

The Postlunar Imaginary
through Inflatable
Architecture
Katarzyna Balug

THE POSTLUNAR IMAGINARY THROUGH INFLATABLE ARCHITECTURE

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The membrane of the structure becomes an extension of one's skin, seen from inside the body, as it indents, sweats and changes shape, as the person inside moves over and through various locations. . . . We are all part of an energy continuum throughout the universe. . . . Understanding of energy processes is reaching the point where the wave emissions of the body and brain can be registered and measured, opening up the possibility of ultimate environmental control. . . . We are not alienated by technological hardware, but freed by technological forecasting, control and simulation of the elements. —Graham Stevens, "Pneumatics and Atmospheres," Architectural Design

The artistic exploration of bodily enmeshment with technology and environmental control is emblematic of the changing conceptions of human subjectivity that occurred throughout the 1960s. In his 1972 article for Architectural Design, English artist Graham Stevens claimed that an existential extension of the body becomes coterminous with its environment—a body that, like its environment, is fully quantifiable, its mysteries decoded and controlled. NASA's 1960s Apollo missions made explicit the case of human dependence on technology as they transformed the lunar voyage from long-standing fiction to reality. This article explores how the existential questions prompted by the Space Race manifested through inflatable structures, an often overlooked mode of experimentation in architecture. Inflatable constructions, made in the United States and Western Europe in the 1960s, appropriated the physical materials, iconography, and narrative of the NASA Apollo program to produce the imaginary of a new world not in outer space but firmly grounded on Earth. Deploying the materials of the Space Race, these structures expressed possible meanings of lunar conquest for humankind.

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Graham Stevens 'Atmosfields' On location in St. Katharine Dock London. Photo: Andrew Tweedie. Copyright G.A.Stevens 1970.

NASA, Representation and Affect

When the Soviet Union successfully launched the Sputnik I satellite in 1957, Americans were reminded of the potential dangers of advanced technology in the hands of an ideological enemy. Amidst President Kennedy's call for the race to the Moon in 1962, the American space agency launched the NASA Art Program, whose mission was to "interpret the space program in terms already understood." In other words, the goal of the program was to condition the American public to identify with the pursuit of the lunar frontier, to at once naturalize the technology and make

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palatable the expense that the feat entailed. What would be directly experienced by only two men needed to reverberate as a feat for and by the West. Art was chosen as the most relatable means by which to connect with the public imaginary. NASA recognized that "space travel started in the imagination of the artist," and the program invited young and established painters and illustrators to serve as "witnesses and recorders of our efforts in this field." Dozens of artists attended launches from 1963 through all of the Apollo missions. They had full access to the astronauts and the infrastructure required to reach space. In return, NASA widely published their sketches, drawings, and paintings, which depicted raw, emotional responses to the human-machine spectacles that the artists witnessed. The artworks leading up to and including the 1969 Moon landing mission of Apollo 11 projected a heroic link between technology and man in anticipation of the lunar event. They tended to emphasize the technological apparatus, the astronauts, and, more rarely, imagined vistas of the Moon. Few, if any, depicted the potential view of Earth from the Moon or considered the return back to Earth. This suggests that the focus of participating artists and of NASA was on the pursuit of the frontier, not on what might come after. Historian Benjamin Lazier examines the unanticipated existential transformation via German philosopher Hans Blumenberg: "If one tries to relate the centuries of imaginative effort and cosmic curiosity to the event, then the both unexpected and heart-stopping peripety of the gigantic departure from the Earth was this one thing, that in the sky above the Moon one sees the Earth." Seeing Earth surrounded by the vastness of space revealed that man has no realistic alternative to the planet; one result of this was a new sense of rootedness, often accompanied by a deep sense of oneness. The overwhelming response of astronauts who witnessed this view exemplifies Blumenberg's notion of reenchancement with Earth. For example, Apollo 9 astronaut Russell Schweickart recounts that seeing Earth in the profound silence of a spacewalk occurring at thousands of miles an hour made him feel like a "sensing element for man," that it was as if life itself were having the experience rather than Schweickart as an individual. The astronauts' images brought this extraplanetary perspective of Earth to the public and in the Earthrise moment transformed notions of Earth. The planet appeared as a "world picture": fully knowable and representable. However, understanding Earth as a closed-loop system in an infinite array of space also made visceral its limits, including the imminent ecological consequences of unfettered expansion.

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Graham Stevens 'Atmosfields' On location

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in St. Katharine Dock London. Photo: Andrew Tweedie. Copyright G.A.Stevens 1970.

Space Colonies, on Earth

Habitable, inflatable structures were part of the space imaginary long before the founding of NASA. As early as the 1950s, human space colonies were depicted as tightly regulated, enclosed, inflated environments shaped like large tori. Flexible, light nylon and plastic forms, which could inflate with pressurized air to recreate Earth's atmosphere, were commonly envisioned as the exterior shells of the satellite dwellings. In response to the recognition of Earth's bounded form in the late 1960s, inflatable space colonies were reinvigorated as emblems of an idealized mode of ecological living. The lunar landing inspired Gerard O'Neill, among others, to explore their viability as liberators of humanity from the home planet. However, another source of the postlunar imaginary was an ever-present but understudied form in Earth-oriented architecture. The inflatable articulates a blending of the two contradictory responses to space travel: rootedness and desire to leave Earth permanently. Just as the idea of human space colonization appeared closer to fruition with the race to the Moon, a number of architects in the US and in Western Europe began to experiment with inflatable forms. Inflatables had appeared earlier in art linked with kinetic sculpture, and in architectural experiments in housing or defense. Yet it was not until the 1960s that experimentation with grounded inflated forms contained social and sensory experiments self-aware of the earthly context. Many of their authors were in dialogue with one another across the two continents and have often been associated with countercultural collectives distinct from, and critical of, mainstream modernism and modern life more generally. At the same time, these architects found inspiration in NASA's inflatable technologies and space aspirations, and they embraced Buckminster Fuller's technocratic views, idolizing him despite his engagement in government commissions. Fuller unceasingly pursued technological visions to sustain life on Earth rather than away from it; inflatable works combined his ecological concerns with efforts to make strange the familiar of the planet so that it could be experienced anew. During the 1960s, publications like *Architectural Design* featured modernist architecture, conceptual designs for space habitats, and inflatable architectural experiments with equal gravity. By the late 1980s, however, inflatable projects, like other countermovements, were relegated to the margins as postmodernism consolidated. Caroline Maniaque-Benton poignantly demonstrates that the 1982 edition of Charles Jencks's *Architecture Today* included a chapter on "alternatives" by William Chaitkin that contained a section on inflatable, or "soft," architecture, a section missing by the 1988 edition. Two of the creators of inflatable architecture featured in Chaitkin's chapter are the collective Ant Farm and the artist Graham Stevens, whose quote opens

this essay. In the subsequent section, we revisit both of these entities to consider how the inflatable form helped to usher in a postlunar imaginary.

Blurring the Boundary between Body and Environment

Ant Farm was formed in San Francisco by young architects Chip Lord and Doug Michels, who were soon joined by artist Curtis Schreier, among several more transient members. The beginning of their decade-long practice in late 1968 just preceded the Apollo 8 mission, which brought home the famous image of Earth rising over the lunar horizon. Their earliest projects often featured inflatables and borrowed liberally from NASA iconography and materials. In their own words, an ongoing shift from car culture to communications media underscored a rapid exchange of ideas independent of place, which in turn facilitated nomadism. Felicity Scott analyzes Ant Farm as reflexive about the passage to an information economy made possible by cybernetics and about new experiential conditions of space and time. In addition to this analysis, I suggest that their inflatables activated new relationships between humans and their surroundings. The group was based largely in San Francisco but had a strong presence in Houston between the Apollo 8 mission in late 1968 and the Apollo 11 Moon landing in the summer of 1969. At sunrise on the morning of July 20, 1969, the day that Neil Armstrong and Buzz Aldrin set foot on the Moon, Ant Farm was perched in front of NASA headquarters with an inflatable called Space Egg designed by Ant Farm collaborator Charley Tilford. Tilford waved a large American flag in front of the egg-shaped black inflatable, which was covered in parachute fabric. In an interview with curator Constance Lewallen, they claimed that their goal was to attract media attention. While a suspicious reading may interpret this work as a desire to both distract and benefit from the momentous occasion, it can also be intuited as an impulse to amplify earthly existence at the moment of man's arrival on another celestial body. During their time in Houston, the group produced several performances using space memorabilia and astronaut-inspired costumes and began to deploy enormous inflatable forms and parachutes in experimental social events. With inflatable "pillows" large enough to accommodate dozens of people inside and on top of the structures, they would soon return to California and combine heightened bodily experience with politically engaged performances of ecological protest. The media-sensitive collective absorbed the Apollo hype in late 1960s Houston, then used the materials of the Space Age to reflect on a shift in perspective underscored by space travel. Ant Farm's and others' inflatable forms captured the essence of the term "Spaceship Earth" as popularized by Fuller: as an ineluctable limit, not to be abandoned for space colonies, but to be reinhabited in a more thoughtful, enduring way. Though Ant Farm's projects regularly utilize the semiotics of NASA and the Apollo space

program, their inflatable structures underscore and reaffirm the grounded condition of earthly residence. To understand the subtlety of their operations, it is helpful to contrast Ant Farm's inflatable work with the NASA Art Program. Contrary to the Art Program, Ant Farm's inflatable architectures do not attempt to translate or interpret the otherworldliness of a human departure from Earth through representation. Instead, they "actually enact and perform the worlds they imagine," a fundamentally different act from representation. Through this differentiation, a significant rift emerges between inflatable practices like Ant Farm's and the intended orientation of artworks produced under the NASA Art Program. Writer Frank White captures the difference: "Landing on the moon was a goal that was part of a vision, but it never made sense as an end in itself." Rather than illustrate the journey, the ambition, or the technological apparatus of getting to space, Ant Farm's inflatables appear to grapple with new existential dimensions opened up by space travel as they appear here, on Earth. An additional aspect of this existential dimension is suggested within Andrew Pickering's concept of performance as outlined by Salter.

Pickering argues, as do others, that materials engaged in a particular activity have agency equal to that of the humans involved in the arrangement. In other words, the human and nonhuman actors together produce reality through mutually informing interactions. Frameworks that depose the human as the central agent on the planet have become increasingly present in academic literature, from science to critical theory, in recent decades. Ant Farm and other inflatable practices remarkably preceded them in envisioning and putting into momentary play worlds in which humans and nonhumans coexist, communicate, and thrive on the limited resources of the planet. Adjacent to the influence of the Space Race, interest in these dimensions is further evidenced by the group's ties to the budding ecological movement and by self-authored texts in which they question man's capacity to control technology's domination of nature. Inflatable forms are generally temporary, yet video footage of Ant Farm's installations captures the essence of performance. The plastic membrane is flaccid until inflated via a blower or wind, at which point it becomes difficult to tame. The suddenly enormous plastic bubble comes to life as it fills with air. Its human occupants pull it and get pulled by it in turn; the object has a mind of its own, balancing the urge to billow out its insides with the human tugging on it and with the ever more powerful wind that jolts it about from the outside. The 50-foot structure is tethered by crisscrossing ropes. This limits the bubble's movement across the ground and allows the suddenly light human the experience of being weightless atop the air-supported surface. In the process, the state of earthly weight is momentarily suspended—just around the time that freedom from gravity is attained by the Moon-jumping astronauts streaming via pixelated videos on television. While the surfaces bulge about, the helpless

human bounces along, holding on to the rope structure for the illusion of balance. Underneath, more human bodies occupy the bubble, pushed from side to side as the walls cave in and expand on them. This larger-than-life, gravity-defying balloon itself is not new: balloons have facilitated new visual perspectives and scientific discovery in flight since the late 18th century. Once in flight, however, balloon occupants depended on maintaining the vehicle's state of equilibrium, using ballast but avoiding direct interaction with the form. With the 1960s grounded inflatables, the form itself is playable, pliable for maximum experience of the subject, who can be immersed inside or on top of it. In confronting inflatable structures, one cannot frame the subject as a distanced observer perceiving passive objects as in representation; nor as a passenger tending the machine to remain in the elements' good graces; nor as in control of the constructed object. The inflatable invites active encounters between humans, the plastic mass, and the wind, blurring the boundary between subject and environment. Graham Stevens similarly experimented with body limits and environmental control through inflatable structures. In his projects, the body became physically enmeshed with the inflatable form as he explored the material limits of plastic in both containing a particular body and in sustaining life in general. For example, his 1972 Desert Cloud was a large solar balloon that filled at sunrise with gradually warming air and floated low above the Arabian desert. The balloon form produced much-needed shade and, as the air in it condensed, extracted potable water from the desert atmosphere. His 1970 project, Hovertube, was a quarter-mile-long inflated pedestrian tunnel extended to the middle of a lake in Cornwall, allowing the experience of walking on water. In both of these inflatables, as in Ant Farm's, air defines both the form and the structure. The envelope, made of a two-dimensional polymer such as plastic sheeting, fills with air that gives form to the continuous surface. The form's coextensive structural integrity is immediately graspable despite being largely invisible. It is continually conditioned by outside forces, whether these are elements such as wind or water, or human occupants. The inflatable structures of both entities exhibit a certain freedom from the burden of progress, relieved of the techno-rational utopia of the lunar frontier to reengage with earthly existence. This disposition was made physically possible by the material form of the inflatable bubble. As alluded to earlier, it was made thinkable by the existential gap produced when humans first saw Earth outside themselves. The Copernican Revolution had technically proven that Earth revolved around the Sun; seeing Earth in its celestial context in the late 1960s made this scientific fact resonate anew. Earthly departure created a new perspective that undermined Enlightenment anthropocentrism. Philosopher Elizabeth Grosz explains the capacities of art to produce a similar gap, without leaving Earth's orbit. Grosz, following Gilles Deleuze, explores art's capacity to frame the forces of chaos existing in the universe, rendering them sensible so that the body can directly experience them through its nervous system rather than

representationally. Similarly to Salter, Grosz posits that art is neither representational nor metaphorical. In her view, it is a mediation, an opening—or momentary gap—between the experienceable and the concealed. Darwin's concept of sexual (as opposed to natural) selection allows her to posit that art is not limited to the human but is an animal quality. Art acts directly on the body's nervous system, rather than on its sensing apparatus, which requires rational consciousness to process, as it momentarily brings into focus the forces acting and existing on Earth. Artist László Moholy-Nagy suggested in 1947 that art-making is itself a subconscious, intuitive act that both captures and conditions its cultural and social setting. The inflatable, through immersive experiences inside or on top, produced such precognitive affects and suggested new, more lateral relations of existence on the planet. Cary Wolfe further helps to connect Deleuze's momentary enframing to a posthumanist ontological framework by underscoring that, once made (or in our case, inflated), an artwork is responsive to the forces acting on it and is ambivalent toward the human subject as such. The comingling of dependency and resistance is prevalent throughout 1960s inflatable practices, as architects blurred the boundary between the human body and the plastic bubble's capacity to keep it afloat, as in Stevens, or elevated, as in Ant Farm. Romantic writer Victor Hugo, writing at the end of the ballooning era in the 19th century, likened the flying balloon to a cloud, with no navigational capacity. Instead, he foresaw an embrace of the "bird" for flight, a steerable helicopter. The 20th century attested to this foresight, as humans perfected environmental control. However, historians of space have convincingly shown that the social imaginary had no apparatus to receive the image at the pinnacle of technological achievement: the 1968 view of the planet in its totality. Understanding this suggests a different analytic lens for 1960s inflatable practices: beyond critiques of modernism, technology, or the relationship of politics and praxis, the fundamental concern is to find the human back on Earth, via architecture. Part of that, inflatable practices suggest, is learning how to work Hugo's cloud and bird together, to balance control with collaborative assemblages in considering the survival of not just the human but all other forms of life and matter on the planet. Tuned in to their historic moment, the two practices explored here, Graham Stevens and Ant Farm, examined new possibilities of existence on Earth through encounters between human and nonhuman forms, an existence that theory has continued to address in the decades after the lunar landing. In the seriousness of the Space Race, the playful medium of inflatable architecture provided an imaginary from which to imagine life in which humans could alternate floating with flying.

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