

**Fiona Curran – Presentation for Speeding & Braking
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**Satellite’s Gone - Materialities of The Space Race:
Atmospheric Politics, Drifting Clouds.**

This image by the Latvian/American artist Vija Celmins, “Untitled (Desert-Galaxy)” from 1974 presents a photo-realist drawing of a dark night sky filled with stars and other illuminated celestial objects, juxtaposed with a close cropped view of a desert floor from above; the desert view has the sense of someone looking down at their feet as they traverse the terrain. Neither image has any horizon line or additional reference point to provide a sense of scale, location or human perspective. Both views are immersive and all encompassing extending beyond the boundaries of the finite material image into an infinite space beyond. Celmins is notoriously elusive about the symbolism of her works, preferring, in repeated interviews over the years, to distance herself from any explanatory readings and focusing instead on the work’s material construction and the processes of its making. Inevitably however, given the nature of her subject matter, which has consistently returned to depictions of the desert, the night sky and the sea, readings of her work have made frequent reference to notions of the sublime. In this discussion however, I would like to revisit **this** image from the early 1970s in order to re-situate these seemingly ‘empty’ and timeless land and space-scapes back into their social, political and historical context.

Celmins moved to the outskirts of Los Angeles in the early 1960s and would go on regular walks with her camera taking photos of the ocean on her doorstep and driving out into the surrounding southwestern deserts in California, Arizona and New Mexico. As well as using her own photographs Celmins also gathered a number of her photographic resources from NASA’s Jet Propulsion Laboratory at Pasadena, located in close proximity to LA. The JPL began life as a technical faculty of California Institute of Technology in the 1940s, becoming part of the US military during the Second World War when it was involved in rocket experiments and the development of guided missile

technologies. Post war it was formally absorbed into NASA in 1958 a year after the launch of *Sputnik*, the first space satellite to enter Earth's orbit which triggered the onset of the 'space race' and an era of Cold War politics defined by Soviet and American military and technological excess.

NASA's Jet Propulsion Laboratory had a strategic role to play in the development of rocket technologies beyond their military applications into the post-war climate of demonstrable technological supremacy. It played a primary part in the launch of the first US satellite, *Explorer*, for example, which made the original detection of radiation trapped by the Earth's magnetic field, as well as contributing to the launch of subsequent monitoring and exploratory spacecraft. Through these early experiments in rocketry and satellite technologies the JPL also played a significant role in the Apollo space programme, it was responsible for developing the *Ranger* and *Surveyor* series of robotic probes in the early 1960s that paved the way for the future manned moon-landing missions through image and other data collection of the lunar surface.

The 1960s marked a period of unprecedented technological acceleration and publicly funded investment in the fields of space research and satellite and communications technologies. In response to a carefully orchestrated media campaign that promoted a narrative of extra-planetary exploration for the good of mankind and the "conquest" of space as a new, unknown frontier, public support for investment in space research was initially high. In the US, for example, in a speech to Congress on May 25th 1961 that asked for a commitment to billions of dollars of funding, President Kennedy famously stated: "I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the Earth". In the same speech of this oft quoted first pledge however, there were a number of further requests for funding to also support: secondly, the development of the *Rover* nuclear rocket to provide the means of further space exploration beyond the moon; thirdly, to develop and

accelerate the use of space satellites for world-wide communications; and fourthly, to develop a satellite system for world-wide weather observation.¹ The NASA sites recently established in the deserts of California were therefore to take on a strategic significance in the implementation of these goals and it becomes evident that any analysis of the contemporary technosphere cannot be disentangled from this historic era of manned space exploration, and the expansion of environmental monitoring that led to a greater understanding of climate change. What is equally evident is that the earthly landscapes supporting the growth of these technologies and their extra terrestrial destinations take on a renewed *material* significance that begins to bridge the gap between the earth and the sky, proximity and distance; speed and slowness.

My reading of Celmins' work, *Untitled (Desert-Galaxy)* therefore begins to contest these seemingly incommensurable spatial and temporal distances by connecting the photographic image of the constellation on the left, derived from an image in a book bought from the bookshop at the Jet Propulsion Laboratory, with the photographic image of the desert floor on the right, taken by the artist herself in the nearby Mojave desert. A number of the illuminated celestial objects that emerge from the dark charcoal ground in Celmins' work (produced through the artist's erasure of the surface) appear to be caught in motion. As well as stars therefore we are left questioning whether the glowing lights, lines and trails are shooting stars, comets, orbiting satellites or other manmade space vehicles. Far from representing an untouched 'natural' realm that transcends the earthbound to present us with a heavenly firmament, this image captures a particular historical period in which space became a new frontier for development and expansion and in which the cosmos became thoroughly militarized.

According to the geographer Denis Cosgrove, images of the Earth from space were "enormously significant in altering the shape of the contemporary

¹ www.space.com/11772-president-kennedy-historic-speech-moon-space.html

geographical imagination.² In his seminal text *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination* (2001), Cosgrove documents a history of global vision from antiquity to the Space Age tracing the visual representation of earth as a unified spherical body to accompanying social, cultural and political transformations. Focusing on the two most significant images of Earth from space taken by the Apollo astronauts on board Apollo 8 in 1968 and Apollo 17 in 1972, known as *Earthrise* and *The Blue Marble*, Cosgrove documents the relationship between space flight, image technologies and geocultural imaginings. He argues that these two images contributed to two contradictory and competing global perspectives, the first, a new "whole-earth" consciousness appealing to an organic and spiritual unity of terrestrial life, significantly impacted on the burgeoning environmental movement by offering a vision of a fragile planet adrift in a dark void invoking narratives of domicile, care and protection. The second, a "one-world" perspective rooted in a Western, European-Christian tradition signifies "the expansion of a specific socio-economic order across space"³ that "yields an implicitly imperial spatiality, connecting the ends of the earth to privileged hubs and centres of control."⁴ This 'one-world' perspective achieves a sense of global unity through erasure of social, political and geophysical boundaries, enabling a vision of the globe as an uncontested expanse across which communications, goods and capital can flow. The competing claims placed on the depiction of a new form of *universal landscape* image illustrate the complexity of global imaginings and the confluence of landscape, technology and power that emerge when re-entangled with the situated perspectives of *where* and *when* the images were produced, and *who* or *what* they were produced by. As rocket technology developed throughout the post-war period so did visual awareness of the earth via photographic imaging.

² Denis Cosgrove. "Contested Global Visions: *One-World, Whole-Earth*, and the Apollo Space Photographs." *Annals of the Association of American Geographers*, 84:2 (1994). 271.

³ Cosgrove. "Contested Global Visions" 289-290.

⁴ Denis Cosgrove. *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination*. (Baltimore and London: The Johns Hopkins University Press, 2001). 263.

The image of *The Blue Marble* has become so ubiquitous in the intervening 40 years since it was first captured that it is difficult to see it as a deeply contentious political image of the planet. Its appropriation by a huge range of, often contradictory, users from environmental groups to “green” consumer products, transnational finance, insurance and communications corporations, air travel companies and global delivery services, render it as an empty sign whose only residual meaning seems to reside in its depiction of a perceived sense of *globality*. Cosgrove argues that, despite *The Blue Marble’s* appropriation by competing narrative positions, this image of the Earth from space has been doubly constructed as a *global* image that erases local specificities and political differences and perpetuates a Western ethnocentric position. Each narrative “effectively exemplifies the Apollonian urge to establish a transcendental, univocal, and universally valid vantage point from which to sketch a totalizing discourse...The apparent objectivity of the photography and the positioning of the camera far outside the bounds of Earth seemingly constitute an unchallengeable vantage point.”⁵

This response challenges any environmental perspective that appeals to a common notion of the ‘home’ planet or ‘shared’ Earth that transcends national boundaries and political differences. *The Blue Marble* can be seen to erase the situated particularities of climate change, its causes, impacts and uneven distribution. It fails to acknowledge that the world’s poorest citizens are dealing with the worst effects of air and water pollution, rising sea levels, damaged crops, desertification, poor sanitation, disease, the loss of green space and decaying urban environments. In fact, it erases people completely from the picture.⁶

The whole explosion of extraplanetary and new communications technologies during the latter part of the twentieth century was supported by a vast terrestrial material infrastructure that continues to have profound implications

⁵ Cosgrove, “Contested Global Visions”, 288. See also Joseph Masco, “Bad Weather: On Planetary Crisis”, *Social Studies of Science*, 40:1, Feb 2010, and William Bryant, “The Re-Vision of Planet earth: Space Flight and Environmentalism in Postmodern America”

⁶ Shelia Jasanoff, “Image and Imagination: The Formation of Global Environmental Consciousness” in Clark A. Miller and Paul N. Edwards, *Changing the Atmosphere: Expert Knowledge and Environmental Governance*, (Cambridge: Massachusetts, MIT Press, 2001).

for spatial politics across and surrounding the globe. From this point in the 21st century looking back, the legacy of space travel and improved global communications networks not only contributes to an uneven picture of development on the ground but also to a vast sea of space junk that now orbits the planet. Fears are growing that the presence of so much junk has the potential to seriously disrupt communications and digital infrastructures on the ground leading to a newly developing industry to 'clean' it up. Capital demonstrates its geographical reach as it stretches into new markets beyond the earth. In planetary economic terms, as Peter Sloterdijk informs us in *The World Interior of Capital*, "the primary fact of the Modern Age was not that the earth goes around the sun, but that money goes around the earth".⁷ In the same text Sloterdijk critiques the development of a global picture of capital as an all-inclusive world system, once again challenging a cultural and geographical vision of inclusivity, arguing that 'globalization' is a term limited to the few not the many. To speak of globalization is to speak of "a dynamized and comfort-animated artificial continent in the ocean of poverty... Any self-pampering endosphere built on stabilized luxury and chronic overabundance is an artificial construct that challenges probability,"⁸

The relationship between military technology, the pollution of the atmosphere and environmental monitoring emerges in the history of the Cold War period in which the technological expansion out into space coincided with the nuclear arms race and the need to understand the effects of nuclear testing on the environment in order to prepare for the very real possibility of a post-nuclear condition. The earthbound, underwater and atmospheric nuclear tests conducted throughout the late 1940s until the signing of the first Limited Test Ban Treaty in 1963, resulted in a commitment to research in the earth sciences that led to a new vision of the globe as an integrated political, technological and environmental space. In what appears to be a paradoxical position from a contemporary perspective, the post-war period of nuclear militarism fundamentally contributed to a developing awareness of the

⁷ Peter Sloterdijk, *In The World Interior of Capital*, Trans. Wieland Hoban, (Cambridge: Polity, 2014), 46.

⁸ Sloterdijk, *In The World Interior of Capital*, 196.

biosphere as an interconnected whole. Geophysical mapping of the oceans, the earth and the atmosphere began to track the effects of radiation and the dispersal of fallout leading to the discovery of radiocarbon dating, awareness of the importance of carbon dioxide uptake by the Oceans and the discovery of a high level of fossil fuels circulating in the Earth's atmosphere.⁹ Techno-military expansionism went hand-in-hand with a new codification of the biosphere as a pressing environmental concern, which led eventually to theories of climate change. In Sloterdijk's terms, the "environment" emerged into "formal representation" and the atmospheric conditions of weather and air continued to complicate the relation of the earth and the sky, the material and the immaterial.

Sloterdijk takes up Buckminster Fuller's 'Spaceship Earth' metaphor from the 1960s, in which those occupying the spaceship need to recognise their co-dependence with one another and with the "ship" for their continued survival. He sees in this image a perfect illustration of a self-contained immune system or "atmospheric envelope" where every one of the occupants gestures and acts might break something essential to the fragile breathing conditions of this 'artificial' environment. Sloterdijk's account is a social and spatialised ontology of being-*in-the-world* where Inhabitation is *cohabitation*. We are 'condemned' to live with others (human and non-human) in interdependent atmospheric surrounds where any notion of an exterior or independent outside has now disappeared. This disappearance of the outside is a consequence of the making explicit of our environmental conditions, of the fragile life support systems that enable us to be and to breathe. Being-*in-the-world* is therefore always already spatial *and* social due to our immersion in shared atmospheres and communal environmental interdependency.

Detailed transcripts sent from the astronauts on board the Apollo 11 lunar module to NASA's ground control centre in Houston document the repeated

⁹ Elizabeth DeLoughrey. "Satellite Planetarity and the Ends of the Earth." *Public Culture*. 26:2, 2014. 273.

equipment checks and painstaking documentation of every fluctuation or change in atmosphere and environment on board the vessel. Such accounts highlight the strict economy and meticulousness needed to survive in an artificially constructed environment. It is this sense of an artificially constructed, managed and monitored space that is picked up by Sloterdijk in his deployment of the “Spaceship Earth’ metaphor, he argues that:

The space station signifies our lost innocence...It represents the critical case of the total management of the environment by its inhabitants. Up there, we can no longer lean on a given nature, it’s necessary to rebuild it in its smallest detail, and any error could be fatal... with the space station there is no question of such permissiveness: mismanagement of climate, atmosphere, metabolism, etc., will no longer be tolerated. In the absolutely artificial environment, not even tiny mistakes are pardonable anymore.¹⁰

References to Earth as a spaceship waned during the decades following the lunar landings as environmental groups distanced themselves from a description of the earth as a product of human technology that located the earth’s *purpose* in explicitly anthropocentric terms. Where Sloterdijk’s use of “Spaceship Earth” differs from its earlier uses is in his emphasis on “the absolutely *artificial* environment”. In his reading, nature as an independent category has collapsed and cannot be thought except in terms of a hybrid ontology that acknowledges a natural-technological continuum. What is needed is “a new politics of trans-human symbiosis,” in which the human is no longer the privileged term.¹¹

¹⁰ Peter Sloterdijk, ‘Foreword to the Theory of Spheres’, in *Cosmograms*, Ohanian, M. and Royoux, J-C, (New York: Lukas and Sternberg, 2005), 236-7.

¹¹ Peter Sloterdijk, “Atmospheric Politics” in Bruno Latour and Peter Weibel *Making Things Public: Atmospheres of Democracy*, (Cambridge, Massachusetts: MIT Press, 2005).

Recalling President Kennedy's address to congress, the fourth of his pledges in support of funding was to develop "a satellite system for world weather observation" alongside "advanced satellite systems for global communication", in this century these two objectives have begun to coalesce as global communication and data production shift into the realm of informatic weather systems and "cloud" computing. I will briefly conclude therefore with a consideration of the semiotic instability of cloud as it slips between references to the weather, pollution, time and data.

Craigie Horsfield's 2008 tapestries, *Above the road east toward Taibique, El Hierro, 15 minutes, and 16 minutes 25 seconds, February 2002*, re-present two images from film stills. The images are huge in scale, presenting an immersive surface. They offer a seductive image of clouds caught in movement. However, by translating this 'still' into a *woven* surface Horsfield manages to recapture the sense of time and duration that belongs not only to the image but also to the thing itself, the cloud. Horsfield's work is more commonly focused on "social time" within his films and photographs of crowds and his long-term projects working with specific communities. In these cloud images however, he can be seen to extend his interest in social time through a focus on *material* duration. Horsfield illustrates this in his description of the medium:

In the tapestries, the coloured threads alone are meaningless, but together, in confluence, they take on the fullness of the meanings we bring to them. It can be seen as a metaphor for a social world.¹²

In these two images of clouds taken from different moments of the same film that the artist shot on the island of El Hierro in the Canaries in 2002, there has been a delay in their translation from the film into a different material surface in 2008, both dates are detailed in the title of the works. At the moment that the clouds were caught on film they were already in the process of

¹² Craigie Horsfield "Introduction" in Catherine de Zegher *Confluence and Consequence*, Antwerp: M HKA Museum of Contemporary Art, 2010. 9.

disappearing, their forms in constant fluctuation and movement in response to the climatic conditions of the day. El Hierro is the smallest and most Western of the Canary Islands and sits at what was once perceived to be the “edge of the world” between Europe, Africa and the Americas. Prior to the 1884 shift of the prime meridian line to Greenwich in London it was the southern tip of El Hierro that marked the zero line of longitude on the map, the point from which the Europeans navigated their ships on to the ‘new’ world. Like the drifting clouds and water-laden air moving over its ground therefore, the island was subject to a shift in its geopolitical significance on the world stage.

The original film piece that these images derive from, *El Hierro Conversation*, was the outcome of a project that Horsfield worked on between 2001 and 2004 that documented life on the modern island through a series of filmed and oral interviews with the islanders. The film juxtaposes these collective oral histories with images of the volcanic landscape and its relationship to weather and water. The landscape views that are interspersed within the social narratives often depict mist or cloud whose vaporous forms resist being fixed. With the transition from film and photograph into tapestry we witness a rematerializing of the image. The clouds, are *woven*, they become a mesh of interconnecting threads merging surface image with material ground. Perhaps this hints at an alternative form of signification in which a politics of the atmosphere starts to move into the picture. Clouds, in their slippage between the material and the immaterial resist categorization and can instead be seen to follow Hubert Damisch’s notion of the “/cloud/” in Renaissance painting which acts as a signifier of semiotic instability and resistance to linearity, order, containment and the rules of perspective.¹³ Here, the cloud is both natural *and* artificial, located *and* dispersed, visible *and* invisible. Instead of the clarity of the satellite gaze or the human-centred Archimedean viewpoint, there’s an acknowledgment that the view is always partial, obscured and subject to what we might call *meteorological* blind spots. In relation to the weather for example, Sloterdijk highlights how it can no longer be a subject of

¹³ Hubert Damisch, *A Theory of /Cloud/: Toward a History of Painting*, Trans. Janet Lloyd, Stanford University Press, 2002.

harmless conversation now that climate scientists have proved for us that the atmosphere has a memory.¹⁴

Robin Kelsey has written about the presence of the clouds in the NASA images of *Earthrise* and *The Blue Marble*, arguing that their swirling presence introduced a new cartographic perspective that was no longer reducible to the notion of the grid.¹⁵ Often treated as aerial photographs due to their sense of looking down at Earth from above, Kelsey points out that these images do not subscribe to traditional aerial maps because of the presence of the clouds that obscure the view of the earth and the oceans, rendering it incomplete and flipping it back to a more familiar view from the ground looking up at the sky. At this point in the early 21st century when information clouds now circle our planet “like a second atmosphere”¹⁶ we would do well to hold these two perspectives in view at the same time. As Sloterdijk cautions: “[Globalization] has been saturated in the systemic sense since the carriers of this reaching out into open space were forced to acknowledge that all initiatives are subject to the principle of reciprocity, and most offensives are connected back to the source after a certain processing time.”¹⁷ This ‘processing time’ is now being coded in more explicitly geological terms as a consequence of theories of the Anthropocene. Behind the immaterial informatic ‘clouds’ that can be accessed at the touch of a screen lies a world of material traces and environmental consequences from networks of cables and wires to server farms, orbiting satellites, rare earth mineral mining, factory assembly lines and mountains of e-waste. Far from the atmosphere as a signifier of that beyond the ground, it comes to resituate an awareness of the Earth’s bounded geographies and the interdependence of the ground with the sky.

¹⁴ Sloterdijk, “How Big is Big?” (no pagination)

¹⁵ Robin Kelsey, “Reverse Shot: *Earthrise* and *The Blue Marble* in the American Imagination” in El Hadi Jazairy, *Scales of The Earth*, Cambridge, Massachusetts: Harvard University Press, 2011.

¹⁶ Sloterdijk, *In The World Interior of Capital*, 139.

¹⁷ Sloterdijk, *The World Interior of Capital*, 11.