



Touching the Sky: Artworks Using Natural Phenomena, Earth, Sky and Connections to Astronomy

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Touching the Sky: Artworks using Natural Phenomena, Earth, Sky and Connections to Astronomy

Janet Saad-Cook
with Charles Ross, Nancy Holt and James Turrell

Abstract—In separate conversations, four artists discuss their monumental-scale works involving natural phenomena. The projects of Charles Ross, Nancy Holt, James Turrell and Janet Saad-Cook are at various stages of completion, ranging from preparatory stages to works already completed. The artists speak about their own creative process and about their personal vision for their art.



Fig. 1. Charles Ross, *Solar Burn*, photo montage, 36 × 96 in, 1972. A simple lens was set up on the roof so that the sun would burn a path across a wooden plank as the day progressed. Photos of the burns for the year 1971–72 placed end to end created this double spiral figure. (Photo © Charles Ross. Reproduced by permission.)

I. INTRODUCTION

(Janet Saad-Cook)

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James Turrell and I all are involved in artwork which uses the sky, the earth and natural phenomena as its media. We require the help of science in our work, particularly astronomy, but what we are doing is making art. The following article documents three separate interviews I conducted in 1985 with Ross, Holt and Turrell as well as a conversation that same year between myself and M. E. Warlick about my own work.

Among the four artists who speak here there is little similarity in the art that we make; each of us has a personal vision and creative process. This article focuses on that uniqueness through the voice of each artist. As an artist, I believe no one speaks more accurately about our work than we do ourselves.

We are all currently involved in monumental-scale projects, but each of us is at a different stage in the individual projects. Charles Ross has been building *Star Axis* for 10 years, and James Turrell began re-shaping *Roden Crater* in 1979. They are speaking as artists with works in progress. Nancy Holt has already completed numerous monumental works and speaks about these works in retrospect. I am about to begin the *Sun Drawing Project*, and I speak about the preparatory work this kind of project requires.

It is my hope that through these conversations I can give some insight into the vision of contemporary American artists working in this genre and the process involved in making that vision a reality.

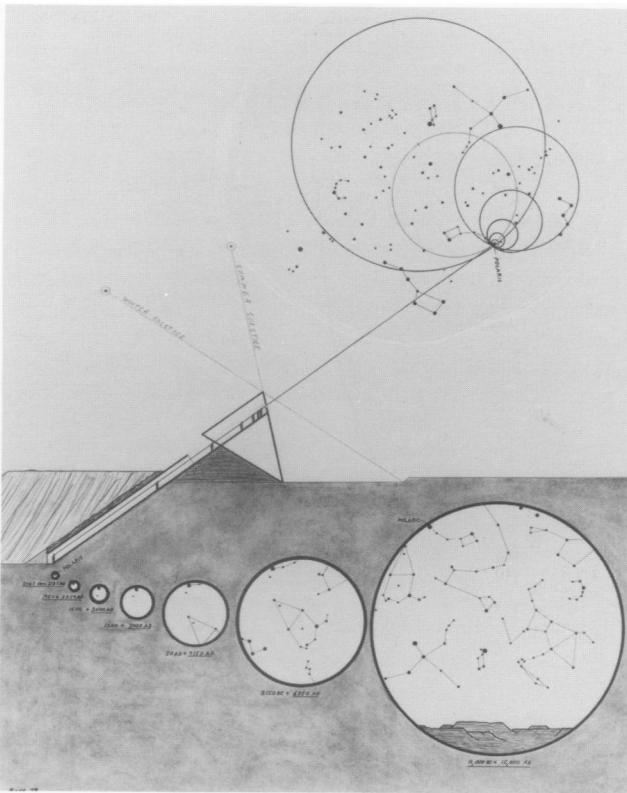


Fig. 2. Charles Ross, *Star Axis*, New Mexico, 1978. The 26,000-year time frame of precession is spatially experienced when the viewer moves up or down the staircase inside the tunnel. As one stands on each stair, the circle of sky framed by the opening represents Polaris's orbit for the dates engraved on that stair.

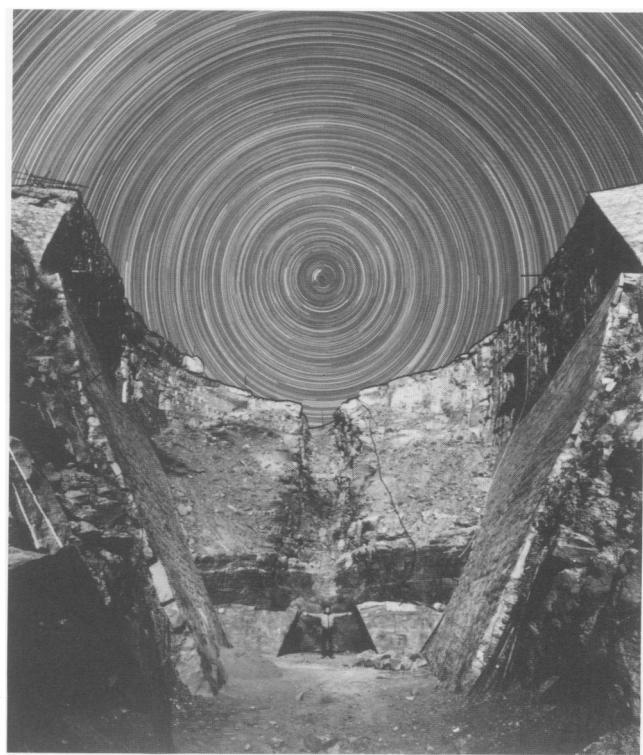


Fig. 3. Charles Ross, *Star Axis*, New Mexico, 1985. Star trails above the excavation. Polaris is the small bright arc at the center. In this photo, the trails were made by many different stars. Polaris turns in each of these orbits at some past or future time. The central channel awaits placement of the sighting tunnel. (Photo © Charles Ross. Reproduced by permission.)

II. CONVERSATION WITH CHARLES ROSS

On 19 June 1985, I spoke with Charles Ross in his West Broadway studio in the Soho district of New York. Everywhere in the vast sunlit space were huge acrylic prisms casting spectral color as sunlight passed over them. These prisms are parts of the *Spectrum* sculptural works he refers to in our conversation.

Solar Burn was a keystone work for Ross which brought him international prominence. For 1 year (23 September 1971 through 22 September 1972) he traced the sun's path from the rooftop of his studio by setting up a fresnel lens that had a new plank of wood positioned under it each day. The sun's arc in the sky burned an ever-changing image into the wood. After 366 days, the total image that was created by the sun/earth/weather dynamic was a double-reversed spiral.

For 10 years he has been building *Star Axis* on a small mesa 100 miles east of Albuquerque, New Mexico. It is a monumental earth/sky sculpture that gives a direct visual experience of precession. To date, Ross has funded *Star Axis* through sales of his art.

Charles Ross: Art and science are two ways of looking at the world, and they are

both equally necessary. Art generates a kind of clarity just as science does. We do not understand things just by measuring and gathering information; each day is laced with mystery, moments that defy logic. If we want to achieve an integrated sense of reality, we need multiple views of the world. We can never see it through just one window.

Janet Saad-Cook: Is a presentation of reality what you are trying to do with your work?

CR: No. I am interested in how we personally interface with the larger order; and I think it is possible to have direct experience of how we are fitted to the stars. That is really what *Star Axis* is about. One thing art can do is focus the lens of experience so that our sense of connection grows clearer. The intent of *Star Axis* is to give us awareness of the motion of the universe in relation to ourselves. By walking through this work, one will be able to directly experience the entire 26,000-year cycle of polar precession.

JS-C: What brought you to precession?

CR: My work is always ahead of me. It is always leading into things long before I understand what they are. It was the *Solar Burn* that demanded I become involved with astronomy. I had placed

this simple lens set-up on the roof so the sun would burn a path across a wooden plank as the day progressed. The idea was to collect a portrait of the weather each day. As the work progressed, I noticed that the burn's curvature was changing with the seasons. We took photos of the burns and placed them end to end following their curvature to see what a year's worth looked like. The sum of days generated a double spiral figure (Fig. 1).

At first, it did not make any sense—this primitive lens set-up was producing a complex spiral shape. A few of the astronomers I showed it to said, "Well, it must be coming from somewhere, but we have no idea what it is." Most of the scientists insisted that there had to be some anomaly in the set-up and that the shape had nothing to do with astronomy—just some weirdness in the lens. In reality, it made no difference at all if the lens faced one way or the other as long as it faced generally toward south. The elements of the spiral are in sunlight itself; it was an archetypal image falling from the sky. I finally contacted Kenneth Franklin at the Hayden Planetarium. He directed me to the Naval Observatory, where LeRoy Doggett, an astronomer with the Nautical Almanac office, recognized the spiral as a reflection of all

the motions of the earth in orbit including its day-to-day change of speed.

My art had led me to a new awareness of the earth moving in space and launched my interest in naked-eye astronomy. I began to investigate the idea that there are discrete forms projected onto the earth by starlight, and I made the big *Star Maps*. The maps express the way space and time form around us when we observe the stars.

All along, my work kept bumping me into the geometry of precession, this dance of the spinning earth. Finally, it dawned on me that a monumental work could be created to focus our awareness of the human being as the intermediary between earth and sky—our place at the boundary where earth and sky mesh and grind together . . . what de Santillana and von Dechend called ‘Hamlet’s Mill’ [1].

There is a direct human scale to the cosmic cycle. As the slow wobble of the earth shifts its axis toward and then away from Polaris, Polaris turns in different-sized circles around the pole. Each of these circles can be seen as a celestial marker in the history of humankind. The dramatic range in size of Polaris’s circumpolar orbits is just about identical to the range of our normal visual field. It was this discovery that gave me the inspiration and the will to build *Star Axis*.

The smallest circumpolar orbit of Polaris is slightly less than a 1° circle—about the size of a dime held at arm’s length. That is about the smallest thing we attend to day to day. Polaris will turn

in this circle from A.D. 2067 through A.D. 2137. It then slowly will spiral out over a period of 13,000 years, growing to a 95° circle, covering our entire field of focused vision. Our day-to-day range of vision is in scale with the motion of this star.

I wanted to build a work of art that would focus these connections in a way that could be directly experienced, a place where one could witness this play of earth and star. The central element of *Star Axis* will be an 11-story walk-through tunnel set parallel to the earth’s axis to frame the north celestial pole. The tunnel will be placed in a conical excavation that has been carefully cut into the southern edge of a small mesa. As one climbs the stairs within the tunnel, one sees increasingly larger circles of sky framed by the far rim. Each of these circles represents an orbit of Polaris at some past or future time. Each stair is dated to indicate in which year, from that vantage point, Polaris would be seen to roll around the far rim. As the viewer moves up and down the steps of the ‘Star Tunnel’, space becomes time, and the entire 26,000-year cycle of Polaris is framed in the real sky (Figs 2, 3).

JS-C: You have been working on *Star Axis* for 10 years?

CR: Yes, plus 5 years to find the site. In some ways it had to be this slow because some of the elements of *Star Axis* — its dimensions, its form, its angles—had to be discovered in the land. It is not architecture; I could never draw plans for it and then build it. Placing it on the land required a kind of ‘discovering it in the

earth’. Measurements inherent in precession had to be found in the land itself. You see, the earth aspect of *Star Axis* has to feel as if it is grown from the ground, that it is not imposed, but ‘found in place’.

JS-C: How accessible is *Star Axis*?

CR: It is only two hours from Albuquerque, and one can drive within five miles of it on a two-lane blacktop. It is easier to get to than most of the ranches surrounding it. In addition to wanting the site to be at the boundary of earth and sky, I wanted it to be at the boundary between civilization and wilderness; I did not want it to be completely remote. The site is isolated, yet there is civilization whispering in the background. One does not have to leave the modern world completely to remember one’s place among the stars. One just needs a place of focus, and *Star Axis* provides that place.

I think of the axis of earth-to-star as an energy matrix that can be experienced in sculptural form. *Star Axis* is a distillation of this geometry into a physical environment that surrounds the perceiver. Every shape, every measurement, every angle comes from precession. For example, the entrance to the tunnel is built to measures of 47°, the earth’s cone of wobble and its seasonal tilt, so that even the shadows will reflect our alignment with the stars. It is naked-eye astronomy, and it involves a direct physical, emotional and sensory experience of our earth-to-star connection.

Astronomers have to spend so much

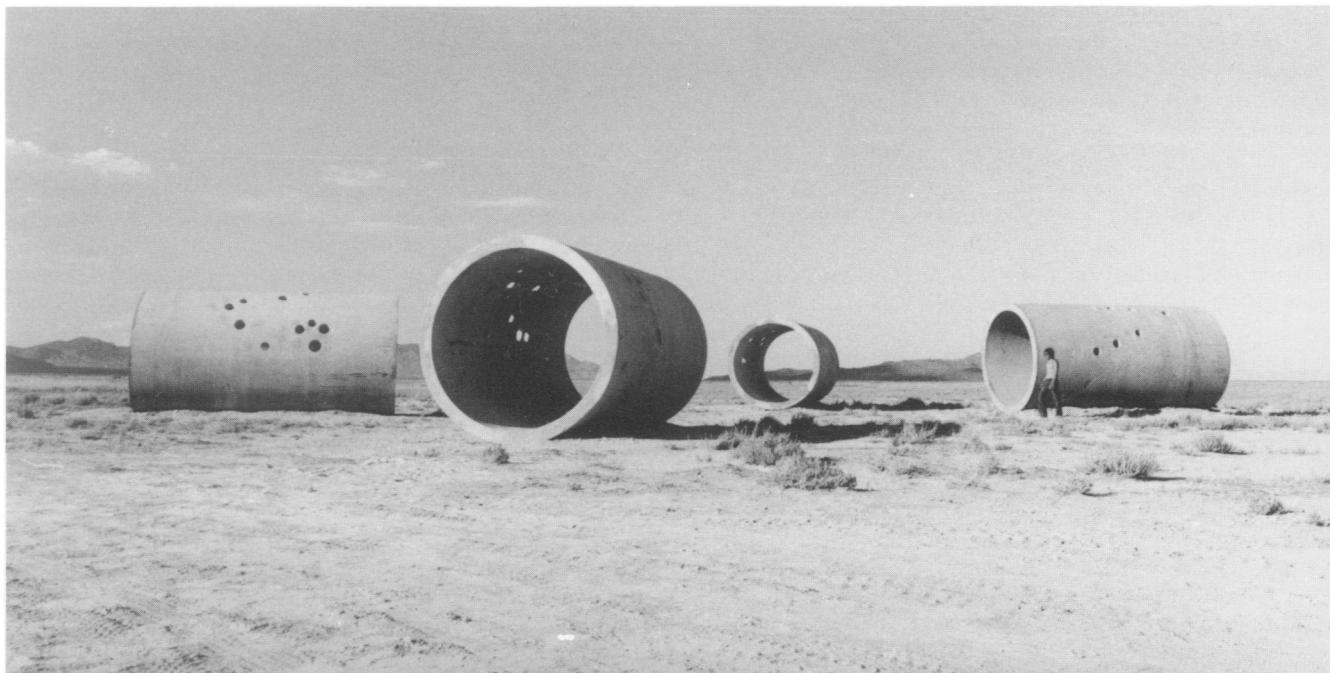


Fig. 4. Nancy Holt, *Sun Tunnels*, the Great Basin Desert in northwestern Utah, 1973–76. Total length: 86 ft; tunnel lengths: 18 ft; tunnel diameters (outside): 9 ft 2½ in; wall thickness: 7½ in. The tunnels are aligned with the position of the sun on the horizon at sunrise and sunset on the solstices.



Fig. 5. Nancy Holt, *Annual Ring* (Federal Building, Saginaw, Michigan), concrete and steel footings, steel bars, 1980–81. Diam: 30 ft; height: 14 ft 3 in. The ring on the ground frames sunlight at solar noon on the summer solstice.

time in front of computers now. I have heard them express concern about how they are losing touch with a direct experience of the sky. It is a problem because being under the stars inspires a feeling that can lead to discovery. I am not dismissing the rational approach—it is necessary. But one can lose creative motivation by getting too separated from one's source.

I believe in the archetypal dimension. It comes through intuition, and it is just as solid as anything that comes through the rational process. We make higher levels of reality accessible by giving them form in art. Today we need 'quantum leaps' to absorb our new, expanding levels of

discovery, and art has a necessary role in that.

JS-C: While building *Star Axis*, have you continued to do *Spectrum* pieces?

CR: Yes, definitely, I am always in contact with the delights of light and color and have just completed a permanent installation of 35 giant prisms in the Atrium of the "Plaza of the Americas" in Dallas.

The spectrum colors hold a certain kind of consciousness. When one walks into one of these spectrums, which is actually large enough for one to stand in a single color, it feels like greeting an old, intimate friend. At some cellular level, we have an enormous recognition of light. It

is through my work with the solar spectrum that I have come to realize we are beings of light.

JS-C: Have you read some of the articles that suggest our basic physical structure may be light, that literally we come from light?

CR: Most religions speak of this. And now physics seems to be driven toward similar conclusions about reality.

My work deals with looking into light. For me, art is interesting only when it offers transcendent experience. It is the job of art to be a window through which to view a larger order. Art can catalyze lines of connection with the expanding environment that surrounds us.

I have never felt that I was small and insignificant under the immensity of the stars. I have always felt, "Wow! It's incredible to be intimately connected to forces this large!" That is the way I feel about our being in the stars.

III. CONVERSATION WITH NANCY HOLT

On 20 June 1985, I spoke with Nancy Holt in her Greenwich Village home and studio. The artist has already completed a number of monumental-scale works and has just started another one. The city of Hackensack, New Jersey, has commissioned her to create a work of art on 57 acres of landfill. She calls this future work *Skymound*. It will consist of siting places for the sun, the moon and the stars, and she expects completion of this work in 3 to 4 years. With the exception of *Sun Tunnels*, which she funded herself, all of the works Holt discussed in our conversation have been commissioned works of art.

Janet Saad-Cook: In your art, are you trying to make people more aware of their place in the universe?

Nancy Holt: As an artist I do not think about my work as related to people first, although certainly the works I do are inclusive of their audience. But they are actually and primarily an exteriorization of my own interior reality. However, they are also made so that people can be a part of them and become more conscious of space, of their own visual perception and of the order of the universe. But also, I think the work is about 'time'—a sense of time that is more universal. The works really do function to keep time, to measure time. When I build them, I think about human scale, and I think about people standing in different places. In order to understand and perceive my works one has to walk through them, in and out of them, so that the works exist in durational time in that respect. They are

not just objects one sees in an instant, but something one experiences in time.

I started *Sun Tunnels* (Fig. 4) in 1973. It was from being in the desert that I really started to perceive the sun. Here in the city I am aware of it—my windows overlook the sunset—but nothing like in the desert where one is overwhelmed by the sun. After the idea for *Sun Tunnels* evolved out of my being in the western desert, I looked all around for land to buy in order to make it. I found the right site in the Great Basin Desert in northwestern Utah. It is a very desolate area, but it is totally accessible, and it can be easily visited, making *Sun Tunnels* more accessible really than art in museums. The ‘best’ thing that can happen to a traditional sculpture is that it is bought by a museum. It is then usually put into storage and not even the artist can get to see the piece. A work like *Sun Tunnels* is always accessible—it’s as accessible as the Grand Canyon. And we do have a tradition of going around in cars and looking at remote places. Eventually, as many people will see *Sun Tunnels* as would see many works in a city—in a museum anyway.

This work is about the sun, but it is about other things too. It is about perception in space. As one approaches the work—one begins seeing it from miles away—one is not sure what it is, it takes on many different configurations. Sometimes one tunnel disappears behind another and re-emerges again, which is perceptually disorienting. And, during the summer when mirages sometimes occur, the tunnels look like they are floating on top of water.

JS-C: What are the holes on top of the tunnels?

NH: The top half of each tunnel has holes in the configuration of the stars in different constellations: Columba, Draco, Perseus and Capricorn, the diameters of the holes varying relative to the magnitude of the stars represented. The sun, being a star, is casting spots of starlight through the star holes, so that when one walks through the tunnels, in effect, one is walking on stars. It’s an inversion of the sky/ground relationship—bringing the sky down to the earth. Many of my works do that, sometimes with reflecting pools and sometimes with shadow patterns marked on the ground.

My piece *Annual Ring* (Fig. 5) is in Saginaw, Michigan. When the circle of sunlight cast through the hole in the dome fits exactly into the ring on the ground, it is solar noon on the summer solstice. The smaller hole in the dome frames the North Star, and the other holes are aligned to the rising and setting of the sun

on the horizon on the equinoxes. The piece is 30 ft in diameter and approximately 15 ft high. When one is inside, it is like being in an open hemisphere because there is more void space than actual physical material. One is out as much as one is in, which is a strange sensation.

In *Rock Rings* (Fig. 6) in Bellingham, Washington (north of Seattle) the arches are aligned to the North Star. It is 10 ft high, the outside ring is 40 ft in diameter and the inside one is 20 ft. It is not a work about the sun; it is more about perception. A viewer walking inside does not know if the inner and outer rings are the same height or not because of the curvature of the walls. There is a visual questioning, and then when one walks outside and tries to look through a set of holes seen first from the inside, it can be difficult to find those same holes. It is very disorienting, even though the shape of the work is simple.

JS-C: This looks like a project that took a long time.

NH: *Rock Rings* took a couple of years to complete, 1977–78, but the actual construction took about 3 months. I am always there for the construction. The stone is 250-million-year-old schist quarried by hand locally. The stonework

is extremely rugged. I looked all over the area to find just the right mason.

Star-Crossed (Fig. 7) is in Oxford, Ohio, at Miami University. Oxford is one of the few places in the world where magnetic north and astronomical north are identical. I thought that was special, and so this work celebrates that fact.

The small tunnel goes north and south, and the big one goes east and west. When the viewer walks up the ramp and looks through the small tunnel, that oval pool becomes a perfect circle—it fits perfectly the field of vision framed by the circular tunnel. Here again I am bringing the sky down to earth. When looking into the pool, one is also looking down to the ground, and yet seeing tops of the trees and the sky and the stars—so the sculpture inverts the world. Looking into the pool from the far end, one sees a circle of sky reflected through the small tunnel. One can see in reflection what one cannot see in reality.

JS-C: So again you are changing the physical reality into a perceived reality.

I watched the construction on *Dark Star Park* (Fig. 8) in Rosslyn, Virginia, and I could not help wondering if the first time you stood on the site you felt despair at all that was going on around there—all

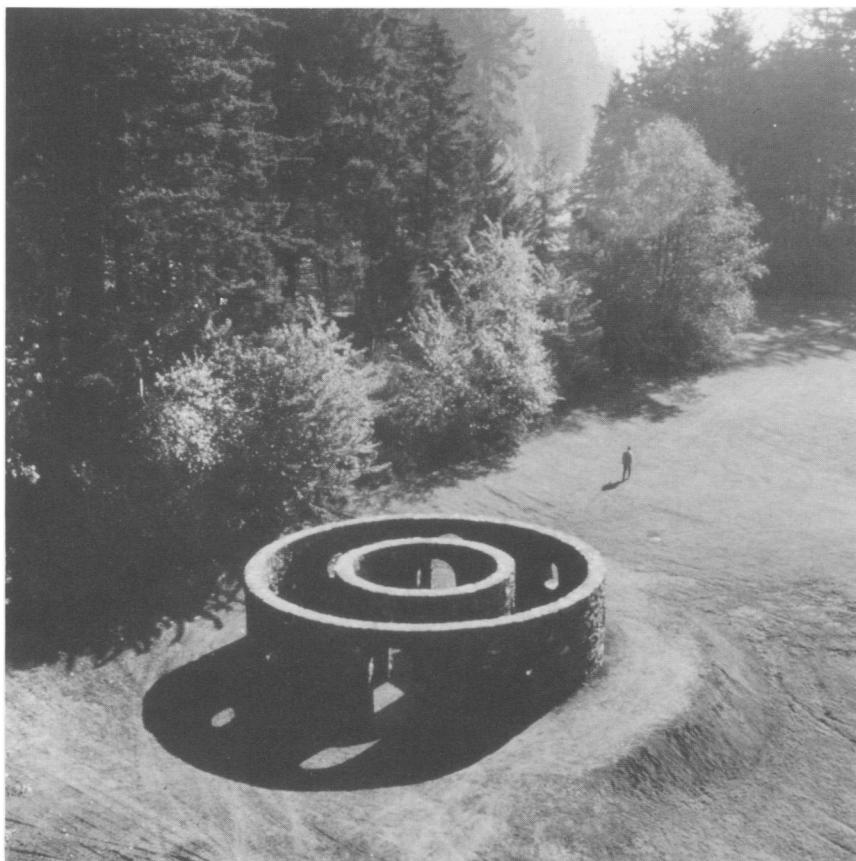


Fig. 6. Nancy Holt, *Rock Rings* (Western Washington University, Bellingham, Washington), 1977–78. Diameter of outer ring: 40 ft; diameter of inner ring: 20 ft; height of ring walls: 10 ft; thickness of ring walls: 2 ft. Stone enclosure with arches aligned with the North Star.

that traffic, the airplanes and cars. And you were going to have to make your work of art in all of this—how did you feel?

NH: I guess everything seems like a challenge to me, so I decided to see what I could do.

JS-C: Plus, this was a unique situation for you in that you actually were in on the planning from the beginning.

NH: I was the landscape designer as well as the sculptor, so the whole park became a work of art. And I was on the committee to approve the architectural design for the building adjacent to the park. I don't think either of these situations ever happened before for an artist, so that was unusual, and it broke new ground for public art.

JS-C: How do you feel about the location of *Dark Star Park* being in such a busy urban area in contrast to *Sun Tunnels* out there in the quiet of the desert?

NH: It is the obverse—this work is more socially interactive. I really thought about building those retaining walls not only to hold back the earth, but to be comfortable seating for people as well. And the pathways, stairs and tunnel are all functional. So it is a lot more about people. I thought about people moving through the park and by the park, and how those spheres come and go visually.

JS-C: And people are there; they are really using it, sitting in the park and enjoying it.

NH: Rosslyn is a business community. Between 9 and 5, especially at lunch time, people are in the park. At the beginning

and end of the day, they walk through the park to get to work or their homes, or to get to and from their cars.

It is called *Dark Star Park* because in my imagination these spheres are like stars that have fallen to the ground—they no longer shine—so I think of the park/artwork in a somewhat celestial way. With this work I am also continuing my concerns with illusions of ordinary perception, especially as perception is altered by curvilinear forms. As people walk in the park or drive by it, spheres of different sizes may appear to be the same size, or one sphere may eclipse another in passing, or a sphere may be seen through a round hole in another sphere or through a tunnel or reflected in a pool. And then there is the concern of time marking. The shadows cast by the poles and spheres line up with the asphalt shadow patterns on the ground at approximately 9:32 a.m. on 1 August each year. That is the day in 1860 that William Henry Ross bought the land that became Rosslyn. So it merges historical time with the cyclical time of the sun.

JS-C: Did you ever think you would be so involved with astronomy?

NH: But I am not involved with astronomy; I am just looking at the world, that's all. Anyone alive who had enough food and shelter, even 10 thousand years ago, would start observing the sky and would want somehow to demarcate the things that were happening. It is a basic human desire. I don't think one needs to know anything about astronomy. I call up the astronomers and give them the latitude and the longitude,

and I say, What do you think? What if you had an unobstructed horizon? What is the angle for the solstice? Then they figure that out. Or I ask, What can I do with the moon that would be constant? And they say, Well, the extreme positions are every 18.61 years. That kind of cyclical time is very interesting to me, although I am aware that even that changes. For example, Stonehenge does not work accurately any more. The North Star, Polaris, has not always been the North Star and will not always be the North Star. So that even when we think in celestial terms, there is still indefiniteness.

I feel that the need to look at the sky—at the moon and stars—is very basic, and it is inside all of us. So when I say my work is an exteriorization of my own inner reality, I mean I am giving back to people through art what they already have in them.

IV. CONVERSATION WITH JAMES TURRELL

On 18 July 1985, I spoke with James Turrell, via telephone, in Flagstaff, Arizona. *Roden Crater* (Fig. 9) is located outside of Flagstaff. It is a volcanic crater which Turrell is transforming into a series of chambers that will be illuminated by celestial occurrences. He began the work in 1979 and expects to complete it in the 1990s [2].

All of Turrell's work has involved the investigation of light and human perception. In some of his earlier works, he used light to create the illusion of densities in a space. Like a magician, he created what

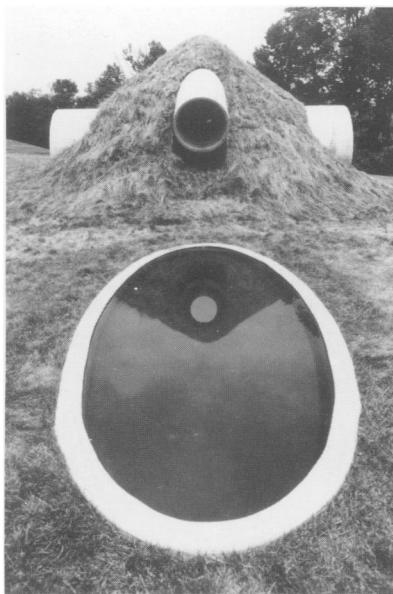


Fig. 7. Nancy Holt, *Star-Crossed* (Miami University Art Museum, Oxford, Ohio), earth, concrete, water, grass, 1979–81. Diameter of mound: 40 ft; height: 14 ft. Inner diameter of large tunnel (aligned east-west): 6½ ft; length: 25 ft. Inner diameter of small tunnel (aligned north-south, at 20° angle): 3 ft; length: 7 ft 3 in. The pool is 18 ft 10 in long, 7 ft 3 in wide and 18 in deep. The oval pool fits exactly into the field of vision framed through the small tunnel and appears to be circular.

appeared to be a solid wall which, on closer examination, would then reveal itself to be light.

Janet Saad-Cook: How would you describe your work in *Roden Crater*?

James Turrell: Basically, my work has always involved working with light. And working with light in a space so that the light feels to be tangibly present there and seems to be filling the space. In *Roden Crater*, I am working with a series of spaces that select light from different portions of the sky. The effects of this light will create certain 'atmospheres' in the spaces inside the crater. These areas inside the crater will react to the light from the sky in certain ways during the day and then in other ways during the night. So there are two aspects, day and night aspects. My light sources are limited to the sun and moon and starlight and, of course, reflections off materials like sand or snow or things that vary with the season. I involve the light in the space with imaged events, and these events are like a syncopated rhythm that comes from the heavens.

JS-C: What do you mean by 'imaged events'?

JT: Well, we have sunrise or sunset, solstice sunrise or sunset, or solar noon, or lunar extremes, which are more rare, things of this sort. Most of these situations bring the light of the event into a space as an image. What I am doing is making a space that is sensitive to events that happen in the skies, taking light from those events and somehow making it work inside a space.

JS-C: There was a time when you made your Los Angeles studio a work of art by using lights from the outside environment that came in your windows—not the light of natural phenomena like you are talking about now, but artificial light activity that was occurring outside the studio. Is there a connection to this process now?

JT: Yes, my work now uses light in the same manner. In other words, I create the work from the light energy that is in the 'space-looked-out-onto'. And so I am making a series of spaces at this volcano that work with this. And each space is directed to different portions of the sky and has different things that act upon it.

JS-C: When these events are observed, will they be seen as literal events or experiences, or as transformed in some manner?

JT: Actually, it is not so much observing the events but observing something that happens inside the space. For instance, if one has something like a Stonehenge—a situation where there are sitting stones and one stands at a certain place to



Fig. 8. Nancy Holt, *Dark Star Park* (Rosslyn, Arlington County, Virginia), Gunite, earth, sod, winter creeper, crown vetch, willow oak, stone dust, stone masonry, asphalt, steel, water, constructed on $\frac{1}{3}$ acre, 1979–84. The shadows cast by the spheres and the poles will line up with the shadow patterns on the ground at 9:32 a.m. each year on August 1, the day in 1860 that William Henry Ross acquired the land that became Rosslyn, Virginia.

observe an event—one's attention is directed to the event. Here, attention is not directed to the event but to the space itself. It is the *space* that responds in some manner when the event occurs. In other words, it has its own way of forming its response to this event.

JS-C: So that is where it goes beyond being a naked-eye observatory. Because what you are doing is receiving the light and then using it as the medium for your art.

JT: Yes. Once I know where the light comes from, I have very good ideas about what to do with it. And the light does 'do' something on the inside space when it gets

in. It is possible, for instance, to know exactly where an eclipse is going to occur, where that light will be coming from and actually to make something happen so that light gets in there only at that time.

JS-C: I am particularly interested in the eighteenth-century observatories of Jai Singh in India, and I feel your work has an affinity with them.

JT: I agree. The reason I find them so interesting is that they are designed from the outside in. In other words, the structure is literally in response to the events in the heavens. The structures I am building have that same quality. There is a quote about fantastic architecture that

comes from building structures meaningfully responsive to events that are outside the structures themselves. For that reason, I think the observatories of Jai Singh are quite interesting. But what I am doing is art not science, and I think it is interesting that now artists have decided to make these structures that sense these things and are open to the inclusion of events outside of the structures, events from the sky. That is an interesting notion, and it is basically coming out of the earth more than it is coming out of architecture. Science, of course, has to do that occasionally—for instance there are interesting structures like Kitt Peak. But this kind of art is about the sensing of people rather than the scientific sensing. There are structures made by artists which give people an awareness of the natural world and make them more sensitive to it through their experience of art.

JS-C: Why did you choose Roden Crater?

JT: I was looking for a hemispherical bowl-shaped space that would fill up with a plane of about 600 feet. This is afforded by the shapes of some volcanoes. I am working with the idea of a sense of closure

without form, so I wanted a circular place where I actually worked with the perception of the shape of the sky—in that it would be possible to make it seem as though it were an enclosed space even though it is entirely open.

JS-C: In a recent article about *Roden Crater* [3], I read that once one is actually inside the crater the shape of the sky starts getting confusing.

JT: It isn't confusing, it's just different, and it does warp one's perception of the space of the sky. In other words, it makes spaces within space, in the same way that a performer on stage is still in the theatre but in a different space than the audience. *Roden Crater* is a work of art that is empowered by the movements of the sun and moon and starlight.

Another reason I chose this crater is that I am interested in the state of mind engendered by looking into fire. It is not not-thinking, it is a wordless thinking that is a pure, primal sort of thinking. I looked for spaces that are empowered by the kind of light-presence that has that quality. And so one of the settings I wanted was a place of geologic time. I like craters; they are definitely part of geology. For instance, this site is in the

western edge of the Painted Desert, and so one sees geologic time exposed. This setting is a place where one feels like one is standing on the surface of the planet. It is interesting that when NASA took those pictures of Mars, they said it looked like the Painted Desert. Well, the Painted Desert looks like Mars! This area is stripped bare of vegetation, and the geologic time is revealed. That is the setting. One feels as if one were in a time beyond ours. It is in this setting that I am making these spaces that then engage celestial time and celestial events. So immediately there is that feeling of orienting to things beyond.

Generally, we are much like crustaceans. We build houses and inhabit them, then we run outside and get into a movable structure, and then go and get out of that into another shell—sort of musical hermit-crab games. And yet these tend to close us off from that feeling of being involved with nature, so that even though we make these structures, just like coral or anything else that makes a barrier, we do not have real knowledge of what we do. That is, coral has as much knowledge of the fact that it makes a Great Barrier Reef as we personally do of

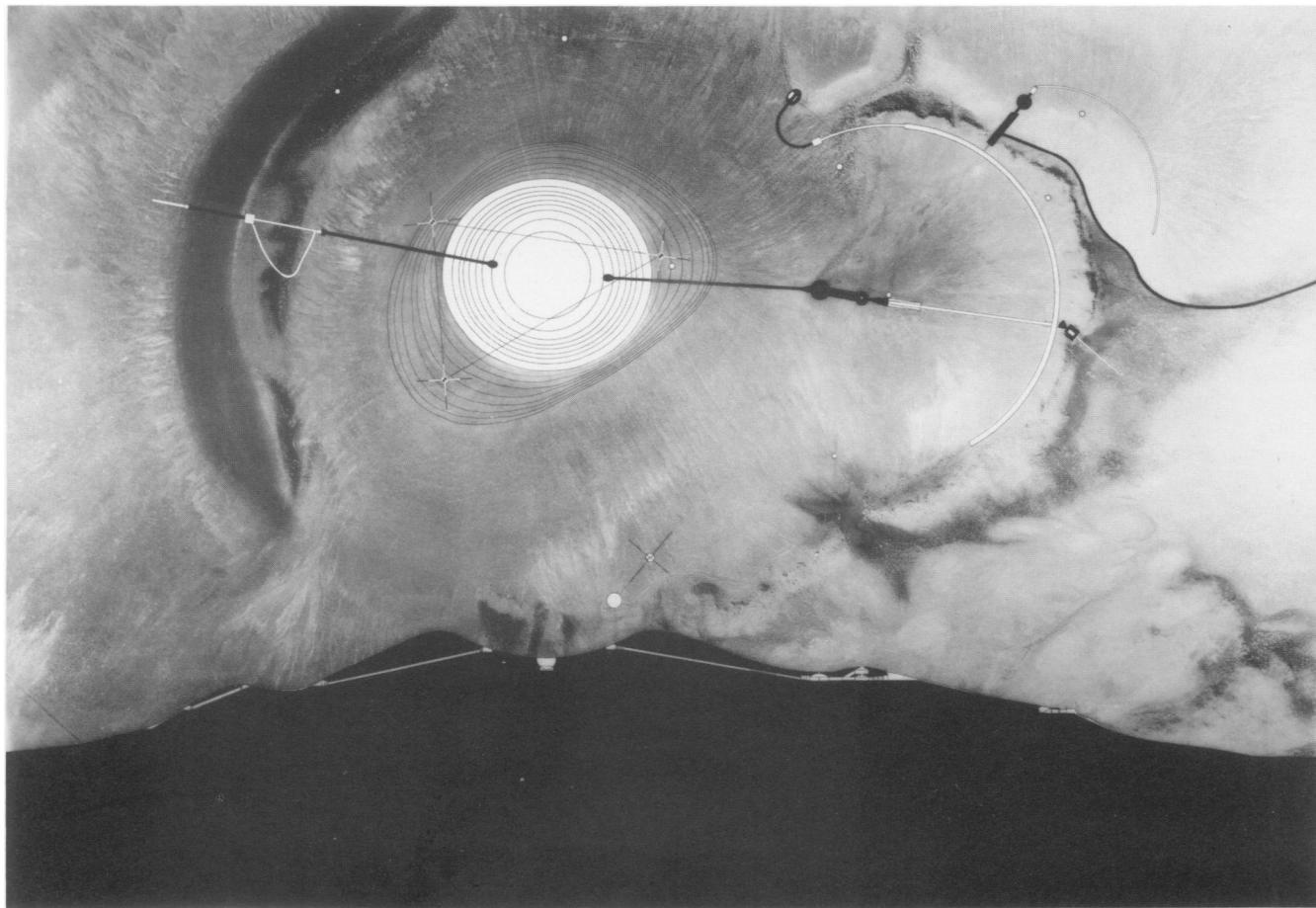


Fig. 9. James Turrell, *Roden Crater*, third stage site plan with cross section, emulsion, wax pastel, ink and graphite on mylar, 1985. (Photo: Doug Parker. © James Turrell. Reproduced by permission. Courtesy Marian Goodman Gallery.)

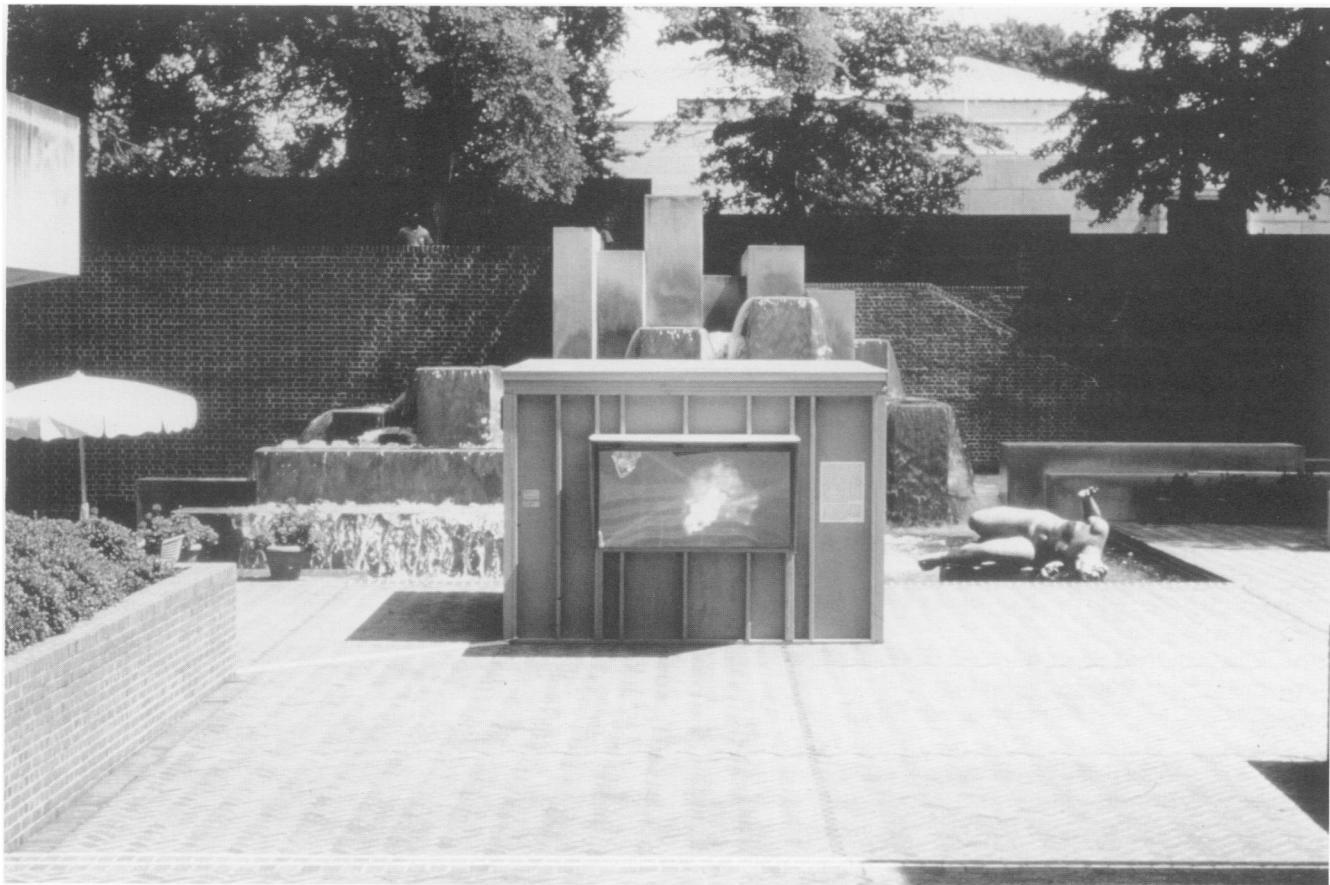


Fig. 10. Janet Saad-Cook, *Sun Drawing: 37° 40' North Latitude* (Virginia Museum of Fine Arts, Richmond, Virginia), wood, sheet rock, plexiglass, thin plastic industrial films, sunlight, 1983. Building: 8 × 12 × 12 ft. Viewing window: 3 × 6 ft. Skylight: 3 × 6 ft. The Sun Drawing was created inside the building and viewed from the outside through the window. Sunlight entered the building through a skylight cut into the flat roof. This Sun Drawing was active from 8:15 a.m. to 4:45 p.m. EDT, 22 July through 2 September 1983.

the fact that we make New York City and structures like that. We feel apart from nature, even though we do those things. It is that feeling of being apart that estranges us from nature. So I am interested in things that take away that estrangement. I think the people who made the Gothic cathedrals had as much to say about a sense of awe as does any of the rhetoric that happens within the cathedral. This is the place for art in our culture in the sense of connecting us with things beyond ourselves. That has been the job of artists for centuries. And I think the province of how we structure reality has also been the job of artists—playing with that and expanding that, and showing how we have put limits on it; these are very much the problems of art.

I think all the arts do that, whether it is how we structure things morally, how we structure them in terms of what we accept and do not accept or how we structure them in terms of prejudiced perception. These are things artists set about to change.

JS-C: To create a *new* reality, a greater reality, or does it matter?

JT: It doesn't really matter; art makes it

plastic. In other words, art plays with those boundaries.

JS-C: Of reality?

JT: Yes, and how we form it.

JS-C: That has been my sense about your work. I see you as an artist who literally shifts reality—makes us look at something we thought we knew and it's not what we thought it was.

JT: Or, it's *more* than we thought it was. Definitely that is part of the realm in which I work, in the sense that I work between the absolute limits of what we perceive and do not perceive—between those limits and the learned limits, which are more acculturated, and what we might also call prejudiced perception. We can *decide* to see things a certain way, and then we can be shown that we can see them another way.

JS-C: I once heard Joseph Beuys say that the merest possibility that his art could shift the perception of one human being in the smallest way sets off the possibility that that human being will then perceive in a different way, and the ramifications of change that can come forth from the shifting of perceptions ...

JT: It is *very* powerful. It is sort of what

one has to do to be a twentieth-century shaman.

JS-C: You don't mind that word—shaman?

JT: No, not at all. The artist's role is peculiar in this culture. This culture very grudgingly accepts its art. In some way, it tries to starve it by not supporting artists publicly very much. But that doesn't make it go away. At the same time, it needs art and celebrates art in a sort of peculiar way—not exactly celebrity status, but there is a status that one has in art. But it isn't as though this culture is as firmly behind art as society might have been, say, in Egyptian times, or in times when there was church patronage.

Art is here to stay. And society's only source of art is its artists. So we might as well pay attention to what they are doing. It is all *contemporary* art because it is all being made *now*. This culture is a little bit slow to accept it, but then that does not mean the culture can stop it from being done.

JS-C: I find that you project a solid sense of what you are trying to do, how you feel about it, how you are going about it.

JT: It takes a lot to do this but it hasn't

Saad-Cook, *Touching the Sky*

been just my effort. Ed Krupp has been very good about the use of the planetarium. Out here in Flagstaff, we use the services of Dick Walker from the Naval Observatory. The Naval Observatory has been very helpful in doing all the astronomy for us. It is a lot of work and it takes a lot of time and consideration of what we are up to.

JS-C: I have the sense that you are removed from the pressures of the art world.

JT: Well, part of that is because we all have our own course in the arts. This interest in working with 'light in spaces' was slow to sell commercially. The art in America is generally a consumerist art—one has to sell these 'comestibles'. Anyone not doing that immediately has to find his or her own way. I did not have to do it through galleries, and that is a really tough way to do it. The people who have done that in New York have paid some kind of dues I have not. But then there are the kinds I have had to pay in order to get my art going.

JS-C: I think as hard as it probably has been, you are very fortunate.

JT: Yes, I feel fortunate to be an artist in this period—it is a very exciting time to be an artist.

V. CONVERSATION WITH JANET SAAD-COOK

In 1981, I began working with reflected sunlight in a process that I call 'Sun Drawing'. It is a sculptural process that involves the interaction of the light from the sun with the rotation of the earth and highly reflective materials that I carefully form and place in the path of the sun's transit. As sunlight passes over the materials, reflected forms of light create a drawing of light on the surrounding walls and ceiling surface that subtly and continuously changes.

Since 1982, I have been working on the *Sun Drawing Project*. This monumental work will involve the selection of a land site, the design and construction of a large-scale structure that will house the Sun Drawing, and the creation of the Sun Drawing inside. On a smaller scale, I have built two Sun Drawings that were contained inside their own specially designed buildings. One was completed in 1983 for the Virginia Museum of Fine Arts, Richmond, VA (Fig. 10), and the other was completed in 1984 for the Smithsonian Institution [4].

On 24 August 1985, M.E. Warlick and I spoke in my studio in Washington, DC [5].

M.E. Warlick: At this point, what are your goals for the *Sun Drawing Project*?

Janet Saad-Cook: Since 1982, I have planned to select land for a permanent site and to design and build a structure that will contain a Sun Drawing for the full cycle of the year. I see this work as a place where people can visually experience the sun's cycle by watching forms of light that continually change with the earth's rotation yet return at the same point in the yearly cycle. This will be a place where 'time' is given visible form, where movement creates visual changes and where these changes complete themselves to the point of return. It will be a large domed structure designed to bring sunlight inside for the full cycle of the year, much like an observatory. The Sun Drawing will be built inside and will be active on every clear day. People will have to be inside to experience it. Creating this Sun Drawing will be like painting a painting, layer on layer, that is constantly changing in harmony with the sun's cycle. So I envision it as a quiet enclosure that will reflect the interaction of sun and earth—light and space and movement and time. From the earliest times, civilizations have used the sun's cycle to make their calendar so that they could live in harmony with the cosmological order. I am planning to make this work of art that uses the sun's cycle in order to reflect that order, and my purpose is to bring us back to the awareness of it.

MEW: Why is this so important to you?

JS-C: I feel there is much impermanence in our lives and much quick-paced moving about. It is sad to me how much we isolate ourselves from each other and from the natural world. So what I am trying to do is to take the cycle of the sun and make that a human experience through my art. The cycle is constant, and all of us who have ever lived on the earth have shared that cycle in some way. And so, connecting with it really connects us on some level with each other, beyond any barriers of time. My work in the American southwest gave me this feeling, and it was profoundly moving. When I set up those temporary Sun Drawings on some of the prehistoric sun marking sites, at solstice or equinox, I felt I was reaching across time, connecting my art to the ancients. Time just fell away and we touched the sky together.

MEW: Tell me about your work in the American southwest.

JS-C: My work there initially began because I wanted to have a more direct understanding of the sun's cycle. So I began to study prehistoric sun marking sites in New Mexico, Utah and Colorado. My first experience was on vernal equinox, 1983, at a site in northern New

Mexico called Tsiping. What happened at Tsiping is that I had an immediate response to the site, a feeling of the site. For example, in the area of the great kiva, I had a strong sense that this was very special ground, and that I was not welcome. I felt awkward and reticent about exploring and examining that area of the site. Then I walked across the mesa to where the sun marking site was believed to be and the whole atmosphere changed. What I suddenly felt was joy and total freedom to be on the land. There was snow, large rocks, an amphitheatre of rocks, and I felt free and welcome. What I observed and photographed was a tiny triangular rock opening through which the sun on equinox can be viewed setting directly behind a special mountain across the valley called 'Cerro Pedernal'.

There was another feeling I had on the site; the sense that the inhabitants of Tsiping had recognized the appropriateness of the place and then used it. That little rock opening was there all the time. They saw it and they recognized that through the rock window they could see the sun set directly behind Cerro Pedernal at equinox. Now that takes being quietly open to one's environment, to find that right place. They recognized it when they found it. Two observations that I made on this first site have been consistent to all the sites I studied: first, that each site has its own sensation, energy and atmosphere, and I have responded differently to all the sites; second, that the Indians recognized the appropriateness of the site, they received it and used it. They did not impose on the site. So it was evidence of a receptive kind of activity I found.

I returned to New Mexico for summer solstice in 1983 and went to the sites that I then would come back to for the full cycle of the year, on solstices and equinoxes. These are Anasazi sites at Chaco Canyon (New Mexico), and at Hovenweep (Utah and Colorado). At each site I did two things: I observed and photographed how the Anasazi used sunlight and shadow to mark the seasons and, on a selected number of the sites, I set up temporary Sun Drawings and photographed them.

In Chaco Canyon, the places I studied were Wijiji, Penasco Blanco, Pueblo Bonito and Casa Rinconada. My favorite at Chaco Canyon is Wijiji. At Hovenweep, I focused mainly on Hovenweep Castle and on Holly Rock, which is near the Holly House ruins. The feelings I mentioned were consistently present. Each site held its own feeling, and the environment was used as it was, it was not imposed upon. This is true of their dwellings as well for they oriented their

beautiful structures to the environment to be protected from the winter's cold and from the summer's heat.

Between March 1983 and June 1984, I completed four expeditions to these native American sites. Then, on autumnal equinox, 1984, I visited Teotihuacan outside Mexico City. By then I saw clearly that these expeditions had become far more important to me than learning about the sun's cycle or the history of astronomy; they had become an essential part of the development of my work and a profound source of inspiration, particularly for the *Sun Drawing Project*.

In October 1985, I am going to India to study the observatories of Jai Singh in Jaipur and in Delhi, and I realize this journey will be the completion of what I began in March 1983 at Tepic. The observatories of Jai Singh are historically, functionally and esthetically very different from the places I have studied in the West. They are complete—they are not ruins or reconstructions—and they measure time moment to moment by the sun. They are truly instruments of the sun.

MEW: As an art historian, I am curious if you see any premonition or basis for the Sun Drawing in your early work.

JS-C: When I look back over the years of my work, it is all connected, and it has always involved light. At first, light was being deliberately veiled and closed off, held back. Then light began to act upon the sculpture in that the objects would reflect, transmit or contain sunlight, so that sunlight began creating a new reality by its interaction with the sculpture. Then, finally, light became the object. All the steps are there.

MEW: I have seen a transformation of the kind of space you work in, going from accommodating the Sun Drawing to the space, to building an environment for a Sun Drawing. Also, your interest in the cycle of time has changed. Back in 1981, you were just capturing light at the moment, but then you became involved with the return of the sun and that brought out your interest in the cycle of time. Can you tell me what the steps have been, your process to this point?

JS-C: From the first Sun Drawing I laid out in my studio in 1982, I knew I had to learn about the sun/earth interaction, and I had to develop the materials. At the time, I was using a variety of industrial thin plastic films, the most important being a light interference film, and I had to find more permanent, stable materials. Now I use mirrored stainless steel, mirrored bronze and dielectrically coated, sagged glass (Color Plate B No. 3).

MEW: I am looking at the steel over

there and I notice that it is just barely bent; it's wonderful what it does just as an object reflecting the environment. But how does this rigid material compare to working with the thin plastic films?

JS-C: I have been able to substitute these rigid materials for all the thin films I was using. I can get the full range of form and color-by-light-interference that I got with the films. It was important for me to keep the properties of light interference as the coloring factor in the Sun Drawings because I wanted pure color, not pigmented color, and color that shifts with the changing angle of sunlight. In terms of my *Sun Drawing Project*, it was absolutely necessary to develop these stable materials [6].

MEW: What is your next step?

JS-C: This period of time we have discussed, 1982–1985, has been a gathering time for me in my art, a time of preparing to begin this project. The turning point will be after my journey to India. I see that as the time I'll move forward from gathering knowledge, information and materials for the project to making it a reality. It will then be time to look for the land.

Finding the land will not be easy; Charles Ross, Nancy Holt and James Turrell have all agreed on that point! There are practical considerations, for example the land must be available, it must have fairly consistent sunlight, etc. And there are spiritual considerations, how I feel about the site. I cannot tell you how I am going to judge that. I just know that when I have been on the sun-watching sites I have had a very strong sense of recognition of the 'rightness' of the place. I trust that. I trust that I shall recognize the rightness of my site. I am also sure that my present ideas about the Sun Drawing will change and grow out of the site itself. The experience of the Sun Drawing will be there, but it will develop appropriately from the site itself.

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1. Giorgio de Santillana and Hertha von Dechend, *Hamlet's Mill* (Boston: Gambit, 1969).
2. Funding for *Roden Crater* has been provided by the MacArthur Foundation, the Dia Foundation and the (U.S.) National Endowment for the Arts.
3. John Russell, "An Earthwork Looks to the Sky", *New York Times* (5 January 1986) pp. 1, 29.
4. To date, I have funded the *Sun Drawing Project* through sales of my art and with the assistance of the Mearl Corporation, Ford Motor Company and E. I. du Pont de Nemours & Company.
5. M.E. Warlick is a former Chester Dale Fellow at the Center for Advanced Studies of Visual Arts at the National Gallery of Art, Washington, DC. At the time of the interview she was on the staff of the National Gallery of Art. She is currently Assistant Professor of Art History at the University of Denver, Denver, Colorado.
6. The process that I developed using dielectrically coated sagged glass led to an appointment as artist-in-residence for the academic year 1985–86 at the Department of Physics, The Catholic University of America, Washington, DC. The University has a glass research center, the Vitreous State Laboratory, and I was the first artist to be invited to do collaborative research there.

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Call for Papers

Art and the Cosmos

The editors of *Leonardo* invite artists and others to submit articles connected to the theme Art and the Cosmos for publication consideration. Artists whose work deals with landscapes and technology provided or inspired by contemporary astronomy and space exploration are urged to submit articles under 2500 words on their work. Astronautical engineers and researchers in astronomy, archaeo-astronomy, history and other disciplines are also invited to submit articles on aspects of their work that may be of interest to artists.

Articles that have appeared in *Leonardo* in this theme area include the following:

- Elizabeth Goldring, "Desert Sun/Desert Moon and the SKY ART Manifesto", 20, No. 4 (1987).
- Pierre Comte, "Leonardo in Orbit: Satellite Art", 20, 17 (1987).
- Ezra Orion, "Sculpture in the Solar System: From Geologically Based Earthworks to Astro-Sculpture", 18, 157 (1985).
- Todd Siler, "Neurocosmology: Ideas and Images Toward an Art-Science-Technology Synthesis", 18, 1 (1985).
- Michael W. Carroll, "Space Art: The Impact of Space-Age Technology on Representational Art", 15, 210 (1982).
- D. Hardy, "Painting: The Impact of Astronautics and Science Fiction on My Work", 9, 95 (1976).
- A. Notarolo, "Some Proposals for Art Objects in Extraterrestrial Space", 13, 239 (1975).
- Ralph Turner, "Extraterrestrial Landscapes through the Eyes of a Sculptor", 5, 11 (1973).
- Leonid Resek, "An Artist in Modern Times: On Extraterrestrial Landscapes", 5, 297 (1973).
- Frank J. Malina, "On the Visual Arts in the Space Age", 3, 323 (1971).

Copies of these articles are available at nominal cost by writing to I.S.A.S.T., P.O. Box 421704, San Francisco, CA 94142-1704, U.S.A.



B

No. 1. Top left. Rita Deanin Abbey, *Exit Glacier*, A-34, porcelain enamel fired on steel, 24 × 24 in, 1986. Organic shapes and the contrast of color and texture allude to the energy of movement and sound.

No. 2. Top right. Albert Frisia, *Ceres*, Kinetichrome, 23 × 23 × 5 in, 1967. This work, which displays a formal-informal approach, was based on impressions pertaining to a distant asteroid.

No. 3. Bottom. Janet Saad-Cook, *Alembic*, sunlight, mirrored stainless steel, dielectrically coated glass, 8 × 3 ft, 1986. The materials that reflect sunlight to create this Sun Drawing are in the patch of sunlight at the lower right.