The Artists-In-Residence Program at the Exploratorium

The Exploratorium has from the beginning used the observations made by artists as a means for developing a clearer understanding of nature among our visitors. This use of artwork has led us to involving artists in all aspects of museum programming -- from the creation of art-works that are interspersed with other didactic exhibits on the museum floor, to public programs that address the common bonds between art and science, and the inclusion of artists in School-in-the Exploratorium programs for elementary and secondary students.

With human perception as its central theme, the Exploratorium has used the perceptions of both scientists and artists to establish notions of how one sees and understands the world around us. Perception is not only the basis for science. It is the basis for sculpture, painting, poetry and literature. By using perception as the key to a better understanding of nature, the works of artists who communicate the possibilities of human experience have become an integral part of the Exploratorium's exhibitry.

Artists' works illustrate the reoccurrence of natural processes in a multiplicity of contexts, and they thus convey a sense of the unity between nature and culture which encompasses both art and science. Since 1974, we have invited 4-6 artists a year to produce works which are installed permanently on the museum floor. These works inspire the discovery of the subtle connections that can be made between the nature of art and science. Families, children, seniors, the physically impaired, and countless other groups have the opportunity to develop an appreciation for art in a playful, and therefore, unusual and less intimidating context.

BRIEF SUMMARY OF ARTIST-IN-RESIDENCE PROJECTS AT THE EXPLORATORIUM

TACTILE TREE BY RICHARD REGISTER (1974)

The Tactile Tree is a study in tactile sensations presented as components of a large ferro-cement tree with truncated branches. These sensations include texture, hot and cold, cool and moist, mists, moving air, and radiant heat.

QUIET LIGHTNING AND A.M. LIGHTNING P.L.B.B. BY BILL PARKER (1974)

Quiet Lightning uses high voltage to produce a violent (but quiet) lightning storm in a glass sphere. Its colors are those of fire -- mostly reds and oranges -- with violets for contrast. By stroking the sphere, one feels a slight tingling sensation and a subtle feeling of warmth. The discharge is modified by the hands and produces an almost X-ray like pattern that mirrors the shape of the hand.

A.M. Lightning, P.L. B.B. is a sculptured fiberglass and wood base in the shape of a radio wave which supports blue lightning in a glass tube. The lightning bolt is composed of slowly moving beads of blue light which bridge the crests of the sculpted radio wave. The nearby presence of people and their touch causes distinct changes and interruptions of the flow of lightning.

CASTLE BY RUTH ASAWA (1974)

Ruth Asawa conducted several week-and day-long sessions in the Exploratorium during which she and groups of young people made complex geometric structures with empty milk cartons. In addition, she made two beautiful panels of folded paper with black and white patterns.

JUPITER FLY-BY AND VIKING LANDING BY GEORGE BOLLING (1974)

Video artist George Bolling presented a real-time broadcast for the five days that the Pioneer II satellite approached and orbited the planet Jupiter. As events unfolded, the artist, who was located at NASA's command center, fed information to the Exploratorium via a special microwave link, where it was presented on large-screen video monitors. Special exhibits and talks at the Exploratorium supplemented the broadcast. The event captured the interest and imagination of 25,000 people during the five-day period.

FOREFRONT READINGS: THE LANGUAGE OF POETRY AND SCIENCE BY MURIEL RUCKEYSER (1975)

The well-known poet Muriel Ruckeyser spent two month-long sessions at the Exploratorium. She contributed her language skills to our graphics, formulated plans for an exhibit section in the Exploratorium dealing with the perception of meaning in language, and organized a series of twelve readings in which both a poet and a scientist read. The readings included very penetrating discussions about the ways in which language could convey imagery, experience, and message. There was a great deal of thoughtful audience involvement in these discussions.

FORMS IN MOTION BY DIANNE STOCKLER (1976)

The artist created an animated film composed of moving geometric figures, lines and fluidly evolving shapes which are projected into a large, smoke-filled glass chamber. The two-dimensional images of the film are seen as moving three-dimensional figures, thus integrating cinema and sculpture.

DRUM BY STEPHAN VON HUENE AND JAMES TENNEY (1976)

Beautifully crafted in Plexiglas, this five-foot - diameter drum has 32 pneumatically actuated hammers mounted around its rim. A microcomputer controls the hammer and receives its instructions from a large rotating disc that contains musical compositions which are read by a light sensor. Composer James Tenney wrote three percussion pieces for the project.

AEOLIAN HARP BY DOUGLAS HOLLIS (1977)

Named after Aeolis, the Greek goddess of wind, this wind-activated acoustic sculpture is mounted on the roof of the Exploratorium. The sounds produced by the wind blowing across the choir of strings are transmitted mechano-acoustically to speakers located just above the north entrance to the building.

PROFESSOR PULFRICH'S UNIVERSE BY GERALD MARKS (1977)

This piece is a whimsical shadow environment which houses several motorized mobiles and a large metronome which cast sharp shadows on the back wall of its enclosure. Visitors view the shadows both directly and with a dimming glass over one eye. They can observe rotating shadows which seem quite arbitrarily to reverse their motion.

PAINTING IN PROGRESS BY GUSTAVO RIVERA, GRADY MCDONALD (1978)

In December of 1977 we engaged three painters, Gustavo Rivera and Grady McDonald to use the Exploratorium as a studio as a means of showing the way in which the work of a painter evolves over an extended period of time. The process of an evolving canvas is

similar to the way in which much of science has unfolded as eventually a synthesis takes place and the entire nature and meaning of previous efforts is changed or broadened.

The conclusion of this project was celebrated with a large showing of paintings by both Mr. Rivera and Mr. McDonald in our special exhibition area in October and November of 1978.

LIGHTWEIGHT PHANTOMS BY JIM POMEROY (1978)

Using a home-built stereoscope based on the 1832 invention by physicist Charles Wheatstone, coupled with a series of double-image slide projections, the artist's images are cast upon a screen by a carousel projector. Viewed with Polaroid glasses (Pomeroy's own modification to Wheatstone's original system), one is presented with the illusion of solid three-dimensional images. These Lightweight Phantoms consist of a series of light images generated by swinging a light bulb in front of a camera with an open shutter. These spiraling, three-dimensional forms appear to be floating in space.

CLASSROOM WINDOW: "DREAM CHART OF FOUR GONE CONCLUSIONS" BY RICHARD POSNER (1978)

This work consists of four leaded glass panels installed in the northeast section of the classroom building. The windows are a surreal juxtaposition of dream imagery, cultural history, and scientific phenomena, which refer to and complement exhibits on the museum floor.

While looking at the windows, the viewer simultaneously sees into the classroom (through large sections of clear glass) as well as his or her own reflection (through the use of mirrors and light-transmitting lenses). The glass canvas functions both as a portrait and a window through which the viewer can travel.

PERFORMANCES BY KIRK ROBERTS (1978-79)

Kirk Roberts used theatrical techniques in presenting his unique ideas and observations about perception and natural phenomena. The Search for Shadowman, a shadow play and other performances were shown to students in our School-In-The-Exploratorium (SITE) program. The students were allowed, after each performance, to experiment with the props and to stage their own versions of the show.

Kirk also acted as a consultant for the School-In-The-Exploratorium program in developing new ways to present perception concepts to children which eventually resulted in the formal inclusion of artists working in this program.

VORTEX BY DOUG HOLLIS (1979)

Doug Hollis built a self-renewing vortex formed by pumping water from the bottom of a six-foot-high, twenty-four-inch-diameter Plexiglas cylinder and then returning it to the top at a high rate of speed. The resulting swirl forms a beautiful whirlpool which can reach all the way to the bottom of the cylinder or disappear completely at the whim of the viewer.

THE MUSICAL JET BY PATRICK READY (1979)

This project was based on a book by C.V. Boys, who wrote about late 19th-century experiments concerning transmitting sound via jet streams of water. An installation was created consisting of a large pool of water, speaker horns and jets of water allowing visitors to transmit their voices through the unlikely medium of a water jet.

PIN SCREEN BY WARD FLEMING (1980)

Pin Screen is a tactile sculpture which translates the sensations of pushing pins up from underneath the sculpture into a strong visual image. The piece consists of special straight pins hung through a four foot-square of finely perforated metal screen. The pins, depending on the direction they are tilted from underneath the screen, reflect either red, blue or green light from lamps mounted overhead. As viewers move their hands or even sweep them across the dangling pins, the path changes colors as the pins reflect the light from the three lamps.

DISCERNIBILITY BY ED TANNENBAUM (1980)

Discernibility is an interactive video sculpture that allows a person to manipulate images of themselves. By altering the gray levels, or by stretching their own video portraits, one can do experiments to find out how much information is needed to discern an image.

SOUND COLUMN BY DANIEL W. SCHMIDT (1980)

Sound Column is a musical instrument whose resonating chamber is a 60-foot-high room in a column of the rotunda of the Palace of Fine Arts.

Within the Sound Column are mounted six polished aluminum bars and a tool to strike them with. A ramp inside the column lets visitors experience the changes in the resonating sounds at various heights. When struck, the aluminum bars vibrate, interacting with the air column to create a series of deep resonating sounds of specific pitch. The series of standing sound waves activated by the vibrating bars are acoustically arranged so that the participant may experience a variety of pitch and hearing changes depending on the height at which he or she stands. At different levels, different sounds occur, including pitch change, sound intensity, and the vanishing of sound.

THE SEA AS SCULPTRESS BY RUTH WALLEN (1980)

The four performances of "The Sea as Sculptress" marked the completion of a year-long study of life in San Francisco Bay. Ms. Wallen placed wooden sculptures consisting of blocks of wood surrounded by a frame in three sites in the bay. Using macrophotography, these blocks were examined photographically at monthly intervals in order to provide a detailed history of the intricate changes in the life forms of small areas on each piece of wood.

The performances included multi-image slide projections of the evolving animal and plant life, narrative, and the recorded sounds of Wave Organ, a wave-activated acoustic sculpture.

VIDEO PILOT PROJECT BY MYA SHONE AND RICK SMITH (1980)

A series of short videos were made relating the themes and exhibits of the Exploratorium to people's everyday life experiences. The basic properties of wave motion were examined -- ducks moving through a pond, boats in the ocean, waves created by rocks in a stream, etc. Three pilot segments were produced with the intention of developing a full thirteen-week series of educational science videos entitled "Frames of Reference." The artists were principally involved in the set-up of the facility and initial experimentation with the concept and format of the first tape.

LIGHT WEIGHT PHANTOMS BY JIM POMEROY (1981)

The original work, installed in 1978, was displaced during the construction of the Exploratorium's mezzanine, providing the opportunity for the artist to reconfigure the optics and projection system, and to add a series of new images.

PERCEPTUAL PARADIGM BY TOM PETRILLO (1981)

These 18 color photographs toy with our assumptions and expectations of the world through our perceptual mechanisms. One quickly accepts the facts presented in the photographs and then becomes astonished to find a paradoxical situation of vision or color. The museum's exhibits hold the answers to the startling phenomena at work -- they were the basis for the photographs and are the link between the perceptual phenomena and the poetics of the artist's work.

MUSIC ROOM BY PAUL DEMARINIS (1981)

The Music Room is a unique multi-player computer music system which enables visitors with no previous musical training to participate in a lively ensemble experience and to create a coherent composition together. Each member of the ensemble is responsible for a distinct musical part and plays that part by performing on one of the five touch-sensitive guitars. One instrument controls rhythm, meter, and tempo, playing percussion sounds. A second plays bass lines and coordinates harmonic movement, while two more direct harmony voicing, orchestration, and melodic figurations. The fifth instrument is capable of pure melodic invention.

RECOLLECTIONS BY ED TANNENBAUM (1981)

This work addresses the poetics of motion, time and color. A video camera picks up head-to-toe movements of a viewer/participant. A sequence of these images is stored in solid-state memory and displayed on color monitors or projected in controlled "modes" that are based on time and space. Through this work, the participant is able to explore animated effects -- how sequences of images create movement. By displaying sequences simultaneously, movement forms are created. The history of the movement is expressed through rainbow-colored multi images that evoke memories of Harold Edgerton's work.

KINETIC LIGHT SCULPTURE BY CHRISTIAN SCHIESS (1981)

Kinetic Light Sculpture consists of two thin, clear glass tubes, one pumped with mercury argon and the other with neon, producing both radiant blue and orange-red lights. The sealed gas tubes are independently connected to the shafts of two variable-speed electric motors. Visitors manipulate three controls that vary the rotational speed, intensity and frequency of the moving light sources, creating infinite and subtle visual effects. The sculpture gives control of the light to the user. The eye responds with afterimage colors, the perception of light broken into the spectrum, and the persistence of strong geometric patterns.

SEEN CLEARLY IN HAZY CONDITIONS BY DIANNE STOCKLER (1981)

Anyone watching a film in a movie theater has turned around and looked toward the projector to notice the multi-colored beams of light that shoot across space and eventually land on the screen. Dianne Stockler works with light beams such as these to shape, structure and choreograph her films. The film loop is seen projected through a large glass chamber filled with smoke. The smoke chamber acts as a three-dimensional screen for the geometric and

abstract imagery on the film and thereby produces the appearance of solid forms. The forms seem solid, as though they possess mass and weight, yet they behave in ways that are impossible for forms of real substance. This film was created as the final phase of a project begun in 1976.

UNSUNG VOICES BY JOHN DRISCOLL (1982)

A group of four related sound sculptures was created by New York sculptor and composer John Driscoll. They each employ ultrasonic signals to create instruments that play in response to subtle movements performed by museum visitors. The physical disturbances caused by the visitors' movements translate signals that are above our audible range into distinct and melodic tones that are within our hearing range. Bats and dolphins use ultrasonics for navigating and locating food.

MAGNETIC FIELD PATTERNS BY HEATHER MCGILL AND STAN AXELROD (1983)

The beauty of magnetic fields are captured by magnetic fluids that are excited by a series of electromagnets. The dark, oily fluid assumes "impossible" shapes in response to the manipulation of the magnets.

LUMEN ILLUSION SCULPTURE BY CHRISTIAN SCHIESS (1983)

This work is a companion piece to Kinetic Light, completed for the Exploratorium in 1981. Lumen-Illusion explores the illusion of circular motion created by a viewer-controlled array of neon and argon tubes. Apparent motion is created by the sequential lighting of the tubes, arranged symmetrically within a 54-inch diameter circle. The duration of each light flash; the intensity; the direction of the apparent motion (clockwise and counter clockwise); the interval of time between each flash; and the flashes (red neon on blue argon field and vice-versa) are viewer controlled.

VIDEO FEEDBACK BY SKIP SWEENEY (1983)

Video Feedback images are created by a video camera that is aimed at an angle into a video monitor. The system, created by Skip Sweeney, allows the viewer to control and manipulate the camera's relationship to the monitor as well as the f stop, zoom and focus of the camera's lens. Organic in appearance, continuously geometric in nature, the black and white images pulsate and evolve as the camera responds to the images that it sends to the monitor.

TRIPLE-AYE LIGHTSTICK BY BILL BELL (1983)

The Lightstick is an array of blinking light-emitting diodes whose pattern sequences are stored in a memory device. The patterns, taken all together, make up a "dot matrix" image of a completed work or a simple figure, but at any given instant only one vertical slice of the image is present. These slices follow each other in such rapid succession that your eye cannot perceive the blinking images when looking directly at the Lightstick. Nevertheless, when your eye, in one of its reflexive movements, scans across the Lightstick, you see the whole image flash across the room. It is a strong and surprising effect. It immediately draws you back to look again, but when you do, the Lightstick is just an innocent bar of light again.

FLAME SPEAKER BY NICK BERTONI AND MAGGI PAYNE (1984)

Flame Speaker is a sound sculpture whose ten-inch-high gas flame becomes the medium through which one can speak or play music. As one approaches the piece, remarkably high-fidelity music can be heard coming from the flame itself, as the ionized gas of the flame vibrates to the electrical impulses provided by an enclosed amplifier. By speaking into a microphone or playing on a small keyboard, one can control the sounds coming from the flame, and explore the frequencies and dynamic ranges of the flame speaker.

INTERACTIVE ROBOT BY CLAYTON BAILEY (1984)

This robot is a hand-shaking copper humanoid constructed of found objects and hand-fabricated metalwork. It rewards donations with a display of static electricity, flashing lights, and thunderclaps, with the intensity of the display proportional to the amount of money donated.

PENTAPHONE BY JONATHAN GLASIER (1984)

Pentaphone is a five-sided marimba-like instrument which is comprised of five sets of bars tuned to different registers of the same pentatonic scale. The bars are made of paduk wood, aluminum, magnesium, flame-treated bamboo and glass. All but the bamboo have tuned resonators to balance the instrument's dynamic range. The characteristic timbres of each type of bar, and the constant pentatonic scale to which they are tuned, allow even untrained players to conduct engaging musical conversations without fear of playing "wrong notes."

FICKLE ORACLE BY LEWIS ALQUIST (1986)

Fickle Oracle has a variable focal length parabolic mirror created by spinning a circular basin of mercury on a turntable. People are able to vary the mirror's focal length by making the device spin faster or slower, watching their own image or images of people walking past go through a remarkable range of distortions. Its sculptured housing is made from vent cowlings found at a shipyard.

WAVE ORGAN BY PETER RICHARDS AND GEORGE GONZALES (1986)

Wave Organ, a wave-activated sound sculpture, is located on a nearby jetty and utilizes wave action from the bay to create a symphony of sound that emanates from a series of pipes that reach down into the water. A wonderful collection of granite building material that existed on the site was utilized to create a series of sculptured terraces and seating areas. The listening pipes, made of PVC and concrete plaster, extend from the seating areas to the water. The intensity and complexity of the wave music is directly related to the tides and weather.

FRIENDSHIP ACROBATIC TROUPE BY CARL CHENG (1987)

Friendship Acrobatic Troupe consists of a large acrylic water tank with air jets mounted in a geometric array at the bottom. Programmed bursts of air create an array of different-shaped bubbles that slowly travel in formation to the surface of the tank. Some of the bubbles are spherical in shape, others look like mushroom caps and still others are shaped like doughnuts or miniature UFOs.

LIGHT STROKES BY RICHARD GREENE (1987)

Light Strokes is a new kind of computer graphic input device which allows people to paint or draw into a computer display system using ordinary brushes or even their fingers and hands. The resulting images have the visual texture of watercolors or finger paintings.

SILAGE BEACH BY MOWRY BADEN (1987)

Based upon experiments by Richard Gregory, Silage Beach induces the illusion of self-motion. One or more persons enter a revolving cylinder whose walls are made of vertical stripes. After staring at the stripes moving past for a moment, the stripes seem to slow down and stop, while at the same time, the viewers feel like they have begun to revolve in the opposite direction.

LARIAT CHAIN BY NORMAN TUCK (1987)

Lariat Chain consists of a motor-driven bicycle wheel rim mounted approximately ten feet above the floor on a tripod with a continuous loop of light chain that fits over the rim. As the wheel turns, the chain runs with it. Left undisturbed, the chain loop revolves in a smooth and flowing manner. By tapping or touching the chain, beautiful standing waves and serpentine convolutions can be created along its circuitous flow.

LIGHTSHIFT M-2 BY PETER TENEAU (1987)

Lightshift M-2 consists of a series of perforated metal screens with holes of different sizes and spacing. By superimposing these screens over each other in various ways, they filter and interfere with the light coming from behind, creating shimmering effects called moire patterns. Taking the form of our architectural frieze, the piece is mounted over the main entrance into the building from the lobby. As people pass by, the images created by the shapes of the screen and their overlapping relationships evolve, change and sometimes disappear.

PANDORA BY BILL MAXWELL (1988)

Pandora is both a fountain and a water sculpture and was temporarily located in the lagoon at the Palace of Fine Arts. By means of a time-sequenced display, the fountain literally "carved" romantic visual images in the water, then displayed these images on, and eventually below, the surface of the lagoon. As visitors watched, the water began to ripple, and from it emerged graphic watery visions of the weeping maidens, like those located at the top of the Palace of Fine Arts colonnades. As the fountain's ten-minute cycle continued, the moving water formed a series of terraced planes which stepped down from the surface of the water to form the interior of the box into which the maidens gazed. From the lowest terrace, a staircase of water appeared which seemed to continue down to the bottom of the lagoon. This residency was a joint effort with Capp Street Project in San Francisco.

THE GHOST OF AMELIA EARHART (1988)

A carefully lit swath of diaphanous yellow cloth undulates slowly in a large tank of clear water. Steady streams of bubbles rising from the bottom intercept and interact with the waving cloth, enhancing the meditative mood of the work. It is located in a quiet, dark area and has seating for people to sit and watch.

ALIEN VOICES BY PAUL DEMARINIS (1989)

Alien Voices initially looks and sounds familiar, but these two side-by-side oak and glass structures, like old-fashioned telephone booths, contain telephones with a difference. Each phone has a touch-control panel with sixteen different options for changing one's speech with the help of a computer control. Visitors holding a conversation with someone in the neighboring booth can suddenly vary their voice from a monotone to a throaty whisper or add a 50's Rock n' Roll "doo-wop" beat to what they say. By letting us exaggerate or eliminate the nuances that are present in each of our individual speech patterns, Alien Voices demonstrates how, despite the meaning of words, the "music" of our speech changes the intent of what we say.

CHAOTIC CHAINS BY ANNA VALENTINA MURCH (1989)

This work describes light, motion, rhythm, resonance, order and chaos in four dimensions. Chains of mirrored balls are suspended from the ceiling and attached at the bottom to motor shafts. The turning shafts cause the chains to sweep and undulate through space. Their beautiful and often chaotic motion is captured by a flashing strobe. Chaotic Chains is dependent upon feedback from its own ebb and flow to transform and evolve its movement from the regular into unpredictable patterns.

SUCH RUINS GIVE THE MIND A SENSE OF SADNESS BY ELLEN ZWEIG (1989)

Drawing from a quote of architect Bernard Maybeck for the title of her piece, and using turn-of-the-century technology, the artist created a series of camera obscuras that capture real-time images of Maybeck's Palace of Fine Arts and projects them into the Exploratorium's exhibit hall. This living cinema, with wide-angle views and soft lenses, provides a 19th-century view of the world.

A PENDULUM CLOCK BY NORMAN TUCK (1989)

At first glance, the giant see-through erector set-like structure seems to be a realization of one of Leonardo Da Vinci's mechanical inventions. Totally open and exposed, it is constructed of steel, ropes, bicycle chains and a bowling ball, and stands 24 feet tall. The clock has "wheel of fortune" teeth protruding from it, marking off the sixty minutes of the hour, as well as a large and a small hand. The clock is powered by the weight of a large metal basket filled with artifacts which in turn acts on a wheel, called the crown wheel, the key to the clock's turning. The crown wheel pushes on the rods to keep the pendulum swinging.