Every New Thing: Artistic Technologies in the Antarctic

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ABSTRACT
Technologies deployed by artists in the Antarctic art have progressed in cumulative fashion from painting and drawing to photography to new media, such as installation and performance art, a sequence which parallels historical eras in exploration.

1. INTRODUCTION
Historian William Goetzmann separated the West's exploration of the world into two great ages. During each of them contemporaneous artistic technologies were used to support expeditions. The First Age consisted of the great seagoing voyages of the 16th through 18th centuries, a tradition to which the three Pacific voyages of Captain James Cook belong. The Second Age, according to Goetzmann, was composed of the 19th and 20th-century land-based explorations of continental interiors, which included Livingstone in Africa, and the work of the U.S. Army Corps of Topographical Engineers across the American West. Goetzmann's student Stephen Pyne then went on to define a third era, the exploration of extreme environments, which began with the International Geophysical Year (IGY), 1957-58, and the exploration of Antarctica, the deep oceans, and space. The artistic technologies deployed during the First Age were primarily painting and drawing, then photography during the Second. According to Pyne, the corresponding technology for the Third Age in environments where no native populations were to be found was remote sensing (and therefore, increasingly, digital imagery). The Antarctic has seen all three used at critical junctures that illustrate how visual culture and exploration mutually inform one another. Lita Albuquerque from the U.S. provides an early example of how digital technologies are being used in the Antarctic for artistic purposes.

2. THE FIRST AND SECOND AGES OF ANTARCTIC ART
The earliest artist inside the Antarctic Circle was William Hodges (1744-1797), who accompanied Captain James Cook on his second circumambulation around the Pacific Ocean in 1772-75. Hodges was a precursor to the fewer than three hundred visual artists who have visited the continent. He was a member of the European colonial tradition that included artists on voyages of exploration in order that the new lands encountered be recorded visually, not just represented by charts and maps, ship's logs, and the collection of local specimens. Officers in the service of British expansionism were often trained as surveyors, Cook among them, and even as topographical artists, but the inclusion of a landscape artist was a relatively new development for the times. Hodges was a classically trained landscapist who was taught topographical techniques by the sailors. His work, and that of other expeditionary artists, thus served the government in two ways. First, his watercolor sketches and drawings were strategic documents recording aspects such as the location of safe anchorages, the size of local watercraft in places like Tahiti, and potential geological resources. Second, the watercolors and subsequent oil paintings were exhibited and served to promote public enthusiasm for funding future explorations.

From the time of that voyage until the early 20th century, the Antarctic was recorded and presented to the public through drawings, paintings, and prints produced by both the officers and the artists accompanying them. The transition from First to Second Age technologies in the Antarctic occurred at the end of the 19th century, as exemplified during the expeditions of Sir Robert Falcon Scott. The British captain took Edward ("Bill") Wilson (1872-1912) with him on both his expeditions, starting with the 1901-1904 Discovery voyage, which conducted the first extensive overland exploration of the Antarctic. Wilson was the official science officer and physician, but also an accomplished watercolorist. At Scott's request while traveling along the Ross Ice Shelf, he made a running panorama of the mountains forming the horizon, a drawing that he later estimated would stretch for over 80 meters if pasted together. Wilson returned aboard the Terra Nova for the 1910-1912 expedition, and again made both detailed maps and sketches of the terrain, as well as watercolor paintings. This time, however, Scott also brought Herbert Ponting (1870-1935), the first professional photographer to visit Antarctic, and he also shot footage for the first Antarctic film, a classic in exploration cinematography. With Captain Scott to the South Pole (1913). Only Wilson, however, was able to accurately record geological features and distant typography, Ponting being frustrated by cold, mirages, and haze.

From that expedition onward the scientific role of painters was increasingly supplanted by photographers as the optical technology became easier to use. The use of artists, however, to reconstruct moments of human interest, and to depict icescapes for the public support of science, continued, and was upheld in the Antarctic during the first half of the 20th century almost entirely by military artists accompanying the U. S. Navy, which was the officially designated exploring authority for the period preceeding, during, and after the International Geophysical Year (IGY) in 1957-59.

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3. THE THIRD AGE OF ANTARCTIC ART

Contemporary art arrived in the Antarctic in 1959 with the Swiss photographer Emil Schulthess, who took time-lapse fisheye photographs at the South Pole and other locations, then drew in graphic devices, such as lines of longitude, directly on his prints to metaphorically connect the Pole to cities as diverse as London and Singapore. The Australian painter Nel Law arrived in 1960, followed by her countryman Sidney Nolan in 1964, and in 1975 the English painter David Smith. Schulthess demonstrated that prime tenet of contemporary art, self-reflexivity; Law and Nolan brought expressive abstraction to the icescapes, and Smith's surrealism laid bare the cognitive dissonance facing artists attempting to deal with such an alien environment.

The pioneering landscape and color photographer, Eliot Porter (1901-1990) also arrived on the ice in 1975. His book, Antarctica, is cited more often as a visual influence than any other by artists who have since visited the continent. Porter was the first artist selected by the National Science Foundation to visit the Antarctic, and a progenitive artist for what would become the NSF Antarctic Visiting Artists and Writers program, which along with the similar national schemes of New Zealand, Australia, and the United Kingdom kept art alive on the continent.

Until the turn of the century, however, almost all the artists sent by the U.S. and other countries to the continent were representational painters or straight-ahead nature and landscape photographers. It is only with the advent of artists such as Lisa Roberts (Australia) in 2002 and Lita Albuquerque (U.S.) in 2006 that we begin to glimpse how new media are coming into use by artists visiting the continent.

4. LISA ROBERTS

Lisa Roberts (b. 1949) sailed to the Australian aboard the research ship Aurora Australia V7 in 2002 as a participant in the Australian Antarctic Division's Humanities Program, the same year she received a New Media grant from the Australia Council. The first work she produced was 42 days -- An Animated Antarctic Journal, an interactive CD-ROM which takes viewers through her journey via the drawings, paintings, and digital sound and video recordings she made during the journey. Roberts also documented work by scientists and crew members in digital photographs and video, writings, drawings, and diagrams. She took careful note of individual gestures and tones of voice during interviews, and upon her return worked with dancers to shape movements in response to the documentation. She then generated computer animations based on rotoscoping (tracing over film) and traditional frame-by-frame sequencing. She notes on her website that she focuses the attention of the viewer upon motion by reducing the dancing figures to dots and lines. Roberts used those abstractions as the basis for works on glass and Perspex (Plexiglas) to represent the formation of ice, nutrient flows, sea currents, and other natural processes in the Antarctic environment. Her website presenting the animations and objects is her way of promoting further scientific research to the public, as well as research in art.

The Antarctic work by Roberts may be seen as a sophisticated, multimedia presentation of, interaction with, and creative response to a research voyage in Antarctic waters. The drawing of Schulthess on his time lapse fisheye prints can be seen as a precursor in both intent--the animation of the Antarctic through movement, in this case, the sun across the circular sky--and in method--the intermingling of first and second age of exploration visual technologies. The next step would be to for an artist to move beyond representation of the Antarctic experience and to interact directly with the Antarctic in an artwork using digital and other media.

5. LITA ALBUQUERQUE PRE-ANTARCTICA

Lita Albuquerque (b. 1946-) is an artist who traces her lineage from the Earthworks practitioners of the 1960s, such as Michael Heizer, Walter De Maria, and Robert Smithson, who used earthmoving machinery to create iconic land sculptures. Albuquerque earned a degree in art history from UCLA in 1968, the year that Heizer was throwing dry pigment out onto the playas of the Mojave Desert to make expressionistic gestures, and he was introducing his colleagues De Maria, Smithson, and Nancy Holt to artmaking in the desert. Heizer would go on to bulldoze dirt into monolithic sculptures in Nevada, while Smithson would push rocks out into the Great Salt Lake to form an entropic spiral that evoked the rock art of prehistoric peoples. Holt, after Smithson's death, would align her four concrete Sun Tunnels out on the empty flats west of the lake.

Often these early land artists and their colleagues would reference the sky. Holt's Sun Tunnels, for example, was situated so that its open ends would accept the rising and setting suns during the summer and winter solstices. Holes were drilled into the tops of the enormous tubes to line up with various constellations, their diameters varying to indicate the apparent magnitudes, or relative brightness, of the stars. In 1971, the same year that Heizer was excavating Double Negative on the Virgin Mesa and Smithson dumping rocks to extend his Spiral Getty, Robert Morris was constructing his open-air Observatory, which in form and function referenced Stonehenge. Walter de Maria set out 400 stainless steel poles in New Mexico, The Lightning Field, a direct bridge between ground and sky. The most elaborate of all such works was that by James Turrell, who in 1974 was flying around in a plane to find the perfect volcanic cinder cone that he could tunnel through and transform into an observatory meant to reshape the viewer's perception of space. Roden Crater in northern Arizona has become a facility not so much about art, perhaps, as about procession and ritual.

In counterpoint to these large structures built during the 1970s, more ephemeral landscape intervention were being conducted, such as the walks documented only through photographs and drawings by Englishmen Richard Long, Hamish Fulton, and Chris Drury. Their transitory treks were more performance art than sculpture, as was the early work of another young Englishman, Andy Goldsworthy, who would become renowned for fashioning ephemeral gestures out of ice and twigs. Under the influence of both Smithson and Long, he balanced rock cairns on tidal flats and created temporary drawings by walking on the sands at low tide. Later he would make more permanent sculptural works, such as his serpentine rock wall at the Storm King sculpture park.

By 1978 Albuquerque was herself distributing rocks and dry pigments across the landscape, initially on the ocean bluffs above Malibu and then farther afield on the El Mirage Dry Lake north of Los Angeles. The first artwork she describes as belonging to her mature oeuvre was Malibu Line, a shallow trench fourteen inches wide and forty-one feet long filled with ultramarine dry pigment. In photographs, the only surviving trace of the ephemeral work,

the viewer is at the near end of the line, which extends outward to the edge of the bluff where it abuts the lighter azure of the ocean, which in turn meets the even paler blue sky at the horizon. The spectrum of hues constitutes a continuum, a connection between earth and sky negotiated by the artist.

The six-mile-long El Mirage playa is the nearest dry lakebed to downtown Los Angeles, and ten years earlier both Heizer and de Maria had been using it, along with other alkali flats in the Mojave, as a tabula rasa for earth drawings. Heizer, for example, was making circular drawings out of motorcycle tracks on the Jean Dry Lake, while de Maria set out his Desert Cross in white chalk on El Mirage. The works could only be fully apprehended from the air, much in the same way as the Nazca lines in Peru. As with the case of most earthworks, the primary experience of the art was through photographs, given both the remoteness of the sites and the ephemeral nature of the works.

While some of the first earthworks artists went on to build more permanent sculptures, all that often remains of more performative works by later artists, such as Albuquerque, are often photographs. The trend since the 1970s has been for artists to avoid making large-scale permanent works, and instead to practice a type of land art that leaves only modest traces, if any, at their sites. Land art works are more often than not temporary installations performed by the artist and/or team members, and all that remains are digital traces (online, in electronic files, and as prints from those files), and occasionally physical fragments brought into a gallery for sale.

The title of Albuquerque's Mojave work Rock and Pigment Installation, installed in 1978, gives no clue to its celestial orientation; it is in actuality a 300' by 500' model of a constellation directly above the Mojave at that time of year, but of course invisible during daylight. She called her constellar analog a "mirroring of the sky," which stemmed from her consideration of Navajo sand paintings, the carefully deployed forms in Japanese rock gardens, and the alignments found in ancient sites such as Chaco Canyon. In 1980 she executed a work for the International Sculpture Conference in the nation's capital, turning the Washington monument into a gnomon for a giant sundial on the Mall by cutting and filling with red pigment four chevron-shaped trenches at the cardinal directions touched or implied by the shadow of the obelisk during the day. Albuquerque's incorporation of such an iconic monument in an analog sundial led to an invitation from Egyptian officials for her to create a temporary installation near the pyramids at Giza for the 6th International Cairo Biennial held in 1996. She surrounded the pyramids with a field of stars, and recreated the constellations with circles of her by now characteristically deep blue raw pigment. Sol Star fueled Albuquerque's ambition to involve not just monuments in her practice, but the entire planet.

The North and South Poles have exerted a metaphorical force as well as a magnetic one ever since the Greeks postulated that the Earth was a sphere with a continent at the bottom. Albuquerque applied to the NSF Antarctic visiting artists program and in 2004 was accepted for her plan to set out 99 ultramarine globes on the largest single piece of ice in the world, the Ross Ice Shelf, an installation that would once again mirror the invisible constellations above. This was the first half of an artwork to be executed as near as possible to both poles, a work that would be less physical object and more an imagined and virtual one.

6. ALBUQUERQUE ON THE ICE

Artists had urged the NSF for years to send land artists to the ice, and Stellar Axis: Antarctica would be the first such large-scaled installation work created on the continent. Albuquerque had two strong visual ideas compelling her to mirror constellations at the poles. First, stars are invisible during daylight, which at the poles means for the entirety of the six-month-long day. Her project would maintain the figure-to-ground relationship of stars to sky, but reverse the light at the planet's diurnal maximum of the winter solstice. The white ice would represent the black sky, the dark blue spheres the light of shining stars. It was an elegant if oblique reference to how astronomers of the early twentieth century worked, mostly by looking at the more sensitive negatives of photographs made through telescopes, versus the positive prints, which had a lower level of resolution. It was also a sophisticated use of the Global Positioning System satellites, which her team astronomer, Simon Balm, used to determine the position of the brightest 99 stars in the southern hemisphere and their corresponding positions on the ice. Although the metaphor for Stellar Axis: Antarctica was a mixture of ancient sky worship and genetics, its design was predicated entirely upon digital means.

The second idea was based on how one could conceive of light passing through the planet as if it were a shaft of information, photons literally bringing us news of the universe. She realized that light from the two poles would meet in such an imaginary construct. When talking with Balm she learned that if you are standing in the northern hemisphere, the rotation of the Earth makes the stars appear to rotate counterclockwise around the Pole Star, but that when standing in the southern hemisphere, they appear to be rotating in a clockwise direction around the corresponding celestial pole. Albuquerque imagined that in the center of the earth--where the two apparent motions might meet--the geometrical figure created would be a helix, or a spiral with a constant diameter, much like half of a strand of DNA. She visualized the two visualized strands of light passing through the center of the Earth and forming a double helix, a metaphor for the codification of information over time in strands of DNA.

When the NSF accepted her application to execute the first half of her project in the Antarctic, the best the agency could offer was a chance to lay out the spheres out on the Ross Ice Shelf at just short of latitude 78 degrees south. Not only were flights to Pole fully booked with scientists and their gear, it would be difficult enough working for a week to set out her project on the ice shelf a few miles from McMurdo Station, where temperatures seldom veer below zero during December. Attempting the project 10,000 feet above sea level and where it was thirty to fifty degrees colder would have greatly increased the chance for failure.

Albuquerque assembled a team to assist her in construction and documentation of the project. In addition to Balm, who would act as their Antarctic field guide as well as astronomer, the photographer Jean de Pomereu, filmmaker Sophie Pegrum, and cinematographer Lionel Cousin would accompany her. As with most contemporary earthworks--as well as in accordance with the strict international protocols governing the Antarctic--the art would be installed, photographed, and then taken down. Upon arrival at McMurdo, Albuquerque selected what she thought would make the most aesthetic site for the work on the Ice Shelf, and Balm bored out the first hole with a gasoline-powered drill in which to anchor the largest and central component, a 48-inch

sphere representing the brightest star in the sky, Sirius. It was December 14th, and the Solstice was on the 22nd.

All ninety-eight other stars of descending magnitudes, represented by graduated spheres in seven steps down to ten inches, were aligned from that point according to his GPS, the array representing the entire dome of the "night" sky from horizon to horizon translated into polar coordinates and scaled within the 400-foot circle. It took them that entire week to install Stellar Axis, but they made it in time for fifty-one people from McMurdo to walk out onto the ice shelf on Midsummer and follow the Archimedean spiral that wound into the piece. As the participants unwound from the center, Pergrum flew overhead to film the procession, while de Pomereu and Cousin photographed and filmed it from the ground. Pegrum flew in clockwise circles until all the processioneers had completed the three revolutions to exit the work. And then the pedestrians made a spontaneous gesture. Everyone dropped prone on their backs: snow angels. The effect was surprisingly unsentimental, neither a worshipful gesture nor an ironic one, but simply an acknowledgment of the connection between earth and sky. Today the public experiences only digital traces of Stellar Axis: Antarctica through the still and moving images captured by the team, which are most often viewed online.

7. CONCLUSION

Stephen Pyne visited the ice in 2002-03, an important journey that helped him define the Third Age of Exploration. Another historian, Australian Tom Griffiths, visited several years later, and references Pyne in his own book, Slicing the Silence. Griffiths restates the Third Age: "In Antarctica you are intensely aware of the celestial Earth . . . . From the mid-twentieth century, Antarctic was the site of the transformation of Earth science into planetary science. The continent of ice was no longer just the end of the Earth; it became a place from which to intellectually encompass the planet and a privileged human window on the universe." Albuquerque's Stellar Axis: Antarctica is not just the first large-scale installation work on the ice, but the first artwork to fully take advantage of that privilege.

Albuquerque wonders how she will manifest the second half of the Stellar Axis project, the North Pole as inaccessible to her as the South. The corresponding position on the planet, when she simply draws a line from her project on the Ross Ice Shelf, is in the waters off Greenland. She visited a spot nearby on a charter ship--but how to deal with spheres in the water is something she and Balm haven't yet solved. When they do, and when the other half of this artwork is realized, Albuquerque will have completed one of the largest gestures made by an artist on the planet, appropriate enough in an age when globalization is a condition that needs to be made visible.

The artistic technologies deployed in the Antarctic, from painting and drawing through film-based photography to digital media, paralleled the three major eras of exploration on the continent, a progression that to some extent also follows the development of the Anthropocene. The newer technologies have never completely replaced their precursors, but rather added to the tools available to artists.

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