

## Environmental Visualization in the Anthropocene: Technologies, Aesthetics, Ethics

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In 1996 the Central Intelligence Agency (CIA) semi-declassified a series of satellite images taken, primarily, of the earth's Northern Hemisphere during the second half of the Cold War. These planetary images were the result of programmatic US investments in technology development intended to secure the nation's political and economic interests around the world. Aimed at documenting covert Soviet military maneuvers, the program involved not only extensive photographing of territory but also prototyping of new image-making technologies. The satellite images were *semi*-declassified in that they were made available only to a select group of "patriotic" environmental scientists working on the then nascent issue of climate change. In what appears to be an unlikely turnabout, the partial declassification of these images—specifically those that showed contractions in the polar ice sheets—provided scientists with a form of *environmental visualization* that proved vital to generating empirical evidence for and building scientific consensus about global climate change.

The declassification project was called Measurements of Earth Data for Environmental Analysis, or MEDEA. Its post-Cold War historical context indicates that the evocative acronym was not chosen lightly. After the fall of the Soviet

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Union, US federal and military institutions began a process of intensifying public fears of national insecurity. R. James Woolsey, in his 1993 nomination for the CIA directorship, argued that the Pentagon, and by extension the American public, needed to rethink the meaning of security in a post–Cold War era. The United States—he argued by way of a neocolonial environmental visualization—had “slayed the dragon” of communism but now faced an even more threatening “jungle filled with a bewildering variety of poisonous snakes” (quoted in Jehl 1993). Developed out of this charged vision, MEDEA tacitly summoned images of a planet turning against its human children. In the early twenty-first century, the discourse of US national security has morphed once again as the Pentagon and other security institutions invest in projects to visualize and also simulate climate change scenarios seen as the next threat to the nation’s security. Two illustrations reveal just how thoroughly climate change is being threaded to nationalism and militarism: through a national security lens, rising sea levels compromise territorial borders and threaten island nations, and increasing volatility in weather patterns threatens the nation’s food and water resources. Admiral T. Joseph Lopez, former commander in chief of the United States Naval Forces, sums up a nationalistic vision that obliterates the grossly uneven impacts of climate change and the responsibilities of a range of actors from states and nongovernmental organizations (NGOs) to local communities and individuals: “Climate change,” he announces, “will provide the conditions that will extend the war on terror” (quoted in Goodman 2007: 18).

The example of MEDEA—which enlists the global climate crisis in national security agendas—leads us to this special issue of *Public Culture*. The issue investigates contemporary technologies, media, and tactics of environmental visualization: satellite imaging of nuclear contamination (Elizabeth DeLoughrey) and animated films about nonhuman animals (Ursula K. Heise), landscape paintings (Nicholas Mirzoeff) and infographics (Heather Houser), ecological metaphors that obscure the Internet’s environmental ramifications (Allison Carruth) and sensational photographs that privilege the “view from above” (Robert P. Marzec). The six contributors approach their projects from different methodological and theoretical perspectives, but with shared concerns about the cultural and political structures that influence today—and have influenced historically—image-making technologies as well as shared interests in the aesthetics and ethics of *environmental imagining*. The issue starts from the premise that due to the swift dissemination of contemporary visual culture, it is easy to take images of environmental crises and environmental movements for granted. We hope that these essays will spark dialogue about how forms of image making and visual-

izing that have become naturalized are shaping ways of seeing and also perceiving twenty-first-century ecological realities. These scholars also share an ethical commitment to investigating visual forms that have been hidden from public view or, conversely, made overly familiar through media commodification. They also recognize that the emergent technologies and new media marshaled in environmental visualizations—as in established cultural forms such as the novel, painting, and analog photography—are freighted with complex personal, economic, and political histories.

From climate change models to the World Wildlife Fund (WWF) “Species Tracker,” environmental visualizations are political and politicized as much as aesthetic and aestheticized. Digital infrastructures (like the data centers that run the cloud and the global positioning systems [GPS] that generate high-resolution images of the earth’s surfaces) and digital media (including computer-generated imagery in filmmaking and viral online videos) have come to color our sight lines perhaps even more extensively than industrial technologies defined the landscapes of the nineteenth and twentieth centuries. Contemporary acts of visualizing environmental crises and environmental solutions often hide, moreover, the ecological footprint of image-making technologies themselves, which tend to promise the transparent representation of empirical facts or shared experiences. For instance, the infographics (or “infovis”) that large environmental NGOs commission to mobilize publics cultivate what Houser, in her essay, calls “a connect-the-dots aesthetic, constituted by an aerial perspective and finite lines, that privileges simplicity, transparency, and speed.” Consider, too, the photojournalistic coverage of the Belo Monte Dam project in Amazonian Brazil and the indigenous opposition movement that culminated in a 2012 summit in Rio de Janeiro. Marzec’s essay examines this struggle to make a postcolonial intervention in the imperial “view from above,” which makes claims of empirical knowledge and accurate spatial modeling and which mass media perpetuates in situating events like the Rio summit on the larger stage of planetary politics. As the media anthropologist Faye Ginsburg (2008: 289) emphasizes, inquiries like Houser’s and Marzec’s invite us to ask, “Who has the right to control knowledge and what are the consequences of the new circulatory regimes introduced by digital technologies?”

The post–Cold War and postindustrial contexts informing contemporary uses of image-making technologies to create environmental visualizations expose how empirical data serves political agendas.<sup>1</sup> Paul Virilio has shown that twentieth-

1. The Center for a New American Security, for instance, has begun to emphasize the need to “adapt” to climate change and to steer attention away from the production of sustainable technologies (see Burke and Parthemore 2009).

century developments in photography and film arose out of the military demand for aerial surveillance during World War I. The “supply of images” about an enemy’s geography served, in his terms, as a kind of “ammunition supply” (Virilio 1989: 1). Nor is this example an outlier. Manuel De Landa (1991) has persuasively shown that many twentieth-century technological developments—such as computers and image-processing devices—originated from the decisive channeling of science and technology to match state and military interests. In the twenty-first century, several of the essays underscore, visual technologies, devices, and media often emerged similarly from state-funded and military-driven research. The Internet’s infrastructure is perhaps the paradigmatic illustration. Carruth, in staking out an environmental ethics for cyberculture, critiques the image of the digital cloud as “a green space at once everywhere and nowhere in particular.” From industry-sponsored infographics and technology news to cyberpunk fiction, that image papers over the origins of the Internet in military-funded programs (as media historians such as Fred Turner [2006] and Lisa Nakamura [2007] have documented); it also, Carruth shows, renders invisible the environmental consequences of an ever-expanding and energy-intensive “net.”

Despite claims to objectivity, environmental visualizations, along with the devices (like laptops and mobile phones) and infrastructures (like GPS and the Internet) that underlie them, are thus bound up with political ideations that affect experiences of particular places as well as habitual ways of seeing the planet. The agendas that shape visual representations of environmental phenomena and politics are yoked, in many cases, to the planet’s former colonial empires, as contributors DeLoughrey, Mirzoeff, and Marzec all show. Their essays chart economic and political armatures that guide and sometimes govern how environmental visualizations circulate globally. In this, the issue builds on recent agenda-setting work by scholars such as Zahid R. Chaudhary (2012: 1), who argues that “the global dissemination of photography in the 1800s . . . irreversib[ly] [a]ffects . . . the modern formation of the senses.” According to Chaudhary, photography arrived in India as a “technology of the colonial state” designed to alter how the body politic sees to such an extent that it changes collective and individual forms of perception (*ibid.*). These essays, too, delve into the colonial histories that have structured senses of place and planet (to invoke the title of contributor Heise’s 2008 book). Defining a new concept of “Anthropocene visibility,” Mirzoeff offers a deeper history than is typical of “the new era in geology caused by human intervention, primarily the burning of fossil fuels.” His essay situates the ubiquity of planetary maps and models as extensions of imperialist visualizations of battlefields and industrial-age paintings of smog. Anthropocene visibility, he suggests,

is a mode of environmental visualization that obscures rather than reveals both environmental and social injustices: “For if the Anthropocene cannot visualize itself, no more can the market or empire, and yet the ‘authority’ of both can be felt across the world. . . . Anthropocene visibility allows us to move on, to see nothing and keep circulating commodities, despite the destruction of the biosphere.” In dialogue with Mirzoeff, DeLoughrey investigates the naturalization of military forms of surveillance that have expanded since the Sputnik era. Visualizations of the planet (*Earthrise*, *The Blue Marble*, and others), despite their association with the development of a “global consciousness” and a concern for “the fragility of the planet,” are also formative, she argues, of a “consciousness derived from militarism in the Cold War.” These visualizations arise from the global reach of a US “extraterritorial militarism,” which names a generalized effort to control the planet through the visual troping of outer space.

As the authors assembled here also show, technologies and media of environmental imagining can be unruly and revelatory. So too can the technologies and media themselves be read against the grain, as Houser does of WWF infographics and Mirzoeff does of climate maps. Heise, in her essay on the “plasmatic” (or malleable and shape-shifting) bodies of nonhuman animals in animated film, brings both of these claims to life. While acknowledging that animation’s “plasmatic bodies . . . might seem to defy environmentalist worries about the fragility of nature,” she demonstrates that they also playfully and powerfully explore ideas of resilience, adaptation, and synthetic ecologies in the Anthropocene. “By questioning how and why we discover agency in nonhumans, how organisms become objects and objects organisms,” Heise writes, “animated film persistently draws attention to the reification of nature in modern societies and its opposite, the encounter with nature as a realm populated by a variety of nonhuman agents.” These alternative visual aesthetics need attention in an age marked not only by easily digestible sound bites and naturalized habits of image making but also by ideologically conservative forces that seek to govern how communities around the globe visualize and imagine possible ecological futures.

It would be a great oversight, though, to assume that environmental visualizations emanate only from colonial and neoliberal contexts or only from Northern Hemisphere cultures. As many scholars have successfully argued, indigenous populations and grassroots environmental movements contribute extensively to what is a growing archive of image making that includes media old and new (from posters and fliers to flip-cam videos and photo blogs) (see especially Banks and Ruby 2011; Ginsburg, Abu-Lughod, and Larkin 2002; and Wilson and Stewart 2008, among others). Such images do not always escape dominant rubrics of see-

ing. However, more often than generally acknowledged, marginalized populations are radically innovative in the aesthetics and tactics they employ to reenvision environmentalism in making visible the “slow violence” of environmental injustices (to quote Rob Nixon [2011], whom we interviewed for this issue). While such visualization practices make appearances in this issue, the essays that follow home in on digital technologies and media that, we feel, have received scant critical and theoretical attention to date. Our aim is to offer a new genealogy of contemporary visual culture that centers at once on environmental risk and environmental justice and, at the same time, makes a case for both post–Cold War cultural history and new media aesthetics as crucial to the burgeoning interdisciplinary field of the environmental humanities.

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