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## The Six Extinctions: Visualizing Planetary Ecological Crisis Today

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Joseph Masco

The emerging environmental damage of the industrial age offers up rebounding visions of ecological calamity in the twenty-first century. These dangers are not new but rather have been built slowly over decades of human industry, created in the paradoxical pursuit of security, energy, and profit. We find today that the very tools for building a highly globalized modern society are also cumulative ecological dangers, as the unintended effects of industrial activity (across petrochemical, nuclear, and synthetic chemical regimes) produce hazards that exceed our capacity to control, requiring a new assessment of nature, society, and economy. Collectively, people now face industrial dangers that are planetary in scope and operate on vastly different time scales, challenging perception and action while changing the grounds of the political. What should be our collective orientation toward a future that is shifting radically in both its qualities and risks? How do we recalibrate our senses, actions, and expectations as the long-standing modernist assumption of an ever-increasing security through continual technological revolution is replaced by competing visions of precarity and loss? Familiar dangers (nuclear war) and newer ones (a destabilized climate) challenge global governance while also upending foundational notions about technology, modernity, and progress. The nature of the state as a problem-solving apparatus as well as the state of nature as the dominion of life itself are in play at our historical moment

in radical ways, not only as conceptual categories but also as a set of embodied relations.

In sum, the ecological future is not what many residents of the industrialized Global North, who for generations have relied on technological innovation to steadily improve everyday comforts, once assumed it would be. Industrial toxicity is shifting Earth systems—across atmosphere, ocean, ice caps, geology, and biosphere—and is on a trajectory to transform the environmental conditions that promoted such spectacular human expansion over the past ten thousand years (a period that saw the invention of agriculture, the written word, the internal combustion engine, the atomic bomb, and the smartphone). This realization is transforming the focus of security from nation-states and international institutions to the envelope of the atmosphere itself. Atmospheric chemistry is politically emerging as a foundational, but highly changeable, support system for life as we know it. Increasingly, environmental problems operate at the planetary scale, which presents the diversity of global cultures and regional economies with a species-level problem for governance. This shift in perspective requires more than new science, engineering, and statecraft; it also requires new imaginaries, new visions of ecological relationally, and a wide-ranging exploration of the codependence of species and Earth systems. As Dipesh Chakrabarty has argued, climate change is a collective danger that invites us to rethink basic aspects of contemporary life.<sup>1</sup> This chapter is therefore ultimately about conceptualization, about how to think on temporal and spatial scales that exceed human senses. For that, we need both science and art, both technical judgments about material conditions and creative efforts to generate new points of orientation for citizens who are increasingly positioned not only as consumers and members of nation-states but also as vulnerable, if hyperactive, Earth dwellers.<sup>2</sup>

In this regard, the concept of the Anthropocene has been a remarkably powerful intervention in the past few years, moving quickly from a formal proposal within the discipline of geology to a wide-ranging trans-disciplinary conversation, generating new research programs, journals, seminars, and workshops across Europe, Asia, and North and South

America.<sup>3</sup> In the past few years, barely a month has gone by without a major conference somewhere on the planet addressing the concept. Here is a partial list from 2013–15:

- January 2013: “The Anthropocene Project,” House of World Cultures, Berlin
- March 2013: “Bats in the Anthropocene,” Third International Berlin Bat Meeting, Berlin
- April 2013: “Living in the Anthropocene,” Evergreen State College, Olympia, Washington
- May 2013: “Society in the Anthropocene,” School of Geographical Sciences, University of Bristol
- May 2013: “The History and Politics of the Anthropocene,” University of Chicago
- May 2013: “Water in the Anthropocene,” Global Water Systems Project, Bonn
- June 2013: “Culture and the Anthropocene,” Rachel Carson Center, Munich
- January 2014: “Rivers of the Anthropocene,” Indiana University, Bloomington
- February 2014: “Encountering the Anthropocene Conference: Role of the Environmental Humanities and Social Sciences,” University of Sydney
- March 2014: “Megafauna and Ecosystem Function: From the Pleistocene to the Anthropocene,” University of Oxford
- March 2014: “Science, Politics, and Social Natures in the Anthropocene,” Rutgers University, New Brunswick, New Jersey
- April 2014: “Anthropocene Feminism,” Center for 21st Century Studies, University of Wisconsin–Milwaukee
- May 2014: “Anthropocene: Arts of Living on a Damaged Planet,” University of California, Santa Cruz
- June 2014: “Welcome to the Anthropocene: From Global Challenge to Planetary Stewardship,” Association for Environmental Studies and Sciences conference, New York

- July 2014: “Access and Allocation in the Anthropocene,” Norwich Conference on Earth Systems Governance, University of East Anglia
- August 2014: “Schelling in the Anthropocene: Thinking beyond the Annihilation of Nature,” Bard Graduate Center, New York
- November 2014: “The Anthropocene: Cabinet of Curiosities Slam,” Environmental Humanities, University of Wisconsin, Madison
- December 2014: “Im/Mortality and In/Finitude in the Anthropocene,” Royal Institute of Technology, Stockholm
- March 2015: “Energy Cultures in the Age of the Anthropocene,” Obermann Humanities Symposium, University of Iowa, Iowa City
- April 2015: “The Anthropocene: Confronting Global Environmental Change and Hazardous Worlds,” EARTHs Conference, Washington State University, Pullman
- June 2015: “The Good Anthropocene,” Breakthrough Institute, Sausalito, California
- August 2015: “Geographies of the Anthropocene,” Royal Geographical Society–Institute of British Geographers Conference, University of Exeter
- October 2015: “People and the Planet in the Anthropocene,” Transformations 2015, Stockholm
- October 2015: “Computational Ecologies; Design in the Anthropocene,” University of Cincinnati
- November 2015: “How to Think the Anthropocene,” Sciences Po and Centre Alexandre Koyre, Paris
- November 2015: “Social–Ecological Dynamics in the Anthropocene,” PECS, South Africa
- December 2015: “Democracy and Resilience in the Anthropocene,” Canberra Conference, Australia

As one can see, even this partial view of the phenomenon demonstrates that the Anthropocene is now both an era and a qualifier—linking water, air, land, society, culture, the humanities, Schelling, feminisms, megafauna, and bats as Anthropocenic subjects. The term has positive and negative inflections, involving democracy, resilience, annihilations,

immortality, computation, and thought itself. Formally, the Anthropocene was introduced by Paul Crutzen and Eugene Stoermer in 2000 to recognize the industrial-age human as a geological force.<sup>4</sup> The professional geological societies are now debating if there is a stratum in the Earth that is such a clear marker of human activity that it could be the basis for declaring a new geological period.<sup>5</sup> Crutzen initially proposed the start of the industrial age as the “golden spike” of the Anthropocene, suggesting that perhaps the first steam engine or coal plant could mark the start of the new epoch, but more recently he has argued that atmospheric nuclear explosions have left the clearest industrial signature in geology and biosphere. The stratigraphic associations may render a judgment on geological periodization, perhaps elevating the nuclear age to a geological period. What happens to the Cold War when the nuclear age becomes a geological period? Are we prepared to see technological effects so radically decontextualized from their historical and political context, liquidating political epochs in favor of geological time? Or, the geologists might alternatively continue this terrific mischief by postponing their judgment altogether or deciding we have not yet entered a new geological era. No matter how the formal judgments about the Anthropocene are resolved, however, this intervention into contemporary politics has been a bold and brilliant bit of agitprop on behalf of environmental sustainability.

The remarkable discursive success of the Anthropocene in a few short years has produced its share of critics as well. The concept clearly contributes to a scientific discourse within the earth sciences but is somewhat less helpful I think for those disciplines, including the social sciences and humanities, that do not think on geological time scales. The fast adoption of the concept across disciplines raises a series of concerns. Let me briefly consider four hesitations.

First, in the act of recognizing the unintended cumulative consequences of human industrial activity, the term can appear to name people as the core agents on Earth. If we were to limit the Anthropocene to the production of industrial toxicity, I would agree. But there are many kinds of agents on Earth, and it is a mistake to encourage, even as a political exercise or public mobilization strategy, a perception that people are the exclusive or primary actors within ecological systems. In recognizing the

cumulative force of human activity on Earth systems, the “Anthropocene” risks creating a metahuman agency, one that fits easily within the very neoliberal worldview that has accelerated extraction and consumption regimes on the planet. The “end of nature” and “age of man” conceptual frames all too easily morph into a nonscientific, popular claim of sovereignty over the Earth rather than underscoring the unintended destructive effects of people upon it, as the authors of the term have hoped it would.

Second, the Anthropocene can easily be constituted as a mirror to the Cold War logics of closed systems, of limited systems interacting in positive and negative feedback loops and thus subject to command-and-control reasoning.<sup>6</sup> This risks reinstalling a kind of anthropocentrism as the Earth’s atmosphere has changed dramatically over the eons and has only in the Holocene become conducive for human life and expansion. As shorthand for extremely complex articulations across domains, the Anthropocene installs assumptions of a “normative” planetary state, one that (in its focus on human creaturely comforts) could just as easily in the long history of the planet be considered extraordinary. That is, the Holocene can also be approached as an exceptional era for atmospheric chemistry on Earth, just one particularly useful to the human species.

Third, there are also many societies on Earth that are not particularly Anthropocenic, meaning that the “Anthropocene” is less accurate than talking about specific Anthropocenic societies, economies, and activities. It is vitally important that, in the effort to address planetary-scale ecological change, global inequalities are not subsumed into a species-level critique.<sup>7</sup> The Intergovernmental Panel on Climate Change (IPCC) has worked to address this point directly in its major publications, but the inherent link between planetary-scale activities, geological time scales, and species thinking that is at the center of the concept of the Anthropocene blurs historical distinctions in modes of living and specific concepts of nature.<sup>8</sup> These alternative visions and lifestyles are important not just to recognize but to actively learn from for their collective insights.

And finally, the Anthropocene to date has been mobilized via apocalyptic visions of the future, drawing on tropes developed most directly by nuclear crisis as a tool of political mobilization. Thus we have a language of ultimate crisis designed for one technological problem being used in a

context that is not a parallel situation at all. Nuclear war is short and fast and in the hands of a few; climate change is long and slow, a cumulative and accelerating effect of industrial activity. Depictions of collective danger should acknowledge these profound distinctions and the different modes of governance they demand.<sup>9</sup>

Donna Haraway has recently critiqued the Anthropocene, suggesting that it naturalizes a specific historical–political formation—capitalism—as the only human mode.<sup>10</sup> She suggests, along with Jason Moore, that instead of *Anthropocene*, it should be *Capitalocene*—to mark the specifically destructive qualities of a petrochemical-based capitalist system, or perhaps the *Chthulucene*, after the many-tentacled fictional creature created by horror writer H. P. Lovecraft.<sup>11</sup> Bruno Latour has argued that *Gaia*, building on James Lovelock’s original proposal, is a more appropriate concept, as it suggests a system with multiple kinds of nonhuman agency, one that is also open ended.<sup>12</sup> That is, the interaction between living beings and Earth systems is not a closed, homeostatic, cybernetic system but one that can take an infinite number of forms at the planetary scale (some suitable for humans, many not). For Latour, what we need now to consciously produce is “geostory”—that is, histories and ethnographies of human activities as geological forces mobilized to create new collectives committed to managing environmental effects. Nigel Clark, following a similar line of thought, has productively proposed a foundational rethinking of the term *geopolitics*, provocatively suggesting that we need now to attend not only to international relations but also to the material conditions of life on planet Earth.<sup>13</sup> I have suggested that we are entering the “Age of Fallout,” as environmental crisis is largely the ongoing aftermath of twentieth-century industrialism, raising important questions about temporal lag; environmental perceptions across petrochemical, synthetic chemical, and nuclear regimes; and the cumulative force of technological revolution.<sup>14</sup>

In any case, the necessary core project of reducing toxic emissions requires a public mobilization to deal with a highly complex future danger that engages the total environment. This makes the problem of environmental crisis one not only of science and simulation but also of communication and visualization.<sup>15</sup> How, indeed, can we take infinitely complex



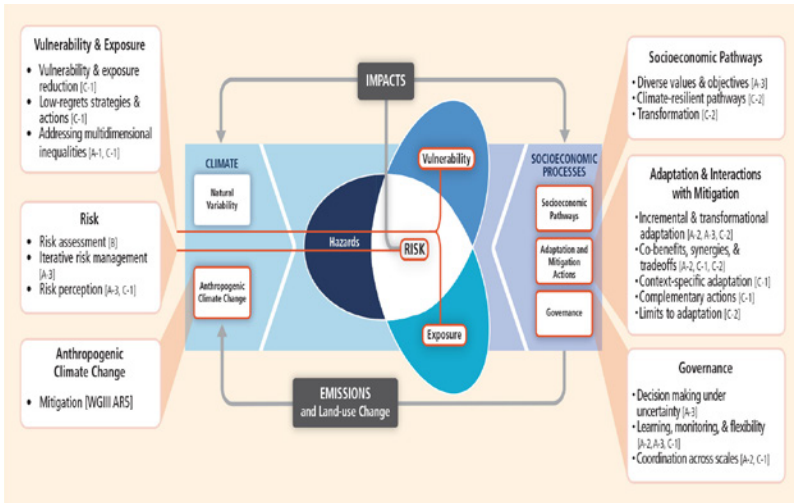


Figure 4.1. The IPCC “Solution Space” schematic illustrates the problem of climate change. Courtesy of the Intergovernmental Panel on Climate Change, *Climate Change 2014, Part A* (2014), 26.

processes involving the interaction of people, industry, atmosphere, water, land, and climate and make them intelligible to non-earth scientists in a way that promotes radical changes in our politics and economy? On this point, it is easy to turn to the IPCC, which, since 1988, has been studying the terms and possible futures of a warming planet. The IPCC is a remarkable scientific and political achievement, as it brings together thousands of scientists from all over the world in an effort to create a consensus view of changes in Earth systems today while also offering scenarios for future climatic changes. Figure 4.1 illustrates how the IPCC visually portrays the problem in its 2014 report.<sup>16</sup>

This is a schematic slide, depicting the complex, interdependent processes discussed in the broader IPCC report. Loaded with technical terms, it is a risk assessment of astonishing complexity combining the total environment with human economic activity and politics. Its central terms—risk, vulnerability, hazards, and exposure—each has substantial literatures across scientific, regulatory, and social theory projects, a complexity only amplified by the use of “socioeconomic processes” as a catchall phrase for human activities (across nations, cultures, and

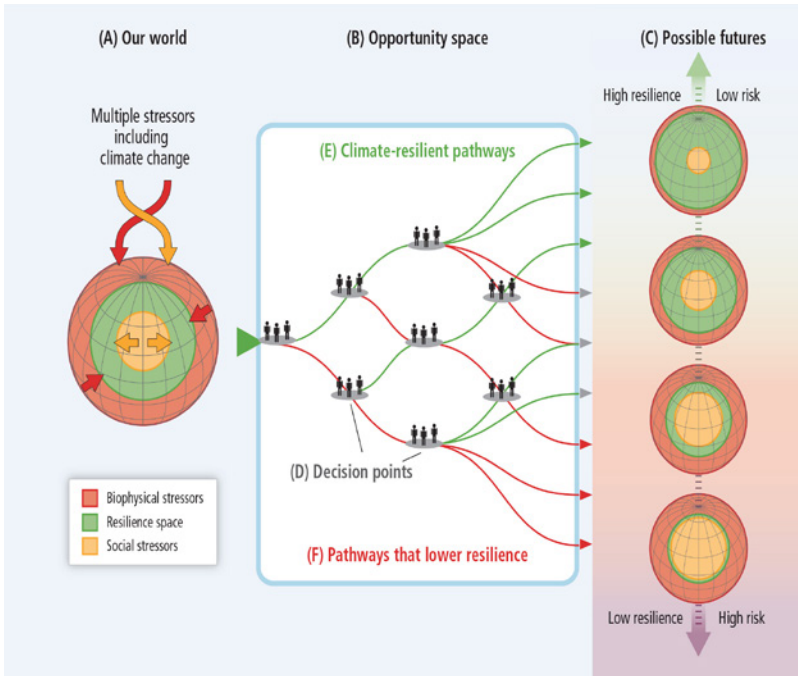


Figure 4.2. The IPCC “Opportunity Space and Climate-Resilient Pathways” illustration showing the human species’s relationship to the future. Courtesy of the Intergovernmental Panel on Climate Change, *Climate Change 2014, Part A* (2014), 29.

economies) on planet Earth. The programmatic clarity of this kind of illustration obscures the complexity of its production and cannot include the potential negative outcomes of mitigation schemes or the data friction between component parts.<sup>17</sup> Figure 4.2 presents the IPCC’s basic argument about the human species relationship to the future, making the simple, if vitally important, point that what people do today impacts conditions in the coming decades and centuries.<sup>18</sup> It recruits readers to an idea of a resilient global population, one that both mitigates and withstands ecological change. The illustration lends itself to an ideal of global governance without stating who can or will make decisions on behalf of the human species. Thus its species view is at odds with our current political reality, in which the nation-state and corporate forms with their much narrower field of interests—population security and profit—define the

contours of the political. And as Brad Evans and Julian Reid have pointed out, the current logics of “resilience” need to be carefully articulated to avoid being a code for social abandonment.<sup>19</sup>

In terms of mobilizing publics to consider existential crisis, the nuclear age offers the prime example. What was called *civil defense* in the United States was a multigenerational effort to teach Americans to fear the bomb in specific ways and therefore mobilize them as nuclear subjects.<sup>20</sup> The mushroom cloud became the emblem of collective disaster after 1945 in the United States, an image that could be confidently evoked to produce a set of cultural associations that were nationally meaningful (Figure 4.3). The mushroom cloud, however, was an explicit branding of the nuclear danger by the U.S. security state, a carefully calibrated image-form that served as an icon of ultimate destruction but that also created a distant viewer, one removed from the event as spectator to it. Nuclear imagery was carefully controlled and circulated during the early Cold War in the United States; it was officially aimed at mobilizing Americans as Cold Warriors. The specific visual tropes of U.S. nuclear culture also created for many an experience of nuclear sublimity—a perverse new kind of attraction to witnessing a destruction that did not need to be felt or shared—because one was visually positioned as external to it. Nuclear imagery thus raises the basic theoretical questions about perception, violence, and collective death that also need to be addressed by contemporary climate politics, which often rely on the tropes of nuclear war—a total destruction—to constitute urgency around carbon emissions and a destabilizing environment. Indeed, a world that is increasingly more hostile to live in (across health, food production, air quality, and weather) is much more difficult to articulate in a single image, as it represents a decreasing quality of life rather than the total destruction of it.

In the immediate aftermath of World War I, Freud explored how death was managed psychically, contemplating how the “most civilized” nations—that is, the most industrialized—proved to be the very ones capable of violence on a new scale. Climate change makes this argument anew, as it recognizes that petrochemical toxicity (in all its forms) is a unique achievement of industrialized society. Freud argued that people maintain two opposed impulses concerning death. The first is a denial

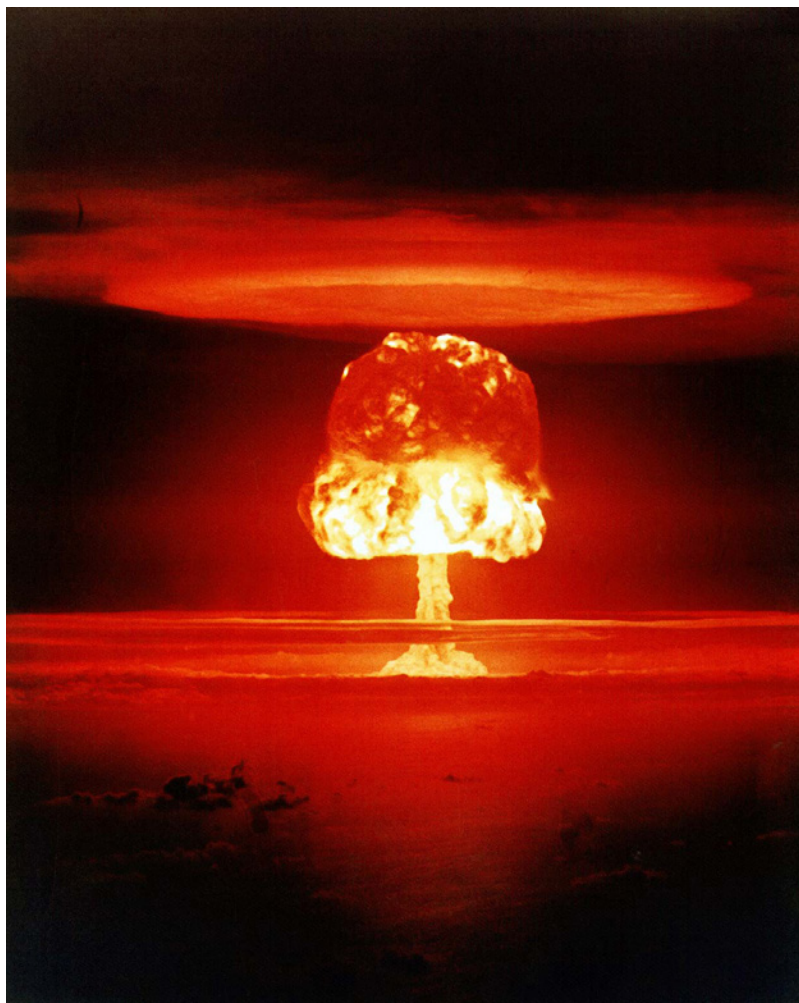


Figure 4.3. Mushroom cloud from U.S. thermonuclear detonation at Bikini Atoll, March 26, 1954. Courtesy of National Nuclear Security Administration/Nevada Site Office.

of one's actual death. Noting the removal of death from public life in Europe at the end of the nineteenth century—the effort to render sickness and death socially invisible—that preceded the invention of world war, Freud wrote,

We cannot, indeed, imagine our own death; whenever we try to do so we find that we survive ourselves as spectators. The school of psychoanalysis could thus assert that at bottom no one believes in his own death, which amounts to saying: in the unconscious every one of us is convinced of his immortality.<sup>21</sup>

*We survive ourselves as spectators.* This is a curious phrase, one that underscores the basic tension between an internal expectation of immortality and the conscious knowledge that everyone has a defined life course ending in death. It suggests an internal dissociation toward death, allowing us to be external witnesses to our own injury or end. This contradiction is managed in at least two ways: the first is simply to psychically locate death elsewhere. Freud talks about the power of fiction, of distant wars and disasters, of newspapers, to give a precise location to death, one that allows finitude to be contemplated but also pushed away from the ego and externalized. The other mechanism is what Freud would eventually call the *death drive*, a basic orientation of the human organism toward an ultimate release from physical struggle and a return to a state of inertness.<sup>22</sup> The pursuit of pleasure and gratification may motivate life, but a drive toward a feeling of nothingness is coterminous with it. Thus, for Freud, we all have a complex orientation toward our own death, one that is managed via displacements and overdeterminations but that is also linked to an internal desire for an ultimate release, an embrace of a pain-free oblivion.

This raises an interesting question concerning planetary-scale existential danger: when we contemplate images of the end, of the apocalypse, of extinction, what kind of work are we doing? Is the pleasure in that mode of reflection an orientation toward the last and final release, or is it alternatively the deflection that allows the ego to feel removed from death and, if not immortal, then at least served and entertained by locating such finality elsewhere? Think about this next time you go to the movies and

are confronted by a story of nonstop mayhem or read of a cataclysm on the other side of the world with interested detachment. The aesthetics, even erotics, of death is a long-running cultural concern in Western theory but one that today intersects with an emerging planetary consciousness, one that demands scaling local dangers up to the earthly sphere and back again. Dangers are revealed today as simultaneously hyperlocal formations and as planetary concerns, a fact that requires an evolutionary collective consciousness, one merging a new orientation toward consumer desire with a new kind of statecraft.

For the rest this chapter, I'd like to explore some dimensions of contemporary ecological crisis, and the broader issue of visualizing collective danger, by engaging a remarkable 2013 exhibition at the Renaissance Society Art Museum in Chicago, curated by Hamza Walker. An explicit engagement with the aesthetic pull of extinction, Walker's *Suicide Narcissus* exhibition helps us think about the limits of human perception as well as the psychosocial effects of radical collective endangerment.<sup>23</sup> Walker presents six artworks, each in a different medium, inviting us to think carefully through questions of collective loss and extinction.

In ancient Greek mythology, as you will remember, Narcissus was a boy of unusual beauty who, failing to return the love of wood and mountain nymphs, was cursed by the god of retribution, Nemesis. The curse, of course, was exquisite. Having never seen his own image, Nemesis leads Narcissus to encounter it in a pool of water. Not recognizing himself, Narcissus falls so powerfully in love with what he sees that he cannot avert his gaze, eventually wasting away by the side of the pool until he dies of starvation. This depiction of a misrecognition with total identification has been a powerful concept for psychoanalysis, informing the logics of Lacan's mirror stage as well as Freud's earlier notion of the ego-ideal, an internalized image of a perfected self that is unattainable as lived experience. The story of Narcissus has come to inform how we think today about self-absorption and ego formation as well as both love and death. But we could also underscore other aspects of the myth less remembered today. It is also fundamentally a story about ecological retribution, as the Earth spirits offended by Narcissus call down a divine and absolute retribution against him, ending in a death that Narcissus could avoid simply by

changing his field of vision, simply by looking away. Nemesis's curse offers a terrible justice for creatures of nature injured by the self-absorption and vanity of human beings, a retribution that is played out to the point of an extinction.

Walker's *Suicide Narcissus* offers a rich and varied set of interventions on planetary ecological crisis, the most important but also most conceptually challenging issue of our time. Each artist in the exhibition offers a specific point of view on monumental collective loss, inviting viewers to consider not just the aesthetic forms but also the current conceptual frames available for thinking past one's own existence. Each piece in the exhibition is meticulously crafted and quite clever, working together to create a rebounding provocation about the ability to perceive immanent loss. Contemplating the end, in this case, is not a vehicle for distraction. Precisely because each piece is such a disciplined statement, the exhibition establishes the grounds for cultural critique, a mode of address that can generate a productive shock in the viewing subject.

Walker's intent is to interrogate the conceptual moves that allow one to stand outside an ongoing collective disaster and merely observe it as spectacle. Commenting on the American love of the special effects-driven disaster movie, he writes,

Global warming and summer blockbusters have been in lockstep, record-breaking temperatures corresponding to record-breaking box office earnings. Draped over summer's Hollywood tent-poles, as these big budget films are called, are plots sagging under the weight of humanity's impending demise, whether it is in the hands of the rabid zombies as in *World War Z*, or whether you happened to be holed-up in James Franco's pad during the rapture as in *This is the End*. The threat of our end is a story as recyclable as cardboard. While ours is certainly not the only story to tell, we are for better or worse the narrator, one whose sense of standing outside the story as it involves our death is a form of denial. The trilobites tell us what we already know, that "happily ever after" is a chapter belonging to another species.<sup>24</sup>

The fatalism in Walker's statement here is, of course, undercut by the sophistication of his curatorial work, which invites us to consider how death as spectacle functions today. *Suicide Narcissus* also offers a variety



of vantage points from which to constitute a different collective politics.

In what follows, I'd like to reflect on each of the six artworks in the exhibition, exploring the temporalities, ecologies, and visual logics of total endings under the rubric of the six extinctions.

### EXTINCTION 1: LUCY SKAER, *LEVIATHAN'S EDGE*

Lucy Skaer's monumental installation *Leviathan's Edge* (2009, whale skeleton and drywall) offers viewers a compelling figure-depth problem, as a giant white skeleton appears, just on the edge of intelligibility, through the cutaways of a white-walled enclosure (Figures 4.4 and 4.5). The white-on-white context of the installation shifts our perspective as we move closer to an obviously large—too large, in fact; what could it be?—animal that exceeds our field of vision. The partial, carefully framed points of view we are allowed of the skeletal remains draw attention to the partial vision we always have on fossilized life. Embedded in earth or stone, ancient remains are always fragile and partial, requiring some degree of reconstruction and imagination.



Figure 4.4. Lucy Skaer, *Leviathan's Edge*, 2009 (installation view, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.



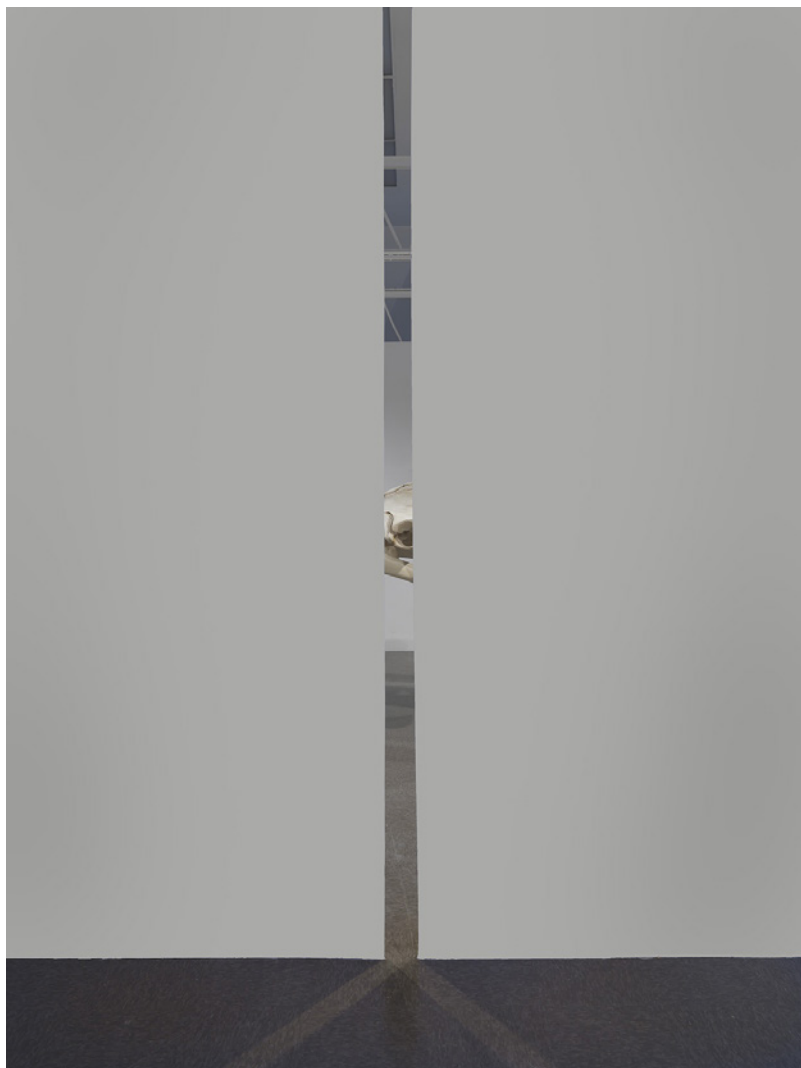


Figure 4.5. Lucy Skaer, *Leviathan's Edge*, 2009 (sectional view, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.

*Leviathan's Edge* invites us to consider the creatures now long gone as well as the contemporary beings on the brink—the ongoing extinctions—and the value systems people attribute to endangerment.<sup>25</sup> Its partial field of vision requires us to fill in and guess at the creature itself, which also posits the remains as timeless, perhaps ancient, perhaps contemporary, perhaps from the future. It invites us to think of how natural history is enmeshed in human history, while underscoring the fragmented and partial vision any standpoint allows on death itself. The whale skeleton—that might be a dinosaur, or some other fantastic being we do not have a name for—is beautiful and beyond full comprehension here because it remains both mediated and fragmented. It also reminds us that there is not enough space in all our museums to account for all the long-gone life-forms. The small slivers of visual access we have to the remains, the cutouts in the installation or the fossil traces of long-gone life on planet Earth, also underscore our limited ability to apprehend, let alone comprehend, the edges of an extinction, its almost-here-ness or, as Thom Van Dooren might put it, the “flight ways” of ongoing species loss.<sup>26</sup>

Biologists will tell you that over 99 percent of the life-forms that have ever lived on Earth have gone extinct.<sup>27</sup> Extinction is not the exception but rather the rule within the deep history of life on this planet. The best estimates today are that some 4 billion species have evolved over the past 3.5 billion years. In addition to the process of natural selection in eliminating particular species, there have been five mass extinction events, periods when, owing to planetary-scale climatic changes, two-thirds or more of all the organisms on Earth have disappeared. Thus not just species but entire ecosystems die with some regularity: this makes every mode of living both an evolutionary accomplishment and a fragile historical achievement of the first order.<sup>28</sup>

Today, there is much discussion of a sixth mass extinction event, an ongoing shift in the terms of living on Earth drawn from the combined impacts of habitat destruction, pollution, overharvesting, invasive species, and human population growth.<sup>29</sup> This sixth mass extinction will be unique in this planet's history, as it does not arrive in the form of an asteroid collision or volcanic eruption but rather through the hyperactive work of one indigenous species: people. The industrial-age human has

become an ecological, even a geological, force, constituting a future of fewer species, reduced biodiversity, and potential disruptions in the food chain.<sup>30</sup> Skaer's *Leviathan's Edge* invites us to consider the once and future remains of monumental life on planet Earth and to consider the "edge," that is, to locate the precise threshold of such a cataclysm, the tipping point between life and nonlife.

## EXTINCTION 2: KATIE PATERSON, *ALL THE DEAD STARS*

Katie Paterson's laser-etched *All the Dead Stars* (2009, laser-etched, anodized aluminum) poses the problem of extinction directly, while also raising subtle questions about temporal lag and misperception (Figures 4.6 and 4.7). Documenting the twenty-seven thousand known dead stars in the universe, the installation requires us to think not about galactic space and infinity but about the quality of light from dead stars and the temporality of seeing.

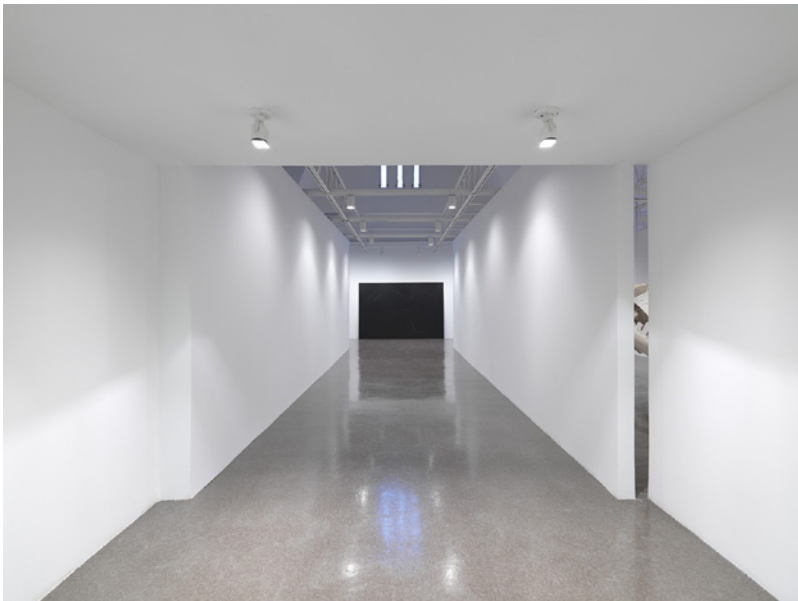


Figure 4.6. Katie Paterson, *All the Dead Stars*, 2009 (installation view, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.



Figure 4.7. Katie Paterson, *All the Dead Stars*, 2009 (installation view, close-up, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.

The speed of light travels at just under three hundred million meters per second. Sunlight takes just over eight minutes to travel from the surface of the sun to the surface of Earth. Thus, when looking at the night sky, there is a lag between the light one sees and its point of origin, meaning that some fraction of the light is from stars that are actually dead, with the last flicker of light energy just now reaching our planet. How, then, with the limited human senses that we have, can we actually see extinction? Under what terms and temporalities does a total loss become visible? Presenting a universe of potential answers to this question in a spherical form evoking Earth, Paterson draws attention to the kind of light our sun gives out, the time that light takes to travel across the solar system, and what it might look like in some five to ten billion years, after it finally goes supernova and burns out.

Paterson also alerts viewers to the fact that extinction is all around us, a constant presence. Thus the challenge is to account for how human senses operate within the ongoing temporal lag between living and dying.<sup>31</sup> *All the Dead Stars* provokes questions about how many species, processes, and ideas are merely the afterimage of themselves—a loss that has already occurred but is just not yet visible as such.<sup>32</sup> Today, pollinators—the bees, moths, and butterflies that enable plants of all kinds to reproduce—are in crisis. The colony collapse disorder among honeybee populations is part of a larger shift in how these insects live and die, how their bodies have been manipulated by people and put to work for agricultural industry.<sup>33</sup> Theories abound, but the likely cause is the combined effects of chemical fertilizers, climate change, and pollution. Put differently, we see in the vast die-offs of pollinators today a variety of species under environmental stress to a kind of maximal degree. Are these a terrestrial version of Paterson's dead stars—a question simply of the temporal lag, not the end result?

One ambitious proposal for climate governance involves determining the operating parameters for Earth systems and mobilizing human society to keep specific domains within the peak thresholds for current life. Known as the planetary boundaries proposal, this entirely reasonable act of environmental governance seeks to transform the climate crisis into “a safe operating space for humanity,” to constitute a new form of “planetary stewardship” (Figure 4.8).<sup>34</sup> The idea is breathtaking in its vision, detail-

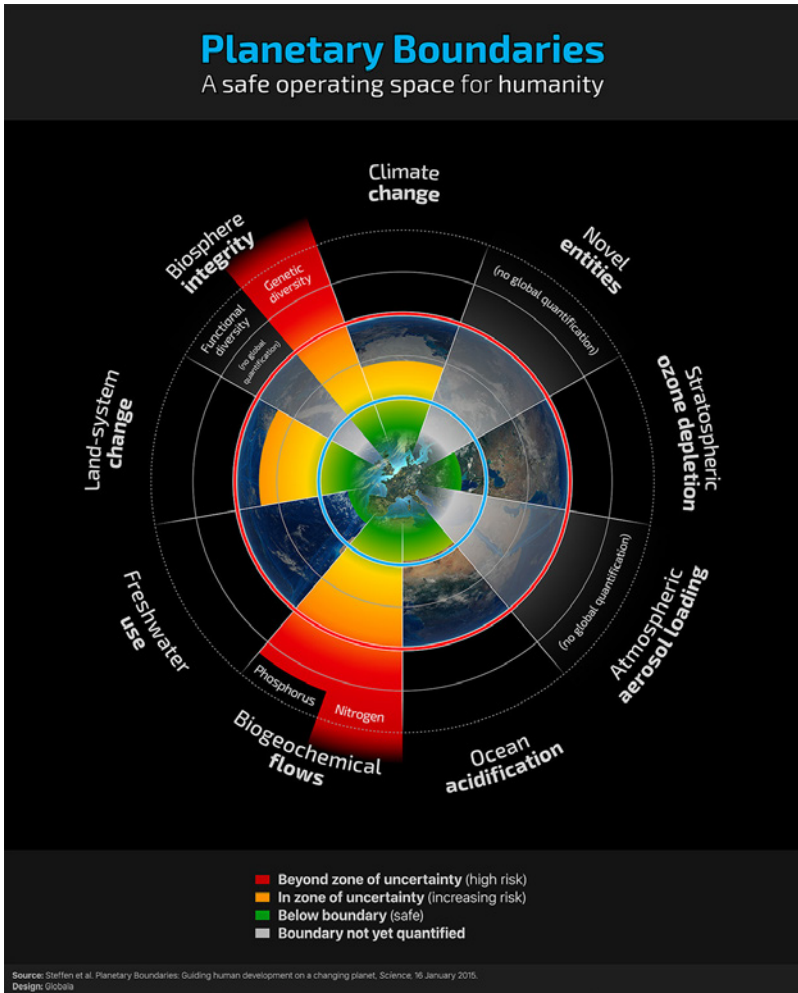


Figure 4.8. The planetary boundary concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. Stockholm Resilience Centre, *The Planetary Boundaries*. Courtesy of F. Pharand-Deschenes/Globaia.

ing nine core areas for planetary management—climate change, ocean acidification, ozone depletion, the nitrogen and phosphorus cycles, global freshwater use, land use, biodiversity loss, atmosphere aerosol loading, and chemical pollution. As an aspiration politics, this is a significant

intellectual contribution, as it links individuals, organizations, and states to specific goals that can be measured and encourages all parties to engage in planetary thinking. But it is also an engineering approach to planetary process, striving for sublime levels of control of complex human, technological, and ecological interactions. Earth processes are also not closed systems and can be subject to both abrupt and long-term changes.<sup>35</sup> Thus the promise of the planetary boundaries project is to intervene across ecological domains and to calibrate complex planetary systems with multimodal interactions and feedbacks to support specifically human comfort levels. A highly nuanced proposal for the geoengineering of Earth systems, the planetary boundaries process embraces a macroview of environmental risk. Here the call for subtle control of planetary processes overwhelms more simple and direct human-centric responses to climate change—for example, reducing meat consumption, leaving the remaining oil in the ground, reforestation, and committing on a collective scale to renewable energy. The danger here is that the sublime intricacies of Earth systems can become an invitation to a new kind of suicide narcissus—promoting an aestheticized love of complexity and command-and-control reasoning, one that prevents people from simply looking away, seeing a simpler and more direct solution, embracing a different way of living.

### EXTINCTION 3: THOMAS BAUMAN, *TAU SLING*

Thomas Bauman's *Tau Sling* (2008, wood rope, motor, mirror) is a mechanized installation in which a thick rope is continuously twisted and reflected in a mirror, constituting an ever-changing, ever-tightening noose (Figure 4.9). It is mesmerizing precisely because of its slow-moving tangle of elements, a machinery that fascinates as it constricts and knots endlessly.

*Tau Sling* offers a beautiful metaphor for many of today's industrial legacies while also referencing forms of direct (particularly racialized) violence in the Americas. In its ever-twisting form, we can consider how the careful work of building a machine, a security system, an energy infrastructure, a global economy, creates looping and treacherous side effects that can undermine basic logics of safety and sustainability. Bauman's *Tau Sling* is a machinery of insecurity, one constantly in motion,



Figure 4.9. Thomas Bauman, *Tau Sling*, 2008 (installation view, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.

offering an enticing, even hypnotic vantage point on constriction and entanglement.

In 1955, mathematician John von Neumann addressed this point directly in a remarkable essay titled “Can We Survive Technology?” in *Fortune* magazine. He writes,

“The great globe itself” is in a rapidly maturing crisis—a crisis attributable to the fact that the environment in which technological progress must occur has become both undersized and underorganized. . . . Literally and figuratively, we are running out of room. At long last, we begin to feel the effects of the finite, actual size of the earth in a critical way.<sup>36</sup>

Von Neumann contemplates how technological revolution has expanded to an unprecedented scale, leaving no room for experimentation without collective danger. He focuses on two technologies of immediate concern: nuclear weapons and weather control. The nuclear revolution, he states,



will transform “everything it touches,” potentially providing new sources of energy, but only if nuclear war can be avoided. Thus surviving the nuclear revolution is the necessary first step before a better world can be built through its peaceful application. Similarly, he considers weather modification as an emerging technology and worries about how carbon emissions from industrial production could produce a substantial warming of the planet, leading to melting ice caps and a changing climate.<sup>37</sup> Industrial emissions, he suggests, could be a planetary problem much like the atomic bomb, constituting a new kind of threat, one exacerbated by the implementation of weather control as a new tool of war. Thus his positive utopia of weather modification is undermined by an imminent new world of “climatic warfare.” For von Neumann, technological revolution now affects the entirety of the planet, leaving no future room for expansion and collective costs for failure or error.

One might consider von Neumann’s essay a foundational statement in the literature of the Anthropocene, as it suggests that technological growth scaled to the planetary dimension exceeds human understanding and control to become a force in its own right. Peter Haff, following this line of thinking, has proposed that we now live within a “technosphere,” a planetary-scale imbrication of technological systems that interact with all Earth systems.<sup>38</sup> Indeed, we have achieved a world of climate alteration, not through conscious decision making or warfare, as von Neumann predicted, but through an unrestrained petrochemical-based capitalism. Von Neumann’s fascination with technological revolution and industrial scaling thus works here very much like Bauman’s installation—a mesmerizing apparatus of perpetual motion involving an ever-tightening noose, or, as the great mathematician put it in 1955, “for progress there is no cure.”<sup>39</sup>

Consider a remarkable image from *The Lancet* (Figure 4.10), which makes a vitally important point about climate change and does so in an entirely new way: it illustrates the proportional local production of carbon emissions in relation to their proportional regional health effects.<sup>40</sup> The planetary politics of carbon here are an emerging violence connecting the Global North to the Global South, producing what Rob Nixon would call the slow violence of anthropogenic illness.<sup>41</sup> But of course, thinking with

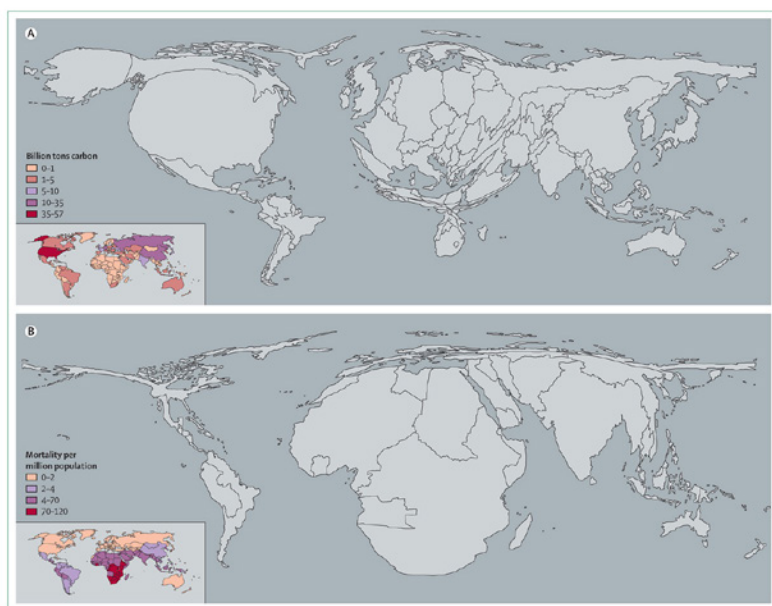


Figure 4.10. Source of carbon emissions to location of increased illnesses from carbon emissions. Reproduced with permission from Anthony Costello et al. and *The Lancet*.

Figure 4.10. Source of carbon emissions to location of increased illnesses from carbon emissions. Reproduced with permission from Anthony Costello et al. and *The Lancet*.

Bauman's installation, carbon is a noose that tightens in all directions, for as the Global South achieves middle-class consumption standards over the coming century, the health effects of an expanding southern petrochemical economy will be directed northward as well—creating an ongoing spiral of negative planetary health effects. Consumption in the Global North entangles health in the Global South, and vice versa, creating an ever more violent circuit that only temporarily offers some the possibility of a detached view on human and nonhuman suffering.

#### EXTINCTION 4: DANIEL STEEGMANN MANGRANÉ, 16MM

Daniel Steegmann Mangrané's *16mm* (2008–11, 16mm film shot with a specially modified camera, color, synchronized four-channel digital sound) offers a slow, five-minute tracking shot directly into a rain forest (Figure 4.11). Although the rain forest is seemingly unpopulated, the



Figure 4.11. Still from Daniel Steegmann Mangrané, *16mm*, 2008–11. Courtesy of the artist.

sound track tells us that the space is filled with wildlife unseen. In the *Suicide Narcissus* exhibition, *16mm* was projected in a darkened room against a white screen.

The beautiful canopy of plants and trees revealed here is dense, and there is no trail to follow or trace of a human footstep. Instead, the 16mm camera glides and hovers through the biosphere, moving seamlessly through a jungle space that would be difficult for a person to traverse. What is this point of view the camera offers us? Who are we that we can see in this way? The film documents the archetypal endangered space of our time—rain forest—valued for its intense biodiversity as well as its ability to manage carbon in the atmosphere. But there is also something uncanny about the camera movement (mechanically synced to the rotation of the film spool) that suggests a kind of archival project, one in which the end of the tracking shot could also be the end of the garden itself. The lack of a human trace also allows this image of the biosphere to be both perfect and timeless, a museum of nature for a world that has eliminated such spaces. It is a vision of the forest without us but one carefully crafted to give viewers a privileged, if decidedly nonhuman, point of view.

In Hamza Walker's installation, a cutaway in the projection booth

reveals the 16mm projector itself, showing the looping analog film stock as it rattles through the machine. This is an analog photographic technology that is near extinction in the digital age as well as a film about extinction. Here we might consider the multiple ways in which a petrochemical economy threatens the rain forests of our time as well as the medium of film itself as a petrochemical emulsion that structured the social consciousness of the twentieth century. The fossil fuels that we use to run our economy are derived out of the decomposition of plant and animal organisms going back hundreds of millions of years.<sup>42</sup> Fossil fuels are thus, in a very literal sense, congealed time.<sup>43</sup> Film is a petrochemical medium that measures time. Thus Mangrané's *16mm* project can be read as a complex statement on how we perceive and instrumentalize time itself. It also underscores how the emulsions that enable filmic vision participate in the larger petrochemical extraction regime that has wreaked havoc from the polar ice caps to the rain forests to the deserts of the Middle East. These are "chemical regimes of living," to quote Michelle Murphy, that remake society, ecology, and biology in complex and novel formations.<sup>44</sup> That so many of the iconic technologies of modernity from oil to fertilizer to film are also highly destructive petrochemical forms, flammable and unstable over time, reveals at another level the unending challenge of truly valuing, of really seeing, a nonrenewable resource as it is used up.

#### **EXTINCTION 5: NICOLE SIX AND PAUL PETRITSCH, *SPATIAL INTERVENTION I***

Nicole Six and Paul Petritsch's *Spatial Intervention I* (2002, video) is a twenty-eight-minute video, exquisitely photographed, with a simple premise: it presents a man on a frozen lake hacking away at the ice he is standing on until it collapses (Figures 4.12 and 4.13).

The video demonstrates the dangers of undermining the natural systems we depend on for support: ice, atmosphere, and land. It also is a marvelous study of labor in the era of climate change, as the lake here is not so easily broken. It takes twenty-eight minutes of hard, sweaty work to get to the ultimate result. The end, of course, does not happen on screen but with a cut to black and a scream, leaving its final form in our imagination. Extinction here resists representation, becoming something that can



Figure 4.12. Nicole Six and Paul Petritsch, *Spatial Intervention I*, 2002. Courtesy of Bildrecht, Vienna 2015.

only be staged suggestively. In this work, Narcissus sees himself reflected in the frozen lake and just keeps hammering away, transfixed on breaking through to the other side, even if it means his immediate doom. The film, which forces the viewer to attend to each stroke of the ax, creates moments of boredom, suggesting the everyday activities—the unnecessary trip in the car or plane, the purchase of the plastic-wrapped produce shipped from the other side of the world, the eating of the hamburger—that collectively move climate.

*Spatial Intervention I* also asks us to consider which strokes of the ax matter in the end, which ones do permanent damage.<sup>45</sup> In Walker's curation, the sound of the ax hitting the frozen lake echoes through the



Figure 4.13. Nicole Six and Paul Petritsch, *Spatial Intervention I*, 2002 (installation view, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.

gallery long before one sees Nicole Six and Paul Petritsch's work, setting up a peculiar experience of viewing and hearing alternative takes on extinction. Thus, like many of the pieces in the overall exhibition, *Spatial Intervention I* is ultimately about perception and temporality, and about time running out.

In their professional assessments of the Anthropocene, earth scientists mobilize many forms of data to depict the radical changes that begin around 1950. Population, GDP, water use, paper consumption, telephones, tourism, all take off dramatically after World War II. These indexes are tied directly to parallel appraisals of carbon emissions, ozone depletion, floods, biodiversity loss, and so on.<sup>46</sup> McDonald's restaurants are a key indicator of climate change in these accounts, as cows are a huge contributor to greenhouse gases at every stage in the production of the hamburger. These metrics are crucial, as they recognize how everyday, routine consumer "desire" now constitutes a planetary force. Not

coincidentally, the “great acceleration,” as many call this shift in global consumption patterns at mid-twentieth century, is also coterminous with the nuclear age—making 1950 the inflection point for both climate crisis and nuclear crisis.<sup>47</sup> How to see everyday activities—eating, transportation, water use, and energy use, as well as national security—as a planetary force is an immediate challenge today. After all, industrial civilization has been largely devoted to creating and expanding creature comforts as the very index of progress since the European Enlightenment. Consumer pleasure is, therefore, at the heart of climate change, requiring not only the complex analytics of the IPCC but also understandings of the historical production of psyches, cultures, desires, and even nervous systems.

#### **EXTINCTION 6: HARIS EPAMINONDA AND DANIEL GUSTAV CRAMER, *THE INFINITE LIBRARY***

The selections Hamza Walker presents from Haris Epaminonda and Daniel Gustav Cramer’s *The Infinite Library* (2007 to present, twelve of sixty artist’s books) posit the question of knowledge directly (Figure 4.14). Here books, mostly drawn from the mid-twentieth century, have been broken apart and the pages reassembled in radical new combinations. This project of deconstruction and assembly shifts the nature of the human archive, exploding genre and language, to produce new texts, a new collection of works for a post-Enlightenment library. Encased in glass as paired artifacts, *The Infinite Library* attempts a kind of species thinking of the literary, merging fiction, science, self-help, and the arts into a new uber-category. The books explode the evolution of the modern sciences and humanities, a core product of modernity, to offer stories of a new kind, but made from preexisting intellectual and artistic materials.

The question this installation raises for me is, Who is the reader of these texts? Are they imagined as artifacts collected from the ruins by an extraterrestrial archeologist? This postgenre library is one that needs a future reader, perhaps one who does not yet exist. It is an infinite library both because the fragments of existing texts can be endlessly reorganized and also, perhaps, because the very modernist forms of reasoning that have created our current notions of genre are complicit with the





Figure 4.14. Haris Epaminonda and Daniel Gustav Cramer, *The Infinite Library*, 2007 to present (installation view, *Suicide Narcissus*, 2014, Renaissance Society at the University of Chicago). Courtesy of the Renaissance Society.

nation-states and industrial logics that have produced the linked nuclear and climate crises. It took experts of all kinds to build our current archive, just as it took the combined work of physicists, engineers, chemists, and mathematicians to create nuclear weapons and a petrochemical economy. These cumulative knowledge projects implicate the archive itself in a kind of autodestruction on a species scale. Epaminonda and Cramer, however, offer a vision of an alternative archive, one in which the disciplinary lines developed from the French philosophies of the first encyclopedia project (an inaugural event of the Enlightenment) to the drone killing machines circling parts of Earth today are no longer coherent. The accumulated knowledge of humanity is present, but radically reorganized, montaged to a new aesthetics and potentially new outcomes. *The Infinite Library* might well ask, How do we keep the knowledge base of modernity while constituting a different science, technology, and art to enable a different collective future?



## ON ENDINGS

In Hamza Walker's curatorial vision, the first step to dealing with collective ecological danger is to become attuned to it at the levels of consumption, image making, and knowledge economies. It is to resist the spectacle of mass death to contemplate alternative futures and become invested in both collective and individual futures. *Suicide Narcissus* attempts to shock the viewer out of a normalized consumer economy, one in which disaster is not a call to collective consciousness but rather a spectacle to be enjoyed via psychic distancing, consumer satisfaction, and depoliticization. Walker asks us to reconsider, and to imagine, a future that operates on vastly different terms, precisely by inviting viewers with such clarity and precision to consider the total cost of not doing so. Thus the immediate answer to the problem of visualizing planetary ecological crisis today is not to consolidate climate change into a single image, offering a mushroom cloud for a new emergency, but rather to proliferate modes of conceptualization and visualization of ecological conditions that can allow wide contemplation of the complexity of human interventions into natural processes and, most importantly, evolve radically with those understandings.

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