



## NATIONAL ENDOWMENT FOR THE HUMANITIES

DIVISION OF RESEARCH PROGRAMS

### **Narrative Section of a Successful Application**

The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the Research Programs application guidelines at <https://www.neh.gov/grants/research/fellowships> for instructions.

Note: The attachment only contains the grant narrative and selected portions, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title: Inside-Out Earth: Residual Governance Under Extreme Conditions

Institution: Stanford University

Project Director: Gabrielle Hecht

Grant Program: Fellowships

# Inside-Out Earth: Residual Governance Under Extreme Conditions

*Project Narrative • Gabrielle Hecht*

## INTRODUCTION & SIGNIFICANCE

First proposed in 2000, “the Anthropocene” designates a new geological epoch in which human activity irreversibly shapes Earth systems. The epoch’s best-known manifestation is the climate crisis; other symptoms include widespread soil depletion, rapid biomagnification of toxins, dramatic peaks in air pollution, and much more. I argue that planetary inversion, accompanied and accomplished by a dramatic acceleration of waste production, underpins many of these socio-economic and Earth-systems trends.

Consider some of the ways in which we are turning our planet inside-out. Miners descend kilometers underground in search of metals to fabricate electronics and other consumer goods, making mountains of unwanted rocks. Dredgers scoop sand from seabeds to terraform military bases and luxury islands. Offshore rigs pierce the ocean floor, sucking up oil. Molecules long trapped in the earth seep, spurt, spill, and sneak into bodies, soil, water, atmosphere. As they accelerate and compound each other, such activities pose increasingly complex governance dilemmas. My book project will explore these dilemmas, focusing on cases in southern, central, and west Africa.

As yet, very little Anthropocene scholarship has addressed the epoch’s manifestations in Africa. Most humanists working on planetary crisis have taken a bird’s eye view, grappling with broad philosophical questions (like the old nature-culture chestnut) or nomenclature (e.g., proposing alternate labels such as Capitalocene or Plantationocene in order to emphasize particular causal chains or start dates for the epoch). Although fruitful in some ways, such approaches run the risk of insularity, promoting division into camps. Yet true multi-disciplinary thinking has become urgent: no single field—whether in the natural sciences or the humanities—possesses all the tools needed to grapple with the complexity of our planetary crisis.

For me, a more productive route entails maintaining the “Anthropocene” rubric—which has demonstrated the power to federate natural and social scientists, humanists, and artists—while foregrounding undeniable differences and inequalities in human experience and agency. Along with a growing group of scholars, I maintain that Anthropocene perspectives limited to aerial vantage points miss the all-important worm’s view: close to the ground, churning through waste in order to live. Humanists writing about the Americas, Asia, and Pacific islands have shown the value of location-specific analysis for reckoning with the dramatic scalar shifts of this epoch. Digging deeper in this vein, I hold that starting from African locations shifts our understanding of, and approach to, these disturbing times.

## CONCEPTS & ORGANIZATION

*Inside-Out Earth* will explore the intersections of toxic waste, inequality, and governance from the vantage point of cases in Gabon, South Africa, Senegal, and Ivory Coast. Contrary to stereotypes of Africa as marginal and “lagging” behind other continents, these cases have played key roles in planetary dynamics. Some sites offer visions for novel approaches to national and international governance in a world of ever-increasing waste. Others offer dark views of planetary futures, reminding us that environmental measures in one part of the world can have terrible consequences in other parts.

Six interlocking essays will together constitute the book, whose outline I’ve developed in sustained conversation with a Duke University Press editor. The first and last essays situate extraction and contamination in Africa in the context of planetary dynamics. The middle four dive into specific locations where the residues of extraction permeate the lands, lives, and bodies of Africans. To analyze these cases, I develop the concept of **residual governance**, which I deploy along three axes: [1] **governance of residues** (e.g., management of discarded materials such as mine waste or air pollution), [2] **governance as afterthought** (e.g., treating wastes as “externalities” that only garner regulatory attention after causing harm), and [3] **governance that treats people and places as residual** (e.g., housing poor communities on contaminated land). These intersecting axes of residual governance, I contend, increasingly form the default politics of our degraded world – not just in Africa, but everywhere. Below I offer overviews of each essay.

**1. The Inside-Out Earth.** Anthropocene writings commonly observe that humans “move more sediment and rock annually than all natural processes combined.” One reason is that mining produces far greater volumes of waste rock than of ore. An ordinary 14K gold chain, for example, leaves behind one ton of discarded rock. Yet Anthropocene scholarship rarely moves beyond such tropes. What picture emerges when we attend more closely to accumulations of discarded rock, and to their differential health and environmental consequences? This chapter presents an overview of the wastes of extraction in Africa. In

order to clarify the extent and nature of the modern world's reliance on African rocks, it traces the historical flow of minerals between Africa and the rest of the world. Thanks to a research assistant in Earth-systems science, the chapter will also depict world- and continent-wide increases in mine waste over time, using a combination of data, modeling, and aerial and satellite imagery.

**2. Interscalar violence (Gabon).** In 1972, mineworkers unexpectedly unearthed depleted uranium at a French-owned mine in Gabon, leading to the startling conclusion that a natural fission reaction had occurred *in situ* 2 billion years previously. While Gabonese mineworkers inhaled radon and sustained significant injuries and disease, European and American scientists used the discovery to explore whether rock formations could adequately contain radioactive elements for millennia, thereby offering clues to the governance of ever-increasing quantities of nuclear waste far into the future. This essay treats rocks as “interscalar vehicles” for tracing change across deep time and vast spatial scales, while simultaneously attending to the historical inequalities and modes of violence that enabled extraction. It also establishes the interscalar writing techniques—connecting geological processes in deep time with events unfolding on human temporal scales—that will characterize the remaining essays.

**3. Residual Governance (Gauteng, South Africa).** For over a century after its discovery in 1886, South African gold fueled the national economy and underpinned global finance. Starting in the 1940s, uranium extracted from these same deposits fed nuclear weapons in the UK, the US, France, and Israel. Mineral extraction also defined the geography and topography of Johannesburg and its surroundings, shaping the spatial exclusions that characterized the apartheid regime. Today, huge tailings piles, containing millions of tons of mine waste, stretch over a 56-kilometer band across Gauteng province, straight through the Johannesburg city center. Their dust blows over informal settlements and precipitates into scarce water sources, affecting the health of hundreds of thousands of residents. These toxic and radioactive wastes aren't merely as the material residues of mining; they are also the residues of apartheid, of nuclear weapons, and of racial capitalism. Most of the nation's major governance dilemmas—in public health, urban planning, environmental regulation, service provision, energy production, and more—must reckon with these complex residues. This essay examines the emergence of residual governance as a primary mode of politics in South Africa from the mid-twentieth century to the present.

**4. War in Secret for the Future (Northern Cape, South Africa).** South Africa is the only African country with nuclear power, produced since the mid-1980s by two reactors at Koeberg, near Cape Town. Simultaneously, the apartheid government established Vaalputs, a site in the Northern Cape designed to house low-level radioactive waste. Today's democratically elected government promotes nuclear power expansion, misleadingly invoking Vaalputs as “proof” that South Africa can manage modernity's future waste. Community and environmental activists, however, dispute the claim that the inside-out Earth can be safely restored. One resident remarked that “this dumping is making war in secret for the future”: deriving his own version of Rob Nixon's “slow violence,” he sees Vaalputs generating contamination invisibly, silently, over long periods. This essay examines how residual governance in a remote rural region of South Africa defines—and forecloses—visions and possibilities for the future at multiple scales.

**5. Air in the Time of Oil (Dakar, Senegal & Abidjan, Ivory Coast).** The concepts of residual governance and the inside-out Earth offer analytic leverage beyond the activities narrowly associated with extraction from (or burial in) the ground. This essay develops those concepts further through an examination of air pollution in African cities, a topic that has seen virtually no humanistic scholarship, and comparatively little attention from social or natural scientists. While data are sparse, there's enough to support the WHO's estimate of premature deaths attributable to outdoor pollution in African cities at 250,000 lives in 2018, and rising steeply. High pollution levels result, in significant part, from a constellation of global market practices known as *regulatory arbitrage*: fuel brokers leverage extreme regulatory differences among nations to (legally) sell high-contaminant fuel and high-emissions vehicles that no longer meet environmental standards in Europe and North America to rapidly growing African cities. Cleaner air in European and American cities is thus directly linked to rising rates of bronchial and cardiac disease among African urbanites, placing them at the heart of today's Anthropocene. In exploring these dynamics, this essay focuses on two cities with contrasting approaches to measuring and governing air pollution: Dakar, where scientists and bureaucrats have long deployed the epidemiology and toxicology of

respiratory disease, and Abidjan, where expertise centers on atmospheric chemistry and urban sociology. These distinct approaches—stemming from historical differences in scientific infrastructure, funding, and links with international scientific communities—open and foreclose governance possibilities. The essay will also consider how city residents use consumer and home-made products, many originally conceived to mitigate the effects of seasonal Harmattan winds, to cope with the everyday experience of polluted air.

**6. The Earth, Outside-In.** This essay will conclude the book by arguing that turning the Earth inside out results in humans (and other species) *ingesting* and *inhaling* substances and particles put into *outdoor* circulation. The essay considers the differences between residual governance centered on limiting bodily contamination, and that centered on curbing waste production. It reflects on how the African cases explored in the book both reflect and forebode the dilemmas of planetary-scale residual governance.

#### WORK PLAN, SKILLS, & ACCESS

By the start of the fellowship year, I will have completed drafts of the first three chapters. Chapter 2 appeared in *Cultural Anthropology*, receiving an award from the American Anthropological Association; a round of revisions will make it suitable for the book. I am currently drafting Chapter 3, which I expect to finish by September 2020; short versions have appeared in *Aeon* and *Somatosphere*. Meanwhile, I've been presenting talk versions of Chapter 1 to various audiences, and expect a complete draft by May 2021.

**I will spend the fellowship year completing Chapters 4, 5, and 6.** While researching my last book, I collected (but never used) archival materials on the creation of Vaalputs. Since then, some new collections have emerged, including the papers of Koeberg Alert, an advocacy group that worked extensively on Vaalputs. I will spend **2 months** in South Africa working through these documents and conducting interviews with community leaders. Writing Chapter 4 will take another **2 months**. (*Sept-Dec 2021*)

Over the last 2 years, I've conducted extensive research for Chapter 5, steeping myself in scientific publications and establishing contacts with scientists in Dakar, Abidjan, and Toulouse (home to the lab of a French atmospheric chemist who has collaborated extensively with her colleagues in West Africa). During the fellowship year, I will spend **3 months** (combined) in Dakar and Abidjan, where I will examine archival materials, visit labs, and conduct interviews with scientists, government officials, and community leaders. I budget another **4 months** to write this chapter because of the complexity of this material. (*Jan-July 2022*) Stanford allows me to concentrate my teaching in 2 of its 3 quarters. I will devote remaining fellowship time, along with a non-teaching quarter in Fall 2022, to drafting Chapter 6 and revising the manuscript. (*Aug-Dec 2022*) I will submit the manuscript to Duke by December 2022.

I am fortunate to have secured travel funding for the remaining research. My two previous monographs (and the recognition they received) demonstrate my methodological range, research skills, and ability to bring complex projects to successful conclusion.

#### FINAL PRODUCT & DISSEMINATION

*Inside-Out Earth* aims at a broad range of thinkers concerned with planetary change. I've prepared the terrain by giving talks to diverse audiences: artists and architects in Brussels, London, and Montreal; natural scientists in Seoul and Paris; and humanists and social scientists in the US, Europe, and South Africa. The research will also contribute to other outputs, such as a piece I'm co-authoring with scientists, historians, and artists entitled "One Planet, Many Voices," which we will submit to *Science* in an effort to expand the reach of humanities-inflected Anthropocene scholarship. I will continue to write short essays for broader audiences. And I have begun discussing the creation of an exhibit on residual governance with a South African architect who studies the historical use of toxic materials in home construction. Finally, I expect my research in Dakar and Abidjan to form the foundation for a more extensive project on air pollution in Africa, which I hope to launch after *Inside-Out Earth* goes to press.

We all live on the inside-out Earth. Some of its residues, like atmospheric carbon dioxide, are evenly distributed. Most are not. Nor are their consequences for human and environmental health. Grappling with the increasingly urgent problems associated with residual governance is among the most important endeavors that scholars can undertake, in order to collectively outline the conditions of possibility for a livable world—one in which health in one area does not come at the expense of disease in another.

## Abbreviated Bibliography

- Angus, Ian. *Facing the Anthropocene: Fossil Capitalism and the Crisis of the Earth System*. Monthly Review Press, 2016.
- Austin, Gareth, ed. *Economic Development and Environmental History in the Anthropocene: Perspectives on Asia and Africa*. Bloomsbury, 2017.
- Bonneuil, Christophe and Jean-Baptiste Fressoz. *The Shock of the Anthropocene*. Verso, 2016.
- Boudia, Soraya, et al. "Residues: Rethinking Chemical Environments." *Engaging Science, Technology, and Society* 4 (2018): 165–78.
- Chakrabarty, Dipesh. "The Climate of History: Four Theses." *Critical Inquiry* 35, no. 2 (2009): 197–222.
- Choy, Timothy K. *Ecologies of Comparison: An Ethnography of Endangerment in Hong Kong*. Duke, 2011.
- Gordillo, Gastón R. *Rubble: The Afterlife of Destruction*. Durham: Duke, 2014.
- Hamilton, Clive et al., eds. *The Anthropocene and the Global Environmental Crisis*. Routledge, 2015.
- Haraway, Donna J. *Staying with the Trouble: Making Kin in the Chthulucene*. Duke, 2016.
- Hepler-Smith, Evan. "Molecular Bureaucracy: Toxicological Information and Environmental Protection." *Environmental History* 24, no. 3 (July 2019): 534–60.
- Kelly, Jason et al.,. *Rivers of the Anthropocene*. California, 2018.
- Kenner, Alison. *Breathhtaking: Asthma Care in a Time of Climate Change*. Minnesota, 2018.
- Kotzé, Louis J., ed. *Environmental Law and Governance for the Anthropocene*. Bloomsbury, 2017.
- Latour, Bruno. *Facing Gaia: Eight Lectures on the New Climatic Regime*. Polity, 2017.
- Livingston, Julie. *Self-Devouring Growth: A Planetary Parable as Told from Southern Africa*. Duke, 2019.
- Malm, Andreas and Alf Hornborg. "The Geology of Mankind? A Critique of the Anthropocene Narrative." *The Anthropocene Review* 1, no. 1 (April 2014): 62–9.
- Mbembe, Achille. "Necropolitics," *Public Culture* 15, no. 1 (2003): 11-40.
- McKittrick, Katherine. "Plantation Futures." *Small Axe* 17, no. 3 (2013): 1-15.
- McNeill, J. R., and Peter Engelke. *The Great Acceleration: An Environmental History of the Anthropocene since 1945*. Harvard, 2016.
- Mitman, Gregg et al., eds. *Future Remains: A Cabinet of Curiosities for the Anthropocene*. Chicago, 2018.
- Moore, Jason, ed. *Anthropocene Or Capitalocene?* PM Press, 2016.
- Murphy, Michelle. "Alterlife and Decolonial Chemical Relations." *Cultural Anthropology* 32, no. 4 (November 2017): 494–503.
- Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Harvard, 2011.
- Pellow, David N. *Resisting Global Toxics: Transnational Movements for Environmental Justice*. MIT 2007.
- Piketty, Thomas. *Capital et idéologie*. Le Seuil, 2019.
- Povinelli, Elizabeth. *Geontologies: A Requiem to Late Liberalism*. Duke, 2016.
- Pulido, Laura. "Racism in the Anthropocene," 116-128 in Mitman et al., eds., *Future Remains*. Chicago 2018.
- Purdy, Jediah. *After Nature: A Politics for the Anthropocene*. Harvard, 2015.
- Sarr, Felwine. *Afrotopia*. Minnesota, 2019.
- Steffen, Will et al., "The Anthropocene: Conceptual and Historical Perspectives." *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 369, no. 1938 (March 2011): 842-67.
- Taylor, Affrica and Veronica Pacini-Ketchabaw. "Learning with Children, Ants, and Worms in the Anthropocene...." *Pedagogy, Culture & Society* 23, no. 4 (May 2015): 507–29.
- Thomas, Julia Adeney. "History and Biology in the Anthropocene: Problems of Scale, Problems of Value." *The American Historical Review* 119, no. 5 (December 2014): 1587–607.
- Tsing, Anna Lowenhaupt, et al, eds. *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Minneapolis: University of Minnesota Press, 2017.
- Vergès, Françoise. "Racial Capitalocene," p. 72-82 in Gaye Theresa Johnson and Alex Lubin, eds. *Futures of Black Radicalism*. Verso, 2017. 72-82.
- Whyte, Kyle Powys, "Indigenous Climate Change Studies: Indigenizing Futures, Decolonizing the Anthropocene." *English Language Notes* 55, no. 1-2 (March 2017): 153–62.
- Yusoff, Kathryn. *A Billion Black Anthropocenes or None*. Minnesota, 2018.
- Zalasiewicz, Jan, et al. "When Did the Anthropocene Begin? A Mid-Twentieth Century Boundary Level Is Stratigraphically Optimal," *Quaternary International* 383 (October 2015): 196–203.