

One day in February 1981, artist Janet Saad-Cook was strolling through a Washington, D.C., department store when her attention was riveted by a crumpled piece of iridescent plastic cellophane glittering in a cosmetics display. Instantly she knew that she had found an artistic medium that would take her into a whole new phase of work.

At the time, Saad-Cook was in a period of artistic crisis. She had recently taken down her magnum opus, a huge gallery installation in a medium she had been working in for several years: flexible bamboo reeds she gathered on the banks of the Potomac and wrapped in white gauze, then shaped into fantastic white-line structures that one could walk through as they extended from room to room, casting dramatic shadows on the walls. Deep within herself she sensed that she had come to the end of what she could do in that medium, and she felt directionless, spent, and full of self-doubt. "I felt that I had shot my wad, that I would never do anything of value again," she recalls.

Saad-Cook is a highly intuitive artist who lets her materials lead her. When she saw that beautiful little piece of crumpled iridescent film, all she knew was that she had to get ahold of some and play with it, to see where it would take her. She purchased a roll of the then new material the very next day and, upon unrolling it in

her sunlit studio, found to her delight and wonder that the walls burst forth in a glory of reflected light. "It was like the whole room was both underwater and on fire," she says.

Thus commenced a path that would in time result in the creation of a new artistic medium that Saad-Cook calls Sun Drawings, created through a process that she later patented. Science and art here meld to create images of beauty that attune the viewer to the harmonious dance of the cosmos.

A Sun Drawing is a changing image of refracted light, cast onto a surface such as a wall. To make one, Saad-Cook shapes and assembles reflective materials and positions the reflective unit in a preselected path of direct sunlight. As sunlight touches the reflective unit or "sculpture," an image of light gradually appears on the surrounding walls and ceiling. This is the Sun Drawing. Its image slowly and subtly changes as, with the earth's rotation, the sunlight completes its passage across the reflective unit.

It is so simple an idea that one is inclined to feel, "why didn't I think of that?" But in actuality it takes detailed knowledge of optics, light interference, and astronomy to make a sophisticated Sun Drawing. Saad-Cook uses both mirrorlike reflective materials and ones that have multilayered interference

A Virginia-based artist uses unpigmented colors from the Sun itself for her palette, in drawings in light that attune viewers to cyclic celestial harmonies

©Joan Myers



Right: Artist Janet Saad-Cook (b. 1946). Front: Saad-Cook, *Distillation (Unmounted)*, 1988, as seen in the artist's studio.

coatings that break the light into pure colors. When she first started making Sun Drawings she used mylar, iridescent plastic films, and Du Pont's Kapton, a transparent gold polyimide film used to insulate

spacecrafts and spacesuits. These thin films, however, proved to be too flimsy and unstable, and after about four years she discovered a way to use optically coated glass and mirrored steel and bronze, both of which she shapes to make controlled and permanent Sun Drawings. These cast and reflect the Sun's pure colors_no pigments or stained glass are involved.

"When people hear that the colors are pure light," explains Saad-Cook, a sunny 51-year-old with infectious enthusiasm and a knack for explaining complicated processes simply, "they immediately think of a prism. But prismatic colors are caused by light dispersion a simple process in which light comes through the prism and is dispersed into the whole spectrum [as in a rainbow]. But light interference, which I use, is a much more sophisticated phenomenon in which the layering of thin films onto the glass surface pulls certain wavelengths of light into phase and others out of phase. So you get separate colors_you don't get all the colors together. This gives me a palette to work with."

Each piece of glass is capable of casting two colors: the reflection and its opposite, the transmission. If you take one of these optically coated pieces of glass and hold it in direct sunlight, a certain color, say green, will be cast on the wall. This is the reflection, which has bounced off the

surface of the glass. The transmission, on the other hand, is what goes all the way through the glass and comes out the back. If you hold your hand behind this same piece of glass you will see magenta light. What Saad-Cook does is take a mirrored metal such as steel or bronze and use that to reflect the transmission color onto the same surface that receives the original reflected light, resulting in the interplay of two colors and two images.

"Now, here's what happens with interference colors that doesn't happen with dispersion," continues Saad-Cook. "As the angle of



Courtesy of Janet Saad-Cook ©1986

■ The reflecting unit or sculpture for Alembic, Opposite

light shifts, the colors shift. This rosy magenta turns into a red, and the reflection goes from a bright vivid green to a pale blue-green."

The art of this is in bending the reflective elements to get an image. "These are not random reflections," she emphasizes. Saad-Cook starts with the mirrored metals, bending them by hand in direct sunlight until she arrives at a

reflection that is promising. She then takes pieces of glass_they range in shape and size but are no more than a foot square and about a quarter of an inch thick_that have been "sagged" in a kiln. (Little braces have been placed strategically beneath parts of the glass in the kiln; the resulting irregularity makes a varied, "textured" reflection possible.) The sagged glass has also been sent to an optical lab, where it received thirty layers of alternating coatings, all done according to Saad-Cook's explicit instructions. While bending the metal is a process of actually "drawing" an image in light reflection, with the glass it's a matter of selection. She will sag many pieces of glass at once and then choose the ones she wants to use. "But I've learned never to throw anything away," she notes.

Once Saad-Cook finds the interplay between reflection and

transmission that makes the best image, she permanently attaches the metal and glass onto a special mount whose angle she can also adjust. This she calls the sculpture, but looking at the fairly flat glass and metal object_minimalism in the extreme_one can hardly believe that from them spring such dramatic, varied, shimmering images of pure color.

Although Saad-Cook needs detailed knowledge to



make successful Sun Drawings_and it took her many years to gain that knowledge_the viewer needs no such understanding. One simply delights in the beauty of these ethereal images_dancing ellipses and birds in flight. The colors are so pure, with bright lines of focused light, that they resonate to the very soul. I feel shot through with energy while watching these subtly changing light forms; they engender a wordless ravishment, as if one's spirit is dancing for joy as inner light answers unto light. Then, when clouds pass over the Sun, the image softens poetically or flickers in myriad gradations, and one is awed by the infinite nuances of nature, how living a thing

■ Alembic, 1986

the universe is. As if remembering something once known but long forgotten, one feels deeply connected to the cosmos, rooted_an integral though tiny part of the music of the spheres. Placed in the universe's geometry, one comes to oneself, centered.

It is exactly these kinds of realizations Saad-Cook wishes to inspire through her art, for she is vitally aware that hers is a cosmic canvas. "The Sun Drawings are really not about pretty images of light," she says. "They're about the awareness of the Sun and the Earth, and how the tempo and harmony in the universe is good for our souls."

Courtesy of Janet Saad-Cook ©1986

Gradual Development

Saad-Cook came to this cosmic canvas only gradually, through many years of developing herself as an artist. She was born in 1946 in a small town in southeastern Ohio named Adena. At the age of eight she began studying piano, and in boarding school and later in college she focused on becoming a concert pianist. But in her junior year she came to a startling realization: "I knew I was a creative artist, but I also clearly knew that music was not my medium. I did not want to interpret what somebody else created; I wanted to be the originator. I

also knew that I wanted to create art that I could see and touch."

Upon graduation she turned to the visual arts, painting for about ten years. Around 1976 she made her first three-dimensional objects, using bamboo, sisal, gauze, and coffee-bean bags. "Once I moved from painting to sculpture," she notes, "it became very important to me that I make the medium as well as the artwork."

Her first sculptural works were what she called Pod Pieces, funereal black objects made of stuffed coffee-bean bags that were, in her words, "very deathlike but erotic at the same time." Then in 1978 she moved to a studio that had direct sunlight. "I started using sunlight as an additive factor in my sculptures." In a series she called In Between Space she worked in all white, as noted above, wrapping bamboo reeds with wet white gauze. "I wanted skinny lines of white. I took these white lines and created huge ghostly, skeletal sculptures and environments with them."

In January 1981 she mounted the large installation mentioned earlier, and upon taking it down went through a period of disheartening self-doubt as an artist. But the next month she encountered the little wad of iridescent

film in the department store.

"I spent the next year literally chasing sunlight around the studio," she says. An important transitional work was The Radiating Web of Light. "One of the materials I found was this hair-thin iridescent fiber," she remembers. "I found it in some knitting shop. Obsessive that I am, I proceeded to literally weave a web throughout the studio, and then take tiny pieces of the

Courtesy of Janet Saad-Cook ©1995



■ April's Full Moon, Saad-Cook's 1987 photograph of the site of the VLA Sun Drawing Project in New Mexico. The building to house the Sun Drawing, part of her global project, has yet to be constructed.

iridescent plastic and stick it up here and there. Then I would take gold mylar and shoot sunlight through it. Because the light would reflect, shimmering, off this web, your eye would perceive the complexity in space. Now when I look at pictures of the Web, I see what I wasn't seeing at the time: As I was shooting the gold light through, there were

images on the wall. But I was still focused on what was in the space.

"I loved that web. I would be sitting here still, looking at that web, but for the fact that in February 1982 we had a terrible ice storm and the ceiling fell in! [Fortunately, no one was inside.] It destroyed the Web. It was like somebody had just ripped my heart out.

"But it was actually the best thing that could have happened. I finally had to let go. I couldn't just sit there and adore it anymore." After the studio was cleared out for repairs, she brought in only a few reflective materials. "And that's when I saw it. That's when I looked at the light itself as an object.

"I found that I could make actual shapes in reflection, and I saw that if I left them alone the Sun would change them." But she went away for a few months, and when she returned in the summer the images were gone. She was panic-stricken. "I didn't know anything about the Sun cycle, and there was no sunlight in there anymore." In desperation she called the American Astronomical Society and, in a stroke of good fortune, was connected to astronomer Peter Boyce, who has since become her astronomical adviser.

Boyce came to Saad-Cook's studio. He advised her



Courtesy of Janet Saad-Cook ©1983

to go to some of the ancient Sun-marking sites in the Southwest. "He told me there were ancient Americans who were essentially doing what I was doing. Empirically they would watch the Sun and use it to mark their calendars, to plant, and do their rituals by. He said, 'You'll learn more doing that than you'll learn in a book.'"

Astronomical Studies

She ended up doing three years of astronomical research at ancient Native American Sun-watching sites in New Mexico and Utah, then at the pyramids of Teotihuacán near Mexico City, often in collaboration

with archaeoastronomers. "What I found there were the historic roots of my art," she says. At some sites she set up temporary Sun Drawings.

At one Anasazi site, she recalls, where she witnessed the summer solstice just after sunrise, "I was particularly aware of the unbroken continuum of time and the constancy of the Sun's cycle. This was especially evident in the close proximity of the petroglyphs made by different Indian cultures so removed from each other in time." She continued her astronomical marking studies at the eighteenth-century observatories of Jai Singh in Delhi and Jaipur. The artist became so proficient in the field that she was twice

■ A temporary Sun Drawing on the winter solstice window at the Anasazi Sun-marking site Hovenweep Castle in Utah, taken at solar noon of the summer solstice, 1983. Saad-Cook was still using pliable films at this time.

invited to give papers at the prestigious General Assembly of the International Astronomical Union.

Meanwhile, the Smithsonian Institution included in a national three-year tour one of the Sun Drawings she did with the flexible materials. Lit by artificial light, it was contained in a room-sized box that viewers peered into. Having the Sun Drawing moved from site to site, packed and unpacked, made

Saad-Cook see the need to find more stable materials.

She was already working with mirrored metals, but finding a suitable replacement for the iridescent film was a problem. She solved it through another fortuitous discovery when she happened to see a shard of iridescent glass_a beam-splitter_while visiting an optical coating laboratory in search of a nonreflective coating for the clear domes that she put over her plastic-film "sculptures." Instantly she knew this was the kind of thing she was looking for. To learn more about dielectric coatings and sagging the glass, Saad-Cook spent a year as artist-in-residence in the physics department at the Catholic University of America in Washington, D.C., in 1985-86.

Having at last found more durable materials (which also produced brighter images that could carry over greater distances), and having completed her astronomical research, Saad-Cook embarked on realizing a project she had conceived several years before: the Sun Drawing Project. This would be a building that would permanently house a multiple Sun Drawing in such a way that the moving mural of light could be seen by visitors year-round.

Saad-Cook traveled all around New Mexico in search of a site and found it again in a moment of intuitive discovery_at the National Radio Astronomy Observatory's Very Large

Array (VLA) on the Plains of San Agustin. This is the largest complex of radio telescopes on the world. As it turned out, the same interference phenomena that Saad-Cook uses in her drawings the observatory uses in the process of transforming radio waves from deep space into images of the past that are visual

Courtesy of Janet Saad-Cook ©1997



■ The Sun Drawing Athanor at the Boston University Photonics Center during installation earlier this year. A heliostat mirror on the roof casts sunlight to a secondary bank of mirrors high in the atrium, which throws the light onto the sculpture on its ten-foot podium. The resulting Sun Drawing is 20ft. x 10 ft. on the curved atrium wall. The signature image for all Sun Drawings in the global project, an arc of light, is just beginning to appear

links with the history of the universe.

The director of the VLA was immediately receptive. "I told him, 'You

give me the land to build it on, and then I said a truly stupid thing_'I'll see that the money gets raised to build it.' " She told him the VLA would own the building and be responsible for maintaining it and keeping it open for visitors. Within two years, the National Science Foundation approved the project and Saad-Cook and some of her astronomer friends created the Sun Foundation to help raise funds for it as well as other projects that showed the connection between art and science. Raising the necessary funds, however, has proved an arduous (and still incomplete) task.

The project has not yet been erected, but Saad-Cook sees that as a good thing, because it has gone through many changes as her ideas and technical know-how grow in sophistication. In 1991 she hired architect Eric Owen Moss to help design the project, and the collaboration is ongoing.

Global Scale

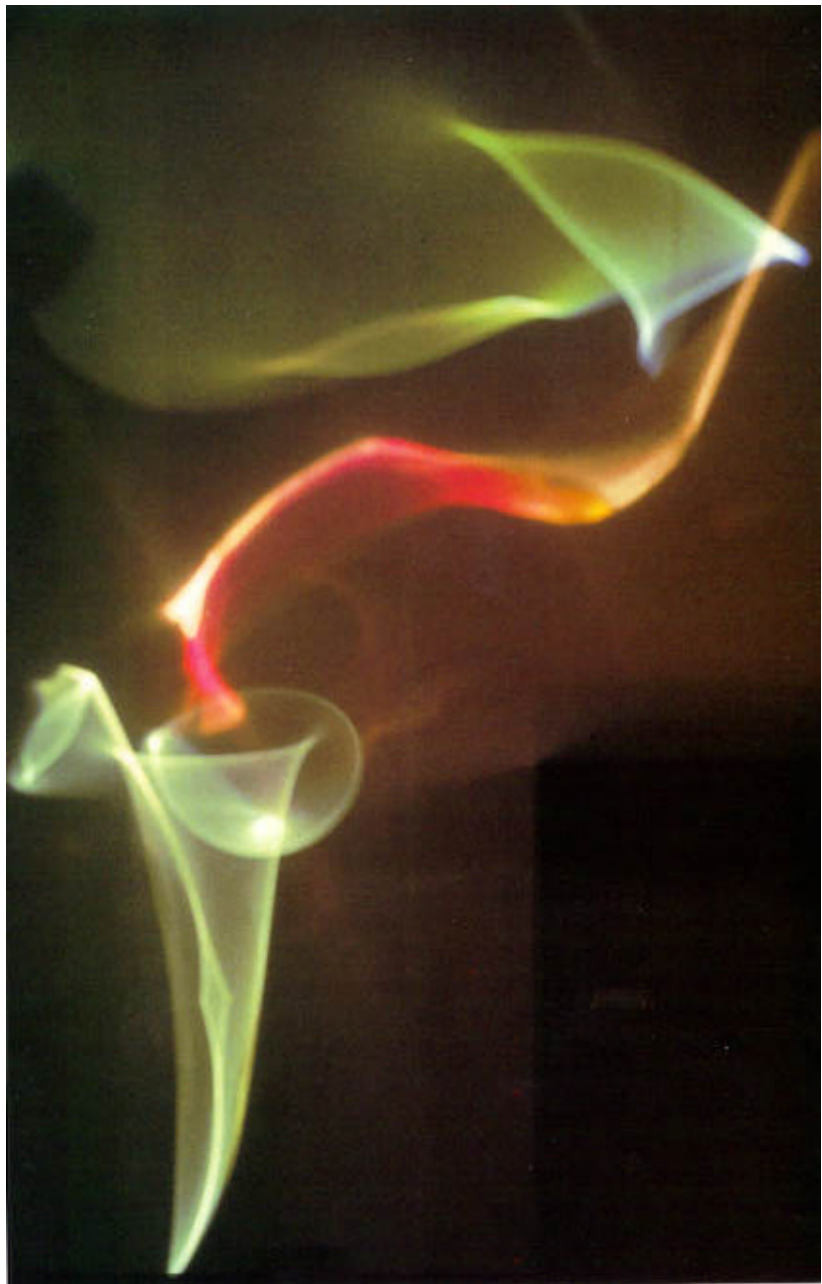
In 1994 Saad-Cook conceived of extending the Sun Drawing Project onto a global scale. A necklace of sites around the world would house interconnected Sun Drawings, each unique but linked by a common marker that appears in the image at a certain time when the sun is sweeping overhead. This marker, now designated as an arc of light, is to be "passed" from site to site: When it begins to fade at one site, it appears in the next. "It helps

■ A work in progress,
provisionally titled *Analema*.

you realize," says the artist, "that we are all interconnected, absolutely, whether we want to be or not."

The first global Sun Drawing installation was completed at MIT Haystack Observatory in Westford, Massachusetts, in 1995. It is housed in the library. The second, at Boston University's Photonics Center, was completed this year and appears daily in the building's atrium. The latter required a complex optical system to bring sunlight into the vast central space. The Sun Drawing there has quickly become so beloved that the center has agreed to pay for expensive upgrades to the heliostat (which casts the sunlight onto a bank of three mirrors, which in turn throw it down to the reflective Sun Drawing apparatus) so the drawing can appear for longer hours—from about 9:00 a.m. (EST) until about 3:30 p.m.—and be brighter and more sharply focused. Since 1991 the VLA has also had a Sun Drawing housed in the atrium of its headquarters office building in Socorro; although this is not the big project that is still planned, Saad-Cook will incorporate the arc of light into it by the end of this year.

Other sites planned in France, India, Japan, and Australia are in various stages of approval, funding, and development. In Nice,



Courtesy of Janet Saad-Cook ©1997

the Sun Drawing will be housed in a subterranean chamber behind the Petite Meridian instrument, part of the great nineteenth-century observatory complex there. At one of these global project sites, still undecided, Saad-Cook will devise some sort of Sun-marking system that will show where the arc of light is at any given time.

In the meantime,

Saad-Cook does Sun Drawings for private homes and companies. Each work is site-specific. People find a Sun Drawing calms them and helps them get in tune with "the big picture."

"In my work," says Saad-Cook, "I want to take the cycle of the Sun and make it a human experience through art. The cycle is

constant, and all of us who have ever lived on the earth have shared that cycle in some way. I believe that connecting with this cycle connects us on some level with each other, beyond any barriers of time. And I feel that the more connected we feel we are, the more peaceful and loving we can be with each other."

This is the central core of Saad-Cook's work. Her medium is not only beautiful reflected light in time but all the intricate workings of celestial harmony, and her art imparts promise for human harmony and world peace. Says the artist: "If people can get that from my art, I've done my job."

Susan Fegley Osmond is an editor of the Arts section of The World & I.

The colors are so pure, with bright lines of focused light, that they resonate to the very soul.

The global project "helps you realize that we are all interconnected, absolutely, whether we want to be or not."

"I want to take the cycle of the Sun and make it a human experience through art."