

Against Eschatology: Environmental Media and the Problem of Acceleration

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An accident is located in time and space. There is a certain sense in which it is located and specific.

A catastrophe is potentially unlimited in time and space.

—Kodwo Eshun, from his 2014 lecture at the Centre for Contemporary Art in Singapore

I. The Apparatus

In his 1974 essay “Ideological Effects of the Basic Cinematographic Apparatus,” Jean-Louis Baudry traces the camera’s paradoxical relationship to the human gaze. The camera follows Renaissance humanism by representing space as rationally organized and three-dimensional. The movie camera then animates the objects of its gaze at twenty-four frames per second. Baudry claims that by imitating the eye’s perception of both space and time, “this system, re-centering or at least displacing the center (which settles itself in the eye), [ensures] the setting up of the ‘subject’ as the active center and origin of meaning.”¹ That is, the camera “displaces” the eye-subject by imitating its gaze, and in doing so reaffirms its epistemological centrality. The cinematic image confirms to the viewer that seeing should be believing, since the camera sees the world just as we do.

The paradox that Baudry names, and upon which this essay draws, is that lens instruments also decenter the human universe. Microscopes revealed

another world of biological entities that the naked eye could not see. The telescope shattered the firmament with its observations of a heliocentric solar system. Contradictions between scopic regimes have accelerated in the Anthropocene's contemporary images. The contradictions are self-evident in the failure of photographic images to fully represent environmental objects: to "see" atmospheric carbon dioxide levels, or the global increase in sea levels, requires instrumentation that exceeds the capacities of the human eye. The Anthropocene's underlying composition is both too small and too dispersed for our unaided perception, and thereby also for the photographic lens.

I argue that visual environmental media also contain contradictions in the representation of time. Until very recently, the inhuman dimensions of geological time hid certain processes from the human eye: geological epochs are measured in blocks of millennia, and their constitutive parts can endure in equal measure. However, the acceleration of changes to the biosphere in the twentieth and twenty-first centuries has rendered many such phenomena immediately visible. For example, several recent documentary and narrative films have centered the trope of glacial retreat, newly visible with climate change.² The allure for environmental media is that the camera can now directly witness these processes and wrap its objects in a tidy narrative frame of linear time. Although these capacities have been politically useful for highlighting the urgency of climate change, they also misrepresent the messy, diachronic temporality of environmental systems. I argue that by moving away from the photographic image, environmental media might also develop a more scientifically rigorous, less ideologically fraught picture of time in the Anthropocene.

II. Images of Clouds

Between 1952 and 1964 the concentration of atmospheric radiocarbon (^{14}C) doubled.³ The cause of this doubling was the advent of widespread thermonuclear testing across the globe, which offset a hundred-year decline in atmospheric radiocarbon. Since 1964, the year after the Partial Test Ban Treaty was signed, the concentration has resumed its decline at a predictable rate.⁴ For those interested in stratigraphy—the reading and interpretation of geological layers—the post-1952 period of elevated radiocarbon is known as the "bomb-curve." This curve, manifest in the atmosphere, was also imprinted onto the biosphere. Since all organisms absorb atmospheric carbon for processes of respiration and photosynthesis, the bomb-curve's distinctive ratio of radiocarbon is found in all organic tissue from that period.

Because the bomb-curve denotes a precisely measurable trace effect of human activity on the geological record, it has been suggested that either the Trinity test in 1945 or the cessation of testing in 1964 would be appropriate dates for the boundary between the nascent Anthropocene and the preceding Holocene.⁵ It is certainly true that no previous human activity had so quickly and indelibly printed itself onto the biosphere. (Other suggestions for the boundary, however, reflect human processes that were centuries, if not millennia, in the making.)⁶ If this suggestion for the boundary is accepted, then perhaps the first image of the Anthropocene occurred at its dawn, during the Trinity test on July 16, 1945. After extensive planning and coordination, a meticulously timed explosion went off in the Nevada desert: “Just before five-thirty, an electrical pulse ran the five and a half miles across the desert from the bunker to the tower, up into the firing unit of the bomb. Within a hundred millionths of a second, a series of thirty-two charges went off around the device’s core.”⁷ The blast was documented with equal precision: the military shot film at the highest speeds technologically possible (around one hundred feet of film per second) from every angle around the explosion.

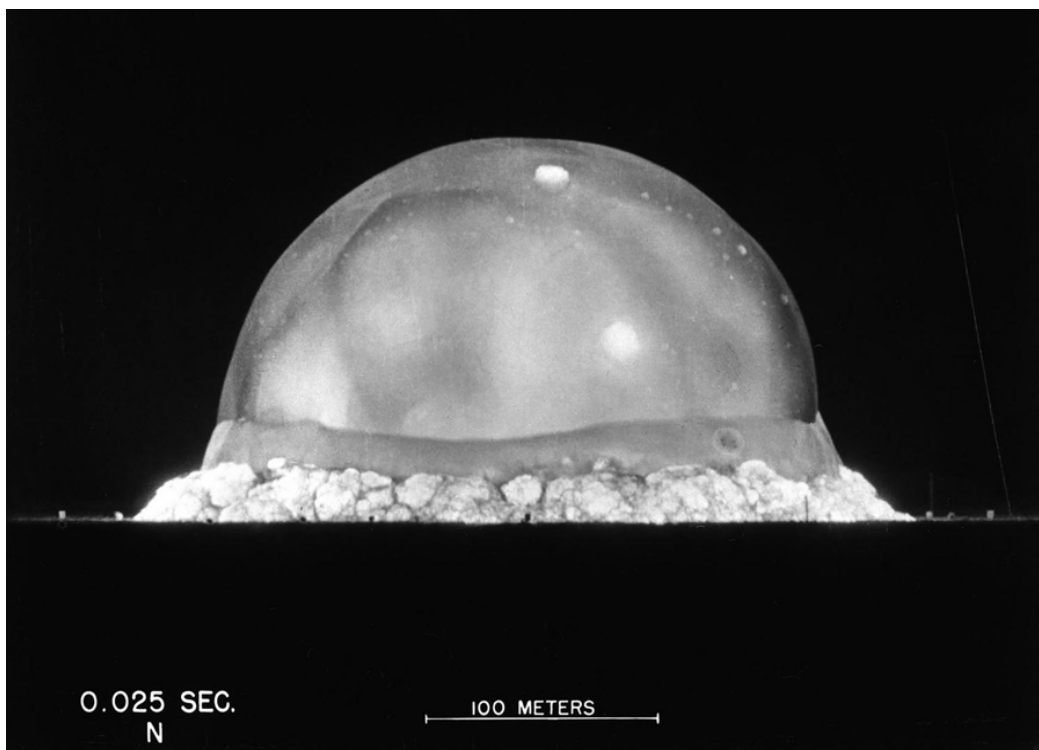


Figure 1. Trinity test, 25ms After Detonation.

The above photograph represents the Trinity test explosion in a form remarkable even to the contemporary viewer. As we see in the bottom left-hand corner, it was captured just twenty-five milliseconds after the blast, the cloud almost unrecognizable. By timing the image so precisely, the military managed to figure the explosion as a local and contained event. The purposes of doing so were presumably for military research interests. In planning to detonate the bombs during warfare, it would be helpful to know the exact extent and shape of the blast in the brief period of time after its eruption. Although useful for this form of research, the temporal and spatial precision of the image also occludes what is relevant for environmental science. Almost all of the meaningful environmental effects of this detonation for the biosphere, such as the bomb-curve of radiocarbon, occur not within the pictured blast radius, nor within the first twenty-five milliseconds.

The US Army's images did not visualize the bomb's environmental aftermath. The military did, however, quickly recognize the cultural potency of its imagery. Its initial strategy was to censor its visual documentation; this, however, had changed by 1955, when the Department of Defense began to produce and circulate images of subsequent tests on public television.⁸ In what follows, I argue that two lessons can be drawn from this image, and from subsequent images of nuclear detonations, about mediating the Anthropocene. One lesson is about the apocalyptic framing of environmental imagery, and the other is about what that framing (as well as the technological limitations of the camera) hides from view. In both cases, the camera's perceived objectivity has organized certain ideological perspectives on the temporality of environmental systems.

III. Eschatological Time

The first lesson pertains to how certain photographs and cinematic images, couched in the discourse of science, are read eschatologically because of their seemingly objective view. Fredric Jameson writes in his 1982 essay "Progress Versus Utopia; or, Can We Imagine the Future?" that nuclear blasts are ideologically potent because "an atomic explosion that destroys the universe" is exactly where "our own ideological limits are the most surely inscribed."⁹ He goes on to clarify that an image of obliteration by nuclear holocaust transformed the present of the Cold War "into the determinate past of something yet to come."¹⁰ What lay at the heart of this imagined non-future, it seems, were the real images of detonations, and simulated devastation of the human world. Although the photographs of the Trinity Test were withheld from the public eye, the Department of Defense later actively

circulated footage of nuclear tests to the public. Joseph Masco writes that “on 5 May 1955, a hundred million Americans watched live on television a ‘typical’ suburban community being blown to bits by an atomic bomb” as part of Operation Cue.¹¹ The intended effect of these images, Masco argues, was to create national community around the preparation for, and survival of, nuclear war. The Department of Defense’s intended lesson was clear: follow our guidance, or you will see what *actually* becomes of your body during and after a nuclear attack.

At this point there has been no campaign by the Department of Defense nor the Environmental Protection Agency to circulate images of climate change devastation. For this reason, which is symptomatic of the ideological stakes of climate change awareness for domestic economics interests, Jameson’s insights must be applied cautiously to images of global warming. Indeed, in *Slow Violence and the Environmentalism of the Poor*, Rob Nixon observes that images of the World Trade Center attacks of September 11, 2001 seem to dominate the cultural imaginary. Nixon argues that certain spectacular images of destruction block our ability to imagine slower, subtler forms of environmental degradation with further-reaching casualties, writing that “the fiery spectacle of the collapsing towers was burned into the national psyche as *the* definitive image of violence, setting back by years attempts to rally public sentiment against climate change.”¹² Nixon’s warning parallels Jameson’s about the Cold War’s ideological investment in nuclear Armageddon: both interrogate why certain forms of violence are ignored to focus on a narrow, spectacular image of fiery death.

What Nixon does not extensively study, and what I consider here, is that contemporary images of glacial retreat and flooding are equally potent spectacles with their own ideological trappings. Indeed, while Jameson does not consider how photography gains narrative force from its perceived access to the real, Nixon does not analyze how Jameson’s political unconscious also structures our perception of environmental catastrophe. In the case of the Trinity test, the camera could witness the detonations at a proximity and speed impossible (and lethal) for a human observer. The result is that these photographs testify to an event that human beings could not directly witness. With the rapid changes to the contemporary biosphere and sudden visibility of previously unseen environmental phenomena, the camera helps evidence a new eschatological narrative. Cameras, both operated by crews and on cell phones, connect dispersed environmental events: flooding, smokestacks, and the movement of glaciers are no longer

seen as local phenomena. They are entangled in a meta-narrative similar to that identified by Jameson, namely, as images of the determinate past of a future without us.

IV. The Field of Effects

The photographic image, and its ideological position as the guarantor of humanity's near-present destruction, does not account for the material traces that survive a blast. These traces, some of which are still being unearthed, evince a field of effects far beyond even the televised broadcasts of Operation Cue. We have already considered the bomb-curve, in which subatomic particles reacted with atmospheric carbon to produce the isotope carbon-14. The other notable example is the blast's production of a novel element, Trinitite, that exists nowhere else in the earth's crust. Unlike the photograph of the blast, these indexical traces do not author a picture framed discretely by time and space. The blast's high-energy particles reshaped matter across the atmosphere, which was absorbed and moved by biochemical processes across continents.¹³ Time did not end after the blasts. It continued to run in the slow decomposition of isotopes in the atmosphere and in the biosphere, which, given time, will constitute the lithosphere. Space and time here are related, but not by the transcendental subject that the photograph imitates.

Ada Smailbegovic also writes of the images of clouds and their lessons in terms of Anthropocenic politics. Her approach champions the effort of nineteenth-century scientists to develop a classification system for clouds. To do so, they paid careful attention to open-ended and variable changes, even as certain patterns were detected (for example, cirrus, cumulus, stratus). The amateur meteorologist Luke Howard first wrote down the classification system when he developed hybrid categories such as cumulostratus and cirrocumulus. The effect of Howard's notation system, according to Smailbegovic, was to create a "conceptual and observational space in which to examine how phenomena can possess both the regularity of differentiated patterns, while also having the capacity for open-ended future transformation."¹⁴ In other words, Howard's rich set of hybrid categories for observation attunes the viewer to alternative temporalities contained within the observed object. The cloud name indicates the diachronic character of the cloud itself: it is the manifestation of a physical system, the futurity of which can only partly be predicted.

The aim of Smailbegovic's appraisal of Howard's classification system is to highlight how language, or rather a poetic description of the natural world, can "defamiliarize the anthropocentric perspective of time."¹⁵ There is a renewal of nineteenth-century romanticism in her work that draws on the poetry of Howard's contemporary, William Wordsworth. However, if Howard followed the work of poetic observation to form a scientific vocabulary, Smailbegovic seems to propose the opposite move: she would like to see a poetic/artistic strategy that mimics the scientific method. The effect of this mimicry would be to induce the "affective and aesthetic amplification" of the object world's temporal minutia. In Smailbegovic's excellent description of these minutia, "It is not just the different rhythms of non-human temporality that are difficult to sense, but temporality as a compound entity of other variables, such as increasing temperature, which is literally speeding up the time of certain biological processes, such as egg hatching or pupation." This egg time or larval time is a factor of temperature measured in units called "degree-days," so that certain developmental processes require a kind of accumulation of heat that can occur over the course of a week if the temperatures are warm, or may take longer if the weather is cool.¹⁶

Smailbegovic's assertion is an important one: for her, the politics of art in the Anthropocene will be judged by to the artist's sensitivity to the minute rhythms of beings. Up to now, she proposes, the scientific method has offered the best model of what such a practice would entail. Smailbegovic's call for new artistic strategies is echoed by Rob Nixon's formulation of how art can address the often conceptually challenging nature of slow violence. He writes: "To engage slow violence is to confront layered predicaments of apprehension: to apprehend—to arrest, or at least mitigate—often imperceptible threats requires rendering them apprehensible to the senses through the work of scientific and imaginative testimony."¹⁷ But what form would this scientific and imaginative testimony take? Photography and film, as I have shown, often frame these events with deceptively limited utility—although we should not close ourselves to future cinematic innovation. Smailbegovic's view is that science traces its origins to the careful observations of the poet, to which it should return. She sees the renewal of this poetic strategy in architectural theory, which has led the charge in subverting binary distinctions between artifice and nature.¹⁸

I am critical of Smailbegovic's proposal to return to Wordsworth and his milieu for one central reason: it would do a disservice to the politics of such a practice to eschew the very technology that the scientist now has at her

disposal. Meteorology is no longer led by the eyes of the wistful poet—the movement of clouds is modeled by computational scientists, who can predict the transition of diachronic objects. Climate modeling attempts to expand such models even farther, inputting more variables that define effects across interconnected systems.

V. Forensic Geology

In this final section, I will consider an aesthetic strategy that might respond to Smailbegovic's and Nixon's calls for new, scientifically adept forms of art. One such alternative might be found in the process of "forensic architecture" recently developed by researchers at Goldsmiths, University of London. That agency has sought to develop a visually centered methodology for documenting and prosecuting human rights violations. However, rather than rely on eyewitness testimony, the "forensic architects" have drawn together data from satellite images, cell-phone transmissions, and military mapping (among many other sources). The data then models "dynamic events as they unfold in space and time, creating navigable 3D models of environments undergoing conflict."¹⁹ The insights of this approach are twofold: the first is its practical delivery of objective evidence of abuses by combatants. Such objectivity is useful for prosecuting cases with traumatized victims, whose testimony in court can and has been discounted for its reliability.

The second related insight is that human rights violations can often be modeled as dispersed across agents and times rather than as discretely located within a particular agent at a particular time. This, we should note, does not dismiss the commitment of atrocities by specific actors. Instead, it highlights how certain cases (such as the constant negligence of refugees by rescue craft in the Mediterranean) could not reasonably be accidental occurrences, but are rather a policy of governments and agencies.²⁰ It can also point to the dispersed and dis-unified field of effects that sophisticated weaponry and acts of state violence leave in their wake. The use of the term "architecture" to describe the project underscores this insight. Rather than reconstructing an image of an event, which denotes a discrete spatial and temporal ontology, the project is committed to visualizations that are sensitive to the disjuncture of cause and effect in time and space.

Whether such a model is feasible for environmental phenomena will be evidenced by its use in the fields of geology, climatology and oceanography. In such disciplines, the enfoldment of objects into radically unfamiliar temporal systems, and the complexity of representing those relationships, is

an epistemological starting point. The evident task for media scholars (and for artists themselves) is to more thoroughly engage with technologies of detection and simulation as they rupture the ideologies of environmental images. There is an allure to the eschatological reading of our historical and climatic present, which simple images of deglaciation and deforestation permit, and which lends itself to necessary forms of political activism. That being said, as the evidence of climate change and ecological collapse continues to mount, so does the pressure to more accurately recognize the origins and challenging futures of the biosphere we have inherited and which we continue to shape.

Notes

- 1 Jean-Louis Baudry, "Ideological Effects of the Basic Cinematographic Apparatus," in *Narrative, Apparatus, Ideology*, ed. Philip Rosen (New York: Columbia University Press, 1986), 290.
- 2 For example, *The Day After Tomorrow* (dir. Roland Emmerich, US, 2004), *An Inconvenient Truth* (dir. Davis Guggenheim, US, 2006), *Chasing Ice* (dir. Jeff Orlowski, US, 2012), and *Stillness* (dir. Esther Kokmeijer, US, 2012).
- 3 Kevin T. Uno, Jay Quade, Daniel C. Fisher, George Wittemyer, Iain Douglas-Hamilton, Samuel Andanje, Patrick Omondi, Moses Litoroh, and Thure E. Cerling, "Bomb-curve radiocarbon measurement of recent biologic tissues and applications to wildlife forensics and stable isotope (paleo) ecology," *Proceedings of the National Academy of Sciences* 110, no. 29 (2013): 11738.
- 4 The concentration of radiocarbon declines over time due to the combustion of fossil fuels. The isotope ¹⁴C holds the name "radiocarbon" because it is an unstable isotope of the carbon atom, with a half-life of roughly 5,700 years. Thus, the very ancient carbon in fossil fuels has completely decayed into ¹³C and ¹²C when it is extracted from the ground, and those more stable isotopes are released into the atmosphere.
- 5 Simon L. Lewis and Mark A. Maslin, "Defining the anthropocene," *Nature* 519 (2015): 172.
- 6 Although it is not considered in this paper, perhaps the most compelling of these arguments is made by environmental historian Jason W. Moore in his book *Capitalism in the Web of Life* (London: Verso Books, 2015). In that book, he examines how the "Capitalocene" (his renaming of the Anthropocene) commenced with the "Long 16th Century's" acceleration of resource extraction for the purposes of capital formation in Europe.
- 7 Alex Wellerstein, "The First Light of Trinity," *The New Yorker*, 16 July 2015, www.newyorker.com/tech/elements/the-first-light-of-the-trinity-atomic-test.

- 8 Joseph Masco, "Engineering the Future as Nuclear Ruin," in *Imperial Debris: On Ruins and Ruination*, ed. Ann Laura Stoller (Durham, NC: Duke University Press, 2013), 262.
- 9 Fredric Jameson, "Progress Versus Utopia; or, Can We Imagine the Future?," in *Art after Modernism: Rethinking Representation*, ed. Brian Wallis (New York: The New Museum of Contemporary Art, 1984), 241.
- 10 Jameson, "Progress Versus Utopia," 245.
- 11 Masco, "Engineering the Future as Nuclear Ruin," 262.
- 12 Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2011), 13.
- 13 This field of effects is theorized very effectively by Rob Nixon in *Slow Violence and the Environmentalism of the Poor*. The term "slow violence," which he coins in that book, revises the term "structural violence" to suggest a causal agent diffuse both across networks and institutions but also occurring across generations of actors.
- 14 Ada Smailbegovic, "Cloud Writing: Describing Soft Architectures of Change in the Anthropocene," *Art in the Anthropocene: Encounters Among Politics, Aesthetics, Environments and Epistemologies*, ed Heather Davis and Etienne Turpin (Ann Arbor: Open Humanities Press, 2015), 102.
- 15 Smailbegovic, "Cloud Writing," 105.
- 16 Smailbegovic, "Cloud Writing," 97.
- 17 Nixon, *Slow Violence*, 14.
- 18 Smailbegovic, "Cloud Writing," 104.
- 19 Forensic Architecture Website, "Project," accessed 26 December 2017, www.forensic-architecture.org/project/.
- 20 Forensic Architecture Website, "The Left-to-Die Boat," accessed 26 December 2017, www.forensic-architecture.org/case/left-die-boat/.

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