense that scientific research is ... and therefore full of risks. We know for sure we can always make something work."¹⁴ Steve Paxton's *Physical Things* was a walk-through air structure where people could see events and heard various sounds. Emerging from it, people took receivers to hear sounds and texts broadcasted from overhead loops. The climax of Oyvind Fahlström's rich and complex theater piece *Kisses Sweeter Than Wine* was unwrapping U.S. president Johnson's head, while "snowflakes" – liquid Ajax soapsuds filled with helium – drift upwards. In Deborah Hay's elegant *Solo*, remote-controlled carts moved silently over the floor, alone, or carrying performers. The movement of the carts was controlled by the "orchestra" at the back of the stage, over radio frequencies. In *Open Score*, on a regular tennis court, Robert Rauschenberg used rackets with miniature transmitters in the handles and contact microphones on the strings. The "bong" of the ball hitting a rackets was amplified and at the same time switched off one of the 48 lights. When the court was dark, using infrared camera television, the public was only seen projected on large screens.

Those different performances had no special meaning. They simply brought together different key images, much like Robert Rauschenberg's early painting of John Cage's music. At its best, *Nine Evenings* endowed the performances with an independence that either forces the viewer to unite the whole in his mind, or left the work to stay as it is, rich and complicated, like life itself. The performances also demonstrated why artist's work often seemed formally uneasy when yoked to motors, circuits and light. They came off as gestures rather than as legitimate art. The *Nine Evenings* was a relative success. Due to the lack of time and rehearsal, each performance had to be played twice, so art critics and the audience were puzzled.¹⁵ But as an unusual theater

12 • John Cage (musician), Lucindia Childs (dancer and choreographer), Oyvind Fahlström (painter and writer), Alex and Deborah Hay (dancer and choreographers), Steve Paxton (dancer and choreographer), Robert Rauschenberg (painter), Frank Stella (painter), David Tudor (musician) Robert Whitman (artist).

• Mary Emma Harris, *Theater at Black Mountain College*, Cambridge, Massachusetts, The MIT Press, 2002, p. 314; Martin Duerberman, *Black Mountain College. An Exploration in Continuity*, New York, W. W. Norton, 1983, p. 578, ill.

13 Simone Whitman, Billy Klüver, "Theater and Engineering. Notes by Participants. Notes by Engineers", *Art Forum*, n° 56, February 1967, pp. 26–33.

14 Douglas Davis, "Art & Technology : The New Combine", *Art in America*, January-February 1968, p. 41.

15 Clive Barnes, "Dance or Something at the Armory", *The New York Times*, October 12th, 1966, p. 25 ; Clive Barnes, "Happening : An Ineffable Night at the Armory", *The New York Times*, October 17th, 1966, p. 26.

revealing strange associations between men and machines, *Nine Evenings* was not made in vain for artists who were aware of technology. Furthermore, it could catch the complexity of technology. Engineers put in evidence new properties of optical fiber. And the lighting system was acclaimed. *Nine Evenings* revealed the principles of an effective collaboration between artists and engineers in a common program.¹⁶ Billy Klüver pointed out that each object of collaboration between artist and engineer was a work that neither of them could have created alone. At the same time, he had exerted influence on the shape of contemporary art, particularly as it was practiced in New York. All of his theoretical statements pushed limits of several kinds, in esthetics, as well as in social and philosophical ways. *Intermedial* presentations, virtual space productions and game-like interactive information transfers marked the major parts of *Nine Evenings*. Pepsi Pavilion was a specifically designed space for the same ideas. Hosts and participants thus appeared up to date in presenting information in high tech and, at the same time, in fulfilling the entertainment needs of the recipients. Such a tendency had its tradition within the history of the World's Fairs, but here, it was deliberately pushed to its limits.

Experiments in Art and Technology (EAT) was founded during *Nine Evenings* by Robert Rauschenberg, Robert Whitman, Fred Waldhauer and Billy Klüver. *Nine Evenings* produced an instantaneously growing widespread interest in technology among artists. They called a meeting November 30th 1966 at the Central Plaza Hotel. Over 300 people attended, of whom 80 returned forms requesting technical aid and offering to help. A newsletter was published starting on January 15th 1967, and presented the "raison d'être" on its front page:

The members of EAT will consist of interested artists and engineers. The engineers will become members of EAT independent of their industrial affiliation. As an act of their interest, the member engineers will:

1. Provide information on materials;
2. Translate the artist's problem into a language which can be presented to industry;
3. Make it possible for artists to tour industries;
4. Through discussions and meetings with artists, answer questions about engineering, generate ideas and establish personal contacts;
5. Solve directly technical problems which are considered too simple for presentation to industry;
6. Provide an "underground" within each industry so that when the artist is in direct contact with industry someone is available who can speak his language.¹⁷

As interest in EAT spread rapidly across the country and abroad, EAT encouraged the formation of "Local Groups" to better serve the needs of local artists. Between 1967 and 1968, engineers were recruited by articles in the technical press, visits to industrial laboratories, or by presentations at meetings of engineering societies. As a result, by 1969, EAT had over 2.000 engineers who would work with artists.

16 Lucy R. Lippart, "Total Theater", *Art International*, vol. 11, January 20th 1967, pp. 39–44.

17 *EAT News*, vol. I, n° 1, January 15th, 1967, p. 2.

EAT had enemies, too. Critic Alex Gross, writing in the *East Village Other*, charged in 1970 that EAT selected artists on the basis of rank favoritism. According to his article, its funds were channeled primarily into staff salaries, through soliciting funds from the foundation and the industrial world.

In 1967, Pontus Hulten, curator of the Museum of Modern Art in New York, asked Billy Klüver to supervise the last part of *The Machine as seen at the End of Mechanical Age* exhibit in this museum.¹⁸ EAT sponsored a contest, with a jury of scientists and engineers, and the prize went to the engineers.¹⁹ All 137 submitted works were shown November 1968 at the Brooklyn Museum in an exhibition of great variety and popular appeal: *Some More Beginnings*.²⁰ The winners were Jean Dupuy, and engineers Ralph Martel and Harris Hyman. They designed *Heart Beats Dust*.

The Pepsi Pavilion at Osaka World's Fair, 1970.

Pepsi Pavilion was dome-shaped, 120 feet in diameter, and built of white polyvinyl chloride panels being placed over a steel structure. At different moments of the day, a fog enshrouded the Pavilion, generated by 2,520 jet-spray nozzles capable of spraying 40 tons of water per hour. Tiny water droplets, partially evaporated, increased the humidity of the air surrounding the pavilion and generated the fog. In order not to fog the whole Expo'70, anemometers, humidity gauges and thermometers were monitored in the control room. So it was possible to reduce or to increase the amount of fog. At night, the Pavilion was framed in a square of an intense blue-white light. This light came from eight high-intensity xenon lamps atop four towers placed in a square configuration around the Pavilion. These specially designed lights produced narrow beams as bright and parallel as those of large carbon-arc searchlights.

The Suntrack was designed to follow the sun every day. The Suntrack got its name from the notion that a man (as a servo), or a machine using photo-detectors and set up to track or follow, could achieve the desired result. The Suntrack was merely a reference to Leon Foucault's pendulum. Mirrors, set at the top, constantly reflected the sunbeam and generated a circular beam that fixed a point of the pavilion. Mirrors operated on the concept of a polar heliostat. They worked only if the axis between mirrors pointed toward Polaris, the North Star. This star is the only part of the sky that appears stationary during a day. The sun's angle from the North Star is

18 *The Machine as Seen at the End of Mechanical Age*, The Museum of Modern Art, New York, 1968, p. 216 (catalogue).

19 John R. Connor, "Competition for Engineers and Artists", *The New York Times*, November 12th, 1967, p. 31d.

20 *Some More Beginnings, An Exposition of Submitted Works Involving Technical Materials and Processes*, New York, The Brooklyn Museum of Art, Experiments in Art and Technology, 1968, p. 122 (catalogue).

always the same, so that a mirror that rotates about the North Star at the rate of the sun (once a day) can reflect a sunbeam in a fixed direction.

Seven Floats, designed by Robert Breer, were displayed on the plaza, in front of the Pavilion. They moved slowly (less than 2 feet per minute) and emitted soft sounds. Each float is a white dome-shaped sculpture, 6 feet high and 6 feet in diameter. The outer shell was made from a single piece of fiberglass. Each Float, weighting 800-pounds (batteries are heavy), rolled on 3 rubber-tired wheels. Because two of them were mounted to caster slightly, each Float did not travel in a straight line but followed very large rosettes. However, when a Float touches something, it reverses direction. A Float never retraces its path. During a day, only a quarter of the energy capability of the batteries was used up. The Floats were recharged at night, from a special recharging bay. A battery-operated tape-loop transistor player inside the Floats, provided a series of different sounds: talking, sawing, music... They created a living floating landscape, generated by random activities or by visitors, which anticipated the world inside the Pavilion.

The entrance to the interior of the pavilion was a slanting tunnel. When entering, a handset was given to the visitor. The handset is a clear plastic cylinder which encloses a small speaker in the top, a circuit board, a battery, an antenna coil, a light bulb and a recharging jack. The antenna picks up electromagnetic signals produced by a loop embedded in the floor, by magnetic induction. An amplifying circuit drives sounds to the speaker. Electricity is provided by a 6-volt rechargeable battery containing 500 milliamps hours. The handset could be used for about 15 minutes before 15 minutes of recharging was required. The handsets were charged each night when the pavilion was closed. The handsets were designed to respond with the same strength and yet not pick up signals from one floor area while positioned above the adjacent floor area. The sounds came from a series of 20 loops, each loop was wired to a tape recorder and power amplifier in the controlled room.

Next, the visitor entered the basement of the pavilion: the so-called Clam Room. The walls of the Clam Room were painted in black. The visitor, now a cave-oriented explorer, was gently guided by the handset to a laser light shower of different colors (red, yellow, green and blue). The krypton laser light was deflected by two-dimensional figures by fast-moving galvanometer driven by audio signals. A staircase leads the visitor into the interior of the Dome Room.

The Dome Room contained a large hemispherical mirror dome, 90 feet in diameter. This spherical mirror was the largest ever made. The mirror was an air structure made of Melinex, a plastic film, 1/2000 inch thick. The mirrored inside surface was produced by vacuum-depositing aluminum on the film. A blower maintained the vacuum. The outside surface was coated with fire retardant adhesive. In order to make a spherical shape, the aluminized Melinex was cut and taped in 72 gores. Because of possible creasing and scratching damage, the Melinex film was

sandwiched between thicker polyethylene during handling. Illusions merged with reality: upside down images were generated above the visitors' heads – showing a fully three-dimensional presence of them. The visitor was able to identify himself by climbing the elevated platform, isolating himself from the rest of the general image. A spotlight system, located in the top of the dome, revealed the reflective properties of the mirror, creating blossoms of pure light. The position, color, size and intensity of the lights could be controlled manually, with the help of programmed paper bunch tapes.



Figure 1
Mirror and optical illusions inside Pepsi Pavilion. ©Fujiko Nakaya.

The Dome had acoustic qualities, too: echoes and reverberations created sound images and envelopes. 37 speakers were located in a rhombic grid behind the flexible mirror. Combinations of three types were possible. First, the line sound: a sound was switched at a rapid rate from speaker to speaker in any desired pattern. Second, the point sound: a sound was heard from one speaker in the dome (the point sound could be shifted to any other speaker in the dome). Third,

the immersion or environmental sound: the visitor seemed to be in a forest or in a street (sounds came from all directions).

The floor of the Dome Room strongly contrasted from the sound and light. The floor was divided into twelve areas covered with materials differently textured, each of them creating a different texture impression. At the center of the floor, the visitor could find a 20 feet octagonal glass which provided a window to the Clam Room and by that, a new view point to the laser display. The floor gently sloped down from this glass floor. Handsets allowed the visitor to hear, very clearly, the sound loops emitted from each section, coordinated to the floor material: above the grassy segment, the visitor heard lawn mowers, birds etc.; above the asphalt floor, city sounds could be heard. Other sections were bouncy, rubber, wood, lead, stone... An entire area produced the same sound, but each material presented different sounds, providing individual localized environments. Cool air rushed around EAT console, providing a breezy sensation.

The aftermath ... Finally, the Pepsi-Cola Company dismissed EAT as the administrator-programmer of its pavilion, at the end of a series of disagreements with Billy Klüver and his colleagues. Billy Klüver maintained that the Pepsi Company pull-out was motivated by differences in the conception of aesthetics. The company complained, however, that this was mainly due to mounting costs. As a reaction to them, Pepsi cancelled the quasi-theatrical performances in favor of more traditional theatrical activities.

Only a few pavilions were left after Expo'70 closed its gates. The area is now a big green-zone, housing the Expo recreational park, sport facilities, and parts of the former Expoland (without Pepsi Pavilion). Expoland was kept open as a stand-alone attraction until a fatal roller-coaster accident killed one and injured nineteen guests in May 2007. Investigations showed that the rides at Expoland were suffering from neglected maintenance. The park is currently closed for major renovations and is said to be re-opened in the future ...

Outside and inside a living work of art.

Billy Klüver's attitude towards the pavilion is summarized here: "The Pavilion is a work of art with its own unity and integrity, an unexplored theater and concert space, a recording studio for multi-channel compositions and a field laboratory for scientific experiments."²¹

For Arata Isozaki and Kenzo Tange, the Japanese architects and planners of Expo'70, one of the major characteristics of the World's Fair was the prominence of hardware and of visual image-

²¹ In *Techné*, n°2, 1970, p. 1.

ry. The main goal of Expo'70 was to establish a new kind of World's Fair where seeing, hearing and feeling were the cornerstones of each pavilion. Those orientations can be linked to the Japanese culture and its fundamental notion of *sunayata-ka* ("living emptiness"), that life is beyond time and space.

At first glance, Pepsi Pavilion seemed to be an empty space. Nevertheless, living presence and different processes, outside and inside of it, became the images, even symbols, of an organism that is constantly in a state of change and flux. The entire Pepsi Pavilion plaza – an open space that allows wind, rain, and sunlight to fall in – consisted of intermediate spaces combining/connecting the outside (natural environment) with the inside (artificial environment). The large scaled-installations, involving artificial fog, light and sound, were designed to turn the Pavilion into an interface between two different types of environments. Moreover, each moment relied on the unrepeatable configurations of changing patterns and images. The cloud surrounding Pepsi Pavilion seemed to move like any cloud. Its density and shape depended on the amount of humidity, and on the direction of the wind. But at the same time, this cloud was able to turn a single building into an invisible monument. However, the essence of Pepsi Pavilion was not to destroy the traditional arts, but to stimulate activities through vital implications.

Throughout Pepsi Pavilion, the audience actively participated rather than remaining passive, so that it was not alienated or artificially distanced from the object of contemplation. The audience would not just *see* but *experience*, by being there. Pepsi Pavilion emphasized the human, the organic and the natural. Its flux and fluids reflected the contemporaneous and collective consciousness. The gap is not between art and science, or between art and technology, but between values of aesthetics and human experience. For the first time in the history of modern culture, a pavilion provided a coherent system of values, generated from immediate experience. The mirror dome was a reflection about the potentials and limitations of social interaction and of controlled technology.

Several aesthetic and technical concepts already shown at *Nine Evenings* were displayed again in Pepsi Pavilion. But this time, they were far more sophisticated, more integrated into a unified concept than it was the case in *Nine Evenings*. The artists were given a greater awareness of the limits and possibilities of technology in *Nine Evenings*, but they also had the need to organize, to prepare and to check out their ambitious projects. *Nine Evenings* defined the nature and basis for collaboration between artists and engineers, but also illustrated the enormous complexity of integrating diverse kinds of specialized thinking. With Pepsi Pavilion, on the contrary, competition was replaced by collaboration, specialization by interaction, exploration by mutual aid. Its aesthetic impact was secondary.

The convergence between the feelings the artists wished to convey and what technology is capable of delivering is a complex dialectical procedure. French sociologist Jacques Ellul argued persuasively that technology can only dehumanize. John Cage, Marshall McLuhan and Buckminster Fuller believed that it is the artist's responsibility to deal with technology. Marshall McLuhan wrote: "Only the artist who deals with perception can perceive how technology alters perception and experience". But Pepsi Pavilion shows that technology is finally capable of realizing what so many artists have dreamed of for such a long time. The Constructivists dreamed of a communal art that could be enjoyed by the masses. The Futurists and Dadaists planned an ephemeral art of the present that alienates the system of art galleries and museums. The ideal of the Synchronists was a disembodied art of pure light and color. The desire of the Bauhaus was an integrated space-time experience. And the Surrealists sought for a synaesthetic art unfettered by the demands of an authoritarian logic. The Mirror Dome was largely an awe-inspiring experience. Its basis was social and aesthetic but not commercial. The work of artists and scientists is not primarily financially orientated and moreover, sometimes involves personal risks and sacrifice.

Pepsi Pavilion represented the biggest attempt of its time to generate, with the help of information technology, open environments which embraced multiple interlinked, mutually "environmental spheres". In this day and age, the concept of "environment" manifested through spatial transformations was surely going to write its own quiet yet forceful story. By interpreting such forward-thinking approaches of art and science with an eye on contemporary information society and its perspectives of environmental creation, Pepsi Pavilion aimed to disclose a contemporary form of reality and its new environmental components.

Pepsi Pavilion was not an exclusively visual work. It was a fresh, vivid and pleasurable experience. It juxtaposed integrated sensory response, creating a unique experience that was quite different from viewing art in the traditional museum or gallery context. In the twenties, the American critic Willard Huntington Wright predicted that painting would be replaced by an art of pure, disembodied light and of color floating in space.²² Modern art theory deals with space and time.²³ From World War II, new artistic atmospheres appeared as the new generation spread. This generation was inspired by this brand new world, the "world of tomorrow", entirely oriented towards new technologies of information and of mass media. Step by step, new ways of life, new interrogations and new dialogues between art and technology stood right before the eyes of the art world.²⁴ Step by step, "new realism" spreaded out. Now, images are real instead of being represented through symbol and metaphor. Pepsi Pavilion can be considered as one of the

22 Willard Huntington Wright, *Modern Painting: its Tendency and Meaning*, New York, John Lane, 1915.

23 Siegfried Giedon, *Space, Time and Architecture*, Harvard, Cambridge University Press, 1967.

24 Irving Sandler, Barbara Rose, "Sensibilities of the Sixties", *Art in America*, January 1967, pp. 44–57 ; Barbara Rose, "Shall We Have a Renaissance ?", *Art in America*, March-April 1967, pp. 30–39.

most developed and sophisticated form on "new realism". This achievement was only possible because specialists in science and art have been willing to cooperate, in realizing the different effects displayed in the Pavilion.

As the images of Pepsi Pavilion are metaphors for the themes stated at the beginning of this article, those themes themselves are to be understood as metaphors. Why metaphors? On the one hand, because of the elusiveness this term stands for. On the second hand, "metaphor" is the literary label that can be applied to any term or activity happened inside Pepsi Pavilion that represented figuratively something else. For the last time in a World's Fair pavilion, people face the probing, discovering purpose of man: we are doomed to the excitement of going on. With each day the decisions before us admit less physical necessity. We are conditioned now by freedom, not slavery. The end of man is apparently the future of art.