

6Octave Matrix



Olympia Sculpture Park
Seattle, Washington

Christine Whittaker

Regardless of the medium or format used immersion is the key to bringing the viewer into an experience. Immersion also has the innate ability to transcend all human experience. Immersion has been used in the arts and humanities for centuries.

In the 1990's the arts in America entered into a difficult climate due to social and political pressure termed "cultural wars". In twenty first century I predict immersion will play a key role in the survival of arts and art related programs in America.

6Octave Matrix - An Environmentally Interactive Sculpture.

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Introduction

Because I am a sculptor I approach life that way. My earliest influence regarding technology evolved out of my father's (an electrical engineer) involvement with NASA and the last Apollo Saturn V. He encouraged the ideas of problem solving, invention and looking at the universe to unveil the majestic (on both microcosmic and massive levels). He encouraged me to think about art in terms of creating a phenomenal experience for the viewer (that was his motivation for going to the arts). This is probably the greatest piece of advice my father has ever given me as since I have been creating the immersive experience that he talked about now for almost two decades.



Engineering is primarily about "invention" this is one of the strongest associations between the art and science. True artists are constantly trying to "invent" not to simply "reinterpret or redefine what is known" but rather have respect for history. I went on to seek these concepts out in my academic studies with two Massachusetts Institute of Technology's Center for Advanced Visual Studies fellows Dale Eldred and Joe Moss. Both were sculptors that dealt with the environment, nature, physics and viewer participation. Dale dealt with the environment in its relation to the sun Joe with the physics of sound.



I met Dale (in the mid 1980's) his work and involvement with MIT CAV's opened up a whole new world to me. CAV's was very active in city and environmental projects fusing art and science. Thus, art took on a whole new context in its ability to combine science, physics, electronics and perception (in dealing with a viewer participant). Coming to ITP for me was really about continuing this dialogue and trying to understand what might be possible through the usage of newer technologies. However, I see technology as a means of acquiring a vision rather than the end result.



Through my father I have been exposed to the highest levels of technology through his association with Nasa and later the pentagon (via military research and development). I have also been exposed to the darkest aspects of technology. America is dedicated to defense, annually securing massive sectors of the budget rather than investing into education and humanities. In order to continue to secure such massive budgets defense "partially" develops projects leaving us with massive amounts of technology. This technology is endearingly termed "consumer trickledown" by defense. It filters its way down into our society saturates our culture. Currently, the rate of impact and saturation level far out weigh "need" as education and humanitarian have dwindled.

Pictured my father Thomas Whittaker demonstrating a gun he designed has a one mile capability with almost perfect accuracy.

This trend is similar to what happened to culture during the "industrial age". In the most obvious way America will have to make a commitment to reevaluate its investment into defense. Some of the technologies that were investigated at ITP have been an active part of the military complex for more than twenty years. My thoughts about what I have stated at times over shadowed my enthusiasm for what ITP considered "new" or "important technology". There is a great danger in not fully realizing that the real issue in America now is not to make the abundance of this technology more "user friendly" or "glorify it" but rather to address this great waste and the amount of "useless technology" that is being created.

The gun is composed of canon optical components equipped with a laser guidance system.

Technology in itself is not interesting to me, but rather boring. I am only interested in the way technology can make something possible such as unveiling a phenomenal experience in "nature". In this way technology becomes "useful" or "assistive" to me as a sculptor. "6Octave Matrix" evolves out of this dialogue of nature as "it is" and conceptually firmly based in the arts and humanities. Technology is what makes a project like 6Octave Matrix possible. In building 6Octave Matrix, hopefully I will be able to create a space where the viewer can have a metaphysical experience similar to what the Pueblo an culture was able to achieve in building Casa Reconada, Chaco Canyon in 1100 A.D.



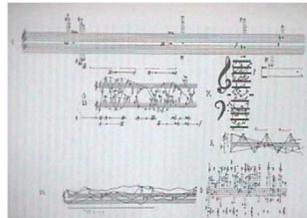
Ancient



Environmental Sculpture



Conceptual Art



Event Machines



Ancient / Environmental Sculpture



Casa Ricanada, Chaco Canyon built 1100 AD by the Puebloan Indians. Built as a ceremonial astrological space for the community.

6Octaves Matrix philosophically rooted in with associations in ancient culture as well as ideologies in the arts that have been active in the three decades. 6Octaves Matrix has association with environmental sculpture, conceptual art and event machines.

Chaco Canyon was a major center of ancestral Puebloan culture between AD 850 and 1250. It was a hub of ceremony, trade, and administration for the prehistoric four Corners area (new Mexico Arizona, Colorado and Utah).

Chaco is remarkable for its monumental public and ceremonial buildings, and its distinctive architecture. The Chacoan people combined pre-planned architectural designs, astronomical alignments, geometry, landscaping, and engineering to create an ancient urban center of spectacular public architecture. One of the most dominant examples of architecture that is both ceremonial and has astronomical alignments is Casa Ricanada.

Dale Eldred MIT Light fellow:

The sky above Dale Eldred by Robbie Lord (edited)



Sculptor Dale Eldred is hardly a household name in the United States. And yet, during his lifetime, his massive, light-responsive installations were featured in numerous publications, including Newsweek, Life, Omni, Metropolis, Places, Stern, and the Architectural Institute of America Journal. His large-scale, city-wide, solar-sculpture exhibitions were commissioned by institutions in the U.S. and Europe, including the Contemporary Arts Museum in Houston, the Nelson-Atkins Museum in Kansas City, the Laumeier Sculpture Park in St. Louis, the Phoenix Art Museum, the Minneapolis Institute of Arts, the Santa Barbara Museum of Art, the Helsinki (Finland) City Art Museum, and the Cankaya Cultural and Arts Foundation in Ankara, Turkey.

At the Sky Art Conference in Alaska in 1987, Dale Eldred heard his friend Otto Piene use the phrase "radio wilderness." Piene-artist, founding member of Group Zero, and, from 1974 to 1995, the director of the Center for Advanced Visual Studies at M.I.T., was talking about the back of the moon. He was discussing a recommendation that the moon's other side be maintained as a galactic nature preserve, free of man-generated wavelengths of light and sound. Piene pointed out that the moon's back side is, in fact, the last true wilderness in the earth-moon system.



This high-grade abstract came as another reminder to Dale that the sky is not empty. It is occupied by entities more startling even than clouds, drops of rain, and flakes of snow. The sky is filled with messages-massed and massless. The sky is a container and a conveyance, a kind of message plasma. Children's prayers and those of mothers at the end of their lives-all these float upward through AM and FM, citizens' band and ham, radar and sonar; through the range of visible light, X-ray, ultra-violet and ultra-red, alpha, beta, and gamma radiation. Human dreams billow through this grid like steam.

"If you want to make public art, and to put it in a place where people will look – a place they are accustomed to regarding as a source of inspiration and a harbor for large questions – the best place is the sky."

Though that is not why Dale chose it as his medium and canvas; he chose the sky because that's where he looked when he strove to think beyond the edge of his imagination. And as any naturalist knows, if you gaze in one direction long enough, whether your vision is in focus or not, some kind of wonder will reveal itself

The relationship of time, light, and space revealed itself to Dale in the sky over Egypt. A series of 35mm slides records the place and moment. The terrain is dusty and flat, uniformly tan and utterly arid, with a vivid blue sky and blinding sunlight. You know immediately that it is Egypt. A path slopes down a channel cut into the earth, leading to a dark opening that looks

Environmental Sculpture

like a mine shaft. Fifty feet from the opening, with its lower edge resting in the dust, is a square piece of mirror, 12" square, propped against a rock and angled 30 degrees from vertical. The dark opening is the entrance to a small tomb. Though this tomb doesn't appear on a formal tourist itinerary, it is visited often enough to make it worth one man's while to stay near its doorway and offer his services as guide. If you want to visit the tomb, the man checks the position of the sun in the sky and then adjusts the angle of the mirror propped against the rock. He carries another mirror with him into the tomb; once inside he catches the beam from the exterior mirror with the interior mirror and redirects the sunlight across whatever surface you wish to examine.



There are no carbon traces in many of the tombs in Egypt; it is believed that the tombs' interiors were illuminated for the workers by sunlight, reflected and directed into the space off polished copper plates that were frequently readjusted to follow the sun's arc across the sky. Illumination without the use of fire, utilizing a simple working knowledge of the relationship of earth to sun. This may seem a small revelation, but it served to summarize all Dale had seen in several years' travel across Central and South America, Asia, Africa, and southern Europe. It changed completely the course of his work. It lifted it off the ground.

In Delhi, India, Dale came upon by accident something he had never heard of before — not in any architecture or art history course, not in any course at all: the observatories of the Maharaja Jai Singh. A city block, carefully detailed and arranged like a park, with beautiful, mammoth structures, each of which, he discovered, was designed as an instrument to study the sky.



Jai Singh, born in India in 1686, was a passionate astronomer. He wanted to record and to predict the patterns of the earth, moon, sun and stars. He studied Ptolemy, Hipparchus, and Euclid. He consulted the astronomical tables in use during his time. Testing their predictions of specific events, e.g., the appearance of new moons, he found the computed predictions deviated slightly from his own observations.

He set out to develop instruments that would respond accurately to celestial events. Like his European counterparts, Jai Singh's first instruments were small and made of brass. He noted inaccuracies in their readings and determined that these must be due to the instruments' size and to a wearing away of their small, movable parts. His answer was to build massive-scale instruments out of polished stone, with increments delineated by light- and dark-colored surfaces. He believed that the size would allow for greater accuracy and that the stone would not erode away to any degree of significance.

He was apparently satisfied with the results obtained from his first construction in Delhi. To confirm the truth of his observations he constructed similar instrument gardens in Jaipur, Muttra, Benares, and Ujjain. It is said that another reason Jai Singh built these additional constructions is that he believed citizens all over India should have the opportunity to study the stars.



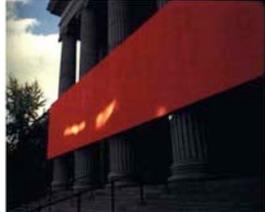
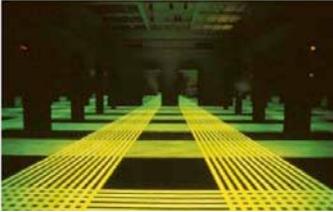
Thomas Jefferson worked with public space in much the same way. The section of the University of Virginia he designed is so clearly about shared knowledge—the grandeur of the rotunda, the connectedness of all the spaces, the gardens' dignity and human scale. An atmosphere is created, a philosophy is presented: This is where we come to learn, without aggression, without greed.

Dale Eldred's work was about simple principles, stunning in their revelation: Reflections pass across a wall, shadows lengthen and decrease, flowers bloom or don't. The earth rotates on an axis tilted at an angle of 23-1/2 degrees from vertical; it orbits around the sun in an elliptical

pattern, with an average radius of 93 million miles. Dale was stunned by the elegant mechanics of our physical world, and he hoped through his work to share some of the wonder.

Environmental Sculpture

He liked to say that his work existed at a point mid-way between vision and invention: the vision of the relationship of time to light to space, and the invention of a means to make that vision manifest.



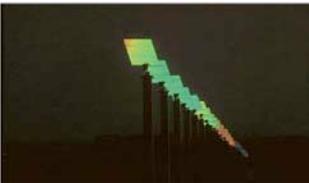
"The History, Present and Future of Sky Art",

SKY ART Conference '81, M.I.T. Center for Advanced Visual Studies, September 25, 1981.
(An excerpt from the panel discussion)

"Coming here, the thought struck me that out of our Western perception we usually draw down very tightly onto a piece of ground that might be only as big as M.I.T.



"But if all is well tonight in Guatemala, all is well tonight in Jaipur. Believe me, the sense of time that we relate our art to usually revolves around our Western thought. I was thinking about the area where you pass out of Port Piraeus, and you go past Cape Sounion. You look up at the Temple of Sounion and it is still working very well. It comes from history, but it is now.



"If you were at Saqqara today about noon the sun would be playing its rhythms across all the architecture. If you were at Pagan today the wind might have been blowing and the chimes at the tops of the temples would be ringing very loudly. Four thousand some temples-history, but still alive. If you were in Jaipur or Delhi, you would be observing and recording from the time instruments of Jai Singh. I'm sure it was a sunny day in India. Come November 1 at Lake Pátzcuauro, kites would be flying-bigger than man, bigger than automobiles, bigger than trucks. Sky drawing is going on near Las Vegas. I was there not too long ago and they were advertising Budweiser. Las Vegas is doing beautifully. At night it sends out messages clear as anything I've ever seen. The icons of American culture. The Sandia solar energy project I visited recently is outstanding. It's not delivering all the megawatts we need, but it's a very beautiful, beautiful site. Fireworks in the villages of Chichicastenango are waking up the dead, calling back and forth from the living to the souls of the deceased.



"Finally, the thought struck me as the 747 was taking off at O'Hare Field that this is all way too much-I feel very insignificant in light of all this. Everything I have learned has come from these places. I hope you have a chance to see a piece I am working on that is from the Cambridge side of the Charles River to the Boston side. What I'm involved in relates to a time incident and to a light incident. It works on a very, very accurate sense of timing, and it lasts less than five minutes-so, if you're there at 12:07 you've missed it. You must stand on the

Environmental Sculpture

Cambridge side to see it; you'll be on the backside of the mirror panels that are set to reflect sunlight across the river to a retro-reflector board on the Boston side. The board is covered with red, yellow and blue reflectors. The colors aren't about design; they separate the board into sections to help you track the progress and speed of the reflected sunlight's passage.

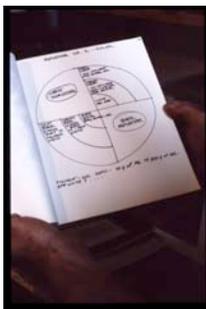
"Attacking the Boston skyline is a difficult problem, but I think this works."



Joe Moss MIT Sound fellow and sculptor:

Dale thought that it would be important for me to continue to work in affiliation with the MIT family and recommended that I further my Masters degree with Sculptor Joe Moss. Moss served as an Artist Fellow at the Massachusetts Institute of Technology's Center for Advanced Visual Studies in 1973, 1985, and 1987-88. Where is specialized in sound sculpture and acoustics research. Moss is best known for his environmental installations that combine visual displays with auditory sensations to create multi-sensory environments.

Through Joe I started to really understand the physics of sound in parabolic and ellipsoid refraction while doing research on his processes and the molds that he created while at MIT. The molds he created at MIT produced many site specific sound sculptures. In addition to sound reflection he also worked with sound baffling molds or sound deadening sculpture.

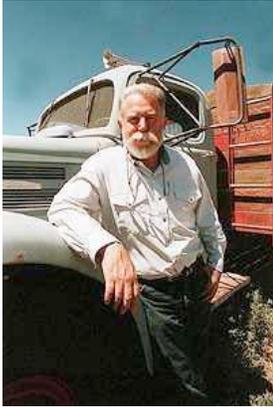


Working with a second MIT fellow I was automatically insured to be in a open environment with a tremendous amount of freedom to explore ideas using art and science. My time spent in my Masters I built many installations, performances and got involved in several special projects (all that included sound and visuals in various formats). One of my main concerns in those projects was how I focused the sound in relation to the viewer perceptually.

My interests in sound lead me to study with Joe and ultimately took shape in my thesis "Passage" the project utilized real-time sound and video (that played in two different frequencies). "Passage" through research induced a slower moving brain wave according to viewer feedback. Close to 200 viewer participants experienced "Passage" in the Delaware Center for Contemporary Art and SUNY Fredonia.

Environmental Sculpture

James Turrell environmental light sculptor:



*Arizona Daily Sun
photo Jim Turrell, at
his Walking Cane
Ranch*

James Turrell is an American sculptor whose primary working materials are light, space and perception. His work is meant to be taken in slowly, quietly, and over time. With the Roden Crater Project, which he considers to be his life's work, Turrell is transforming a dormant volcano in the Arizona desert into a vessel for enhanced human experience and an eternal work of art. Since 1979, Turrell has been transforming the crater into a large-scale work that relates - through the medium of light - the expanded universe of the surrounding sky, land, and culture.

The top of the crater is being re-shaped into a hemispherical dish that will function as a huge Skyspace (enabling the phenomenon of celestial vaulting) and a number of sculptural, underground chambers inside the mountain that will respond as nature's sources of light--the sun, moon and stars--move through the sky. At times, the changes in the spaces will unfold slowly over long periods of time, at other times in a matter of moments.

Turrell has undertaken his project at Roden Crater with clarity, intention, and beyond any normal constraints of time. It is a project of enduring scientific, cultural, creative, and spiritual significance.

Program Two Spirituality

PBS ART:21 (interview excerpt)

Interviewer:

Why do you want to work with light?

Turrell:

Certainly when people describe near death experiences, they use a vocabulary of light. And also when we have dreams, a lucid dream that's in this color, that really is I think quite, quite astonishing. So, in thinking of light, if we can think about what it can do, and what it is, by thinking about itself, not about what we wanted it to do for other things, because again we've used light as people might be used, in the sense that we use it to light paintings. We use it to light so that we can read. We don't really pay much attention to the light itself. And so turning that and letting light and sound speak for itself is that you figure out these different relationships and rules. Now there's a lot to do with sensory as well, in that the feeling of light in so many ways - you probably have seen or handled a lemon and suddenly felt the taste in your mouth. I mean it suddenly floods your mouth. The perception through vision actually creates the sensation in taste. The same thing can happen in sound and sound can change the perception of color.

We think of color as a thing that we're receiving. And if you go into one of the sky spaces, you can see that it's possible to change the color of the sky. Now, I obviously don't change the color of the sky, but I changed the of vision. This is very similar to simultaneous contrast, where you see a yellow dot on a blue field, versus the yellow dot on a red field. Same yellow dot will be seen as two different colors. The same frequencies come into your eyes through a difference of context of vision, and are perceived differently. We actually create this color.

Color is this response to what we perceive. So there isn't something out there that we perceive, we are actually creating this vision, and that we are responsible for it is something we're rather unaware of. So I actually like to do that, and I look at my art as being somewhere between the limits of perception of the creature that we are, that is - what we can actually perceive and not perceive, like the limits of hearing or seeing - and that of learned perception,



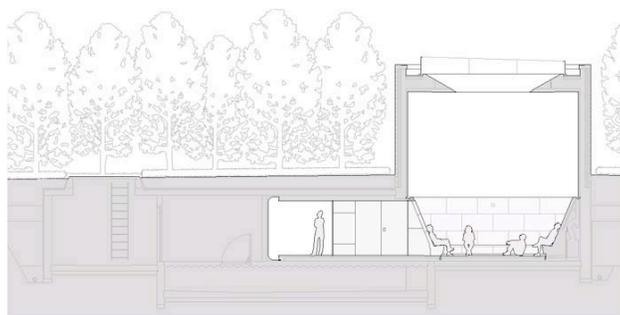
Environmental Sculpture

or we could call prejudice perception. That's a situation where we have learned to perceive a certain way, but we're unaware of the fact that we learned it. So this can actually work against you sometimes. Working between those limits and kind of pointing them out is something I enjoy doing because it's not just the fact that you are bringing the cosmos down into the space where you live, but that your perception helps create that as well. So that you really are this co-creator of what you're seeing.

The opening of the Nasher Museum in Dallas November 2004

Mark DiSuvero and I

In 2004, I accompanied Mark DiSuvero to the opening of the Nasher Museum in Dallas Texas, in doing so I was introduced to all of the sculptors that had works purchased by Ray Nasher for his museum. One of the most provocative works was James Terrell's "Skyspace". I sat with Mark inside of "Skyspace, Tending" and witnessed how using technology in conjunction with the environment can be extremely successful. As we were sitting inside the box shaped structure a series of LED's inset at mid parameter of the wall shifted in color. At the top of the structure was a curved ceiling opening up to a framed area of sky. Perceptually, as the color shifted inside of the structure the color of the sky seemed to shift too until the walls turned purple and the sky appeared to be white. We were both fascinated by the experience as it was a great example of how the technology can be used with nature to alter perception (or reshape a common everyday experience).



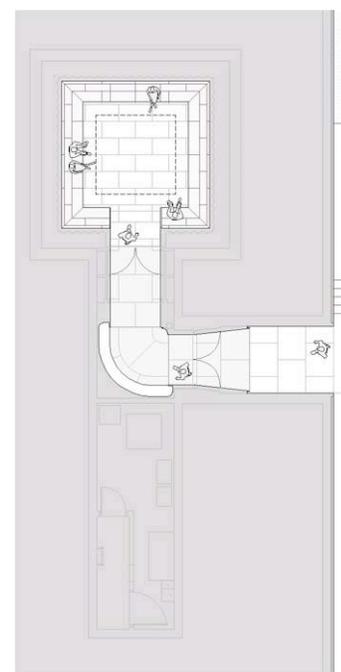
Nasher Sculpture Center

Skyspace, Tending, (Blue)

Known for his work with natural and colored light, James Turrell is recognized as an international leader in the fields of environmental and installation art. His creative use of illumination redefines a viewer's sense of space, the surrounding environment, and the nature of light itself. Turrell has figured prominently in international art developments for more than three decades, due to his pioneering work in fields as diverse as installation art, earth works, and architectural projects.

The skyspace provides a quiet, meditative setting in which one concentrates on the view of the sky through a 9 1/2 x 9 1/2 ft. opening in the ceiling. The rim of the aperture is knife-edge thin, which helps heighten the perception of the sky's proximity. It often appears that the sky has been drawn like a sheet tightly across the opening. Italian limestone benches line the interior plaster walls of the skyspace. They are heated during the winter, and the skyspace is air-conditioned in warmer months, providing a comfortable viewing environment year round.

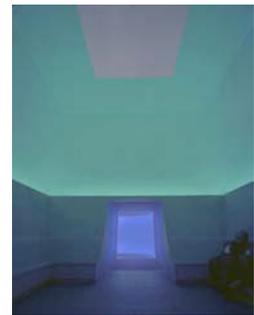
Washing the interior walls of the skyspace with various combinations of red, green, blue, and yellow light, Turrell conditions the eye in a way that affects one's perception of the sky's color, distance, and density. The sky seems to take on extraordinary colors and, framed by the knife-edge rim of the aperture, appears extremely dense and flat. At sunrise and sunset, when



Environmental Sculpture

changes in the coloration of the sky are most rapid and pronounced, the experience can be especially mesmerizing. Just before sunrise, the lights inside the skyspace begin to change gradually, slowly shifting the perceptible hues and tones. At sunset the changes are more dramatic, eliciting vibrant colors and sharper contrasts. The light program becomes more active after sunset, cycling now more rapidly through a variety of colors, some seemingly impossible. The entire system is coordinated by an astrological clock that constantly monitors the changing times of sunrise and sunset at the specific geographic location of the skyspace. The interior lights of the skyspace do not normally change between sunrise and sunset. However, if a photo sensor registers the external ambient light below a certain level during this period, it triggers a brief, quickly paced "storm" cycle of saturated colors and abrupt lighting changes.

Turrell has programmed 10 different light cycles for the skyspace and is planning a total of 12. With such a variety of lighting cycles playing against constantly changing atmospheric conditions, *Tending, (Blue)* displays a seemingly endless variety of moods and experiences.



Walter De Maria The lightning Field

The Dia foundation (excerpt)

The Lightning Field, 1977, by the American sculptor Walter De Maria, is recognized internationally as one of the late-twentieth century's most significant works of art. Commissioned and maintained for public viewing by Dia Art Foundation, *The Lightning Field* exemplifies Dia's commitment to the support of art projects whose nature and scale exceed the limits normally available within the traditional museum or gallery. Dia also maintains two other of De Maria's projects, both located in New York City: *The Broken Kilometer*, 1979, and *The New York Earth Room*, 1977.



A work of Land Art situated in a remote area of the high desert of southwestern New Mexico, *The Lightning Field* is comprised of 400 polished stainless steel poles installed in a grid array measuring one mile by one kilometer. The poles, two inches in diameter and averaging 20 feet by 7 1/2 inches in height, are spaced 220 feet apart and have solid pointed tips that define a horizontal plane. Since it is intended that visitors experience *The Lightning Field* alone or with a small group of people over an extended period of time, Dia provides simple accommodations for up to six people for overnight visits during the months of May through October.

Conceptual Art

Jackson Pollock Abstract Expressionist Painter

The web Museum By Nicholas Pioch

Pollock was the first "all-over" painter, pouring paint rather than using brushes and a palette, and abandoning all conventions of a central motif. He danced in semi-ecstasy over canvases spread across the floor, lost in his patterning, dripping and dribbling with total control. He said: "The painting has a life of its own. I try to let it come through." He painted no image, just "action", though "action painting" seems an inadequate term for the finished result of his creative process.

Pollock's name is also associated with the introduction of the All-over style of painting, which avoids any points of emphasis or identifiable parts within the whole canvas and therefore abandons the traditional idea of composition in terms of relations among parts. The design of his painting had no relation to the shape or size of the canvas -- indeed in the finished work the canvas was sometimes docked or trimmed to suit the image. All these characteristics were important for the new American painting, which matured, in the late 1940s and early 1950s.



John Cage American Composer

American Masters PBS.org (excerpt)

While his interest in chance procedures and found sound continued throughout the sixties, Cage began to focus his attention on the technologies of recording and amplification. One of his better known pieces was "Cartridge Music" (1960), during which he amplified small household objects at a live performance. Taking the notions of chance composition even further, he often consulted the "I Ching," or Book of Changes, to decide how he would cut up a tape of a recording and put it back together.

Cage's first experiments involved altering standard instruments, such as putting plates and screws between a piano's strings before playing it. As his alterations of traditional instruments became more drastic, he realized that what he needed were entirely new instruments. Pieces such as "Imaginary Landscape No 4" (1951) used twelve radios played at once and depended entirely on the chance broadcasts at the time of the performance for its actual sound. In "Water Music" (1952), he used shells and water to create another piece that was motivated by the desire to reproduce the operations that form the world of sound we find around us each day.



An autobiographical statement by John cage (excerpt)

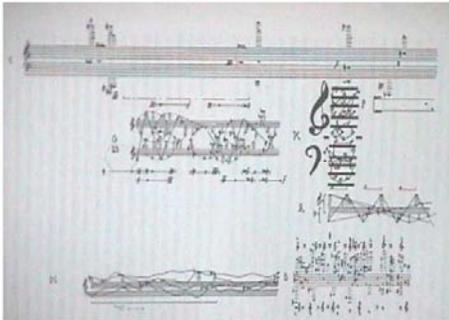
I found dancers, modern dancers, however, who were interested in my music and could put it to use. I was given a job at the Cornish School in Seattle. It was there that I discovered what I called micro-macrocosmic rhythmic structure. The large parts of a composition had the same proportion as the phrases of a single unit. Thus an entire piece had that number of measures that had a square root. This rhythmic structure could be expressed with any sounds, including noises, or it could be expressed not as sound and silence but as stillness and movement in dance. It was my response to Schoenberg's structural harmony.

It was also at the Cornish School that I became aware of Zen Buddhism, which later, as part of oriental philosophy, took the place for me of psychoanalysis. I was disturbed both in my private life and in my public life as a composer. I could not accept the academic idea that the purpose of music was communication, because I noticed that when I conscientiously wrote something sad, people and critics were often apt to laugh. I determined to give up composition unless I could find a better reason for doing it than communication. I found this answer from

The caption for this picture: 'Flower pots and frying pans are a few of the "instruments" to be used by a "persuccion" orchestra for a Mills College concert tonight. Rehearsing are (rear, l to r) Lou Harrison, John Cage and (front) Doris Dennison, Jargaret Jansen, Xenia Cage.

Conceptual Art/ Event Machines

Gira Sarabhai, an Indian singer and tabla player: The purpose of music is to sober and quiet the mind, thus making it susceptible to divine influences. I also found in the writings of Ananda K. Coomaraswamy that the responsibility of the artist is to imitate nature in her manner of operation. I became less disturbed and went back to work.



Example of one of cage's nontraditional manuscripts



Rebecca Horn Sculptor

The Guggenheim Museum
by J. Fiona Ragheb

Rebecca Horn's "Concert for Anarchy" at the Tate Modern. It explodes every few minutes.

Located in the nexus between body and machine, Rebecca Horn's work transmogrifies the ordinary into the enigmatic. In a career that has spanned more than 30 years and traversed varied stylistic ground—from Performance more to sculptural installations and feature-length films—Horn has continually returned to the body, the source of her beginnings as an artist. Her sculptural props and related performances of the 1960s and 1970s grew out of a lengthy period of physical recuperation during which she was limited to working while confined to bed. Both protective and restrictive, her sculptural prostheses and cocoon like garments—the horn of a unicorn that emerges from the head of its wearer's nearly naked body, gloves that increase the fingers' reach nearly tenfold—simultaneously extend and encumber the body, forming artificial appendages that force a Kafkaesque rumination on the treachery of the body's vagaries.



Blue Monday Strip, 1993. Typewriters, ink, metal, and motors, approximately 192 1/8 x 137 inches overall.

In the early 1980s the augmented body ceded in Horn's work to mechanized sculptural installations in which ordinary objects spring to life and engage in carefully choreographed ballets. These beguiling and unsettling contraptions in which spoons seem to kiss and violins to serenade one another take on a bodily tempo as they spasmodically whirl and rest and whirl again. In *Blue Monday Strip* vintage typewriters are liberated from the orderly office world and set akimbo, transformed into an unruly lot whose keys chatter ceaselessly in a raucous dialogue. Occasionally, as if to squelch their staccato, a spatter of blue paint showers on them. As in the sexualized world of Horn's inventions, here the clacking machines seem to personify a pool of glum secretaries who find themselves once again behind their typewriters on a Monday morning, as suggested by the title.

Whether mechanomorphic bodies or anthropomorphic machines, all of Horn's works are fraught with sexual allusions and the ache of desire. In *Paradiso*, created specifically for the Guggenheim Museum on the occasion of Horn's 1993 retrospective there, two swollen, breast like funnels are suspended high above the museum's rotunda. With metronome like regularity, a milky liquid is excreted from the breasts and falls into the pool far below, creating an almost palpable tension in which the entire building seems to hold its breath in anticipation of the next drip. The reference to Dante implicit in the work's title is underscored by crackling lightning rods, and the dark and haunting companion piece to this light-filled and ethereal work—*Inferno*, installed concurrently at the Guggenheim Museum SoHo.

Event Machines

Harold Cohen painter inventor (ARRON)

Genetics and Culture: From Molecular Music to Transgenic Art

Harold Cohen By Ruth West (excerpt)

Professor Harold Cohen, UCSD, spent 30 years of his life working on AARON, an artificial intelligence/artist. "Harold Cohen, former director of the Center for Research in Computing and the Arts (CRCA), was an English painter with an established international reputation when he came to UCSD in 1968 for a one-year Visiting Professorship. His first experience with computing followed almost immediately, and he never returned to London. Cohen is the author of the celebrated AARON program, an ongoing research effort in autonomous machine (art making) intelligence which began when he was a visiting scholar at Stanford University's Artificial Intelligence Lab in 1973."

Arron is the first robot in human history to paint original art. AARON mixes its own paints, creates striking artwork and even washes its own brushes - uses a range of fabric dyes, procion.. AARON grew out of investigations about the nature of "representation." Or, how/why we see marks on paper as a "face" or other real-world objects. AARON can make paintings of anything it knows about, but it actually knows about very little -- people, potted plants and trees, simple objects like boxes and tables, decoration. AARON "Built in 'C' but most of AARON's development is in LISP. "AARON has to know what it's doing, and has to spend most of its time building an internal representation of the developing drawing so that it can decide what to do next. "AARON - No physical or visual feedback mechanism. "I don't tell it what to do. I tell it what it knows, and IT decides what to do."

Cohen:

Is the computer being creative? Is A-life creative?

"I wrote it to discover what an independent (machine) intelligence might do, given some knowledge of the world and some rudimentary physical capabilities. And, in the process, to have IT teach ME about possibilities I hadn't imagined. I'd be happier if AARON's work in the future were LESS like human work, not MORE like human work."

"How do I "tell" AARON what it knows? That's a bit hard to understand if you don't know anything about programming. Some of AARON's knowledge is what we call "declarative" knowledge; for example, how long arms and legs are. That sort of thing is easy to represent. You simply make a list of parts -- left-upper-arm, torso, etc. -- each of which is a list of all the points in that part, with the position of the point in relation to the origin of the part. For example, the origin of "left-upper-arm" is "left-shoulder", and "left-elbow" is at some position in relation to it: so much below, so much to the left, so much in front. AARON knows that the "left-upper-arm" is tacked on to the torso, but it can only tack it on in ways that are plausible for a real body. The program has to know how to go about doing things, and this "procedural knowledge" is usually represented in the form of rules. It might look something like this:

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if (left-arm-posture is "hand-on-hip")
(add-upper-arm left -.3 .5 .65) else
if (left-arm-posture is "arms-folded") and so on.
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The three numbers here would represent the rotations around the shoulder on the three axes that would put the arm at the correct angle before the arm is attached to the torso at the shoulder. But this is a much-simplified account; because of course there isn't just one "correct angle," and the way it chooses one of the three rotations will then influence how the remaining two can be chosen. And at a higher level, of course AARON had to decide, using rules similar in form but different in content, what the "left-arm-posture" was going to be."

