

Rapid #: -27469754

CROSS REF ID: **17868708420005162**

LENDER: **VMC (James Madison University) :: Carrier Library**

BORROWER: **UWW (University of Waterloo) :: Main Library**

TYPE: Book Chapter

BOOK TITLE: Rubber Boots Methods for the Anthropocene

USER BOOK TITLE: Rubber Boots Methods for the Anthropocene

CHAPTER TITLE: Introduction

BOOK AUTHOR: Bubandt et al.

EDITION:

VOLUME:

PUBLISHER:

YEAR: 2022

PAGES: 1-35

ISBN: 9781517911652

LCCN:

OCLC #: 1357549103

Processed by RapidX: 9/15/2026 6:40:45 AM

This material may be protected by copyright law (Title 17 U.S. Code)

Chapter Title: INTRODUCTION. Rubber Boots Methods: Outline for a Multispecies Study of the Anthropocene

Chapter Author(s): NILS BUBANDT, ASTRID OBERBORBECK ANDERSEN and RACHEL CYPHER

Book Title: Rubber Boots Methods for the Anthropocene

Book Subtitle: Doing Fieldwork in Multispecies Worlds

Book Editor(s): Nils Bubandt, Astrid Oberborbeck Andersen, Rachel Cypher

Published by: University of Minnesota Press. (2022)

Stable URL: <https://www.jstor.org/stable/10.5749/j.ctv2h43983.4>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

University of Minnesota Press is collaborating with JSTOR to digitize, preserve and extend access to *Rubber Boots Methods for the Anthropocene*

Rubber Boots Methods

Outline for a Multispecies Study of the Anthropocene

NILS BUBANDT, ASTRID OBERBORBECK ANDERSEN,
and RACHEL CYPHER

The former brown coal mines near the tiny Danish town of Søby are an unlikely microcosm of the Anthropocene. Covering an area of only eleven hundred hectares, the former mines are easily dwarfed by the megamines and tar sand pits elsewhere in the world. What they lack in size, they also lack in drama. Set in the flat and rather drab heaths of western Denmark, the former mines are now a wooded, rolling landscape that has been declared a cultural heritage site as testimony to a bygone chapter of resource exploitation. And located as they are within a welfare state on the northern rim of Europe, the mines are part of a multispecies landscape that has been relatively cushioned by geographic fortitude and economic history from the much more clearly violent historical dramas that have become the hallmarks of a planetary climate and environment going awry. No monstrous storms, no unprecedented forest fires, no king tides, and no mass extinctions plague these landscapes. No draconian forms of government intervention, genocidal evictions of Indigenous populations, or resource curses haunt these landscapes and their human and nonhuman inhabitants. Søby is, in both spatial scale and historical drama, an unremarkable patch of the Anthropocene. And yet, it is exactly the undramatic mundaneness of this version of the Anthropocene that has attracted us, the members of the research project Aarhus University Research on the Anthropocene (AURA), to its simplified landscape since 2013. Headed by Anna Tsing and funded by the Danish National Research Foundation, AURA made the former brown coal mines in Søby a methods lab, an experimental site that anthropologists,

biologists, ecological historians, and philosophers of science could visit to test their own fieldwork-based methods and learn from those of others as we all tried to make sense of the landscape. The former brown coal mines in Søby became a playground for methods experimentation across disciplines that shared a tradition of empirical fieldwork attuned to multispecies socialities and histories, as well as a test site for how best to retool these fieldwork traditions for the Anthropocene.

At a time when both biology and anthropology have come to realize that the conventional objects of their disciplines—natural ecosystems and human sociocultural worlds, respectively—can no longer be studied in isolation, it seemed to us particularly timely to try to regain the lost common ground between the disparate fieldwork traditions of these two disciplines. Anthropology, after all, borrows its tradition of modern fieldwork from biology (Stocking 1983a) and developed from this its own robust methods for studying human worlds. But these methods have primarily been geared toward humans. They have until recently been anthropocentric in the best sense of the term: driven by an ambition to describe human ingenuity and injustice, to understand how human lives are lived differently, and to analyze how human worlds might be constructed otherwise. Anthropological fieldwork methods were born out of attempts to work against Occidental prejudice, colonial oppression, and modern myopia. But even though the worlds otherwise that anthropologists sought to paint through their discipline-specific fieldwork and writing methods often included cows and other animals, plants and forests, spirits and materials, the worlds anthropology depicted were first and last *human* worlds. In recent years, however, the unwavering faith in a world in which humans are the only protagonists has crumbled, challenged



FIGURE 1.1. A view of the former brown coal mining area in Søby. Photograph by Nils Bubandt.

from within academia as well as by the more-than-human environmental and climatic crisis sometimes called the Anthropocene. In the Anthropocene, the issue of social justice is still and more than ever a matter of addressing the social, racial, and gender inequalities and forms of historical violence that affect human lives. And it indexes the intimate entanglement of those inequalities and forms of violence in broader landscapes of multispecies livability.

The Anthropocene is a contested concept that means many things to many people (Swanson, Bubandt, and Tsing 2015). The conventional claim is that the Anthropocene describes the Great Acceleration of an increasingly globally connected world after World War II in which humans have become a force of nature on a geological scale (McNeill and Engelke 2014; Steffen et al. 2015; Zalasiewicz et al. 2017). This claim has been the object of important critiques from a variety of scholars in the social and human sciences who point out that the concept of the Anthropocene is driven by a Western worldview, a universal and gender-blind idea of “the human,” and a politically liberal notion of history that ignores the dynamics and history of capitalism (Danowski, Viveiros de Castro, and Latour 2014; Demos 2017; Grusin 2017; Malm and Hornborg 2014; Moore 2016; Yusoff 2018). This critique notwithstanding, the Anthropocene is also a fundamental provocation to the academic division of labor and modern accounts of the world that for some scholars activate concerns to rethink “life” and to tell new stories about the positions and responsibilities of humans in the world (Zylinska 2014); to shift the way that the past, present, and future are envisioned, breaking with the self-evidence of modern progress (Chakrabarty 2009); and to speculate about novel foundations for future coexistence (Latour 2018; Morton 2016). We use the notion of the Anthropocene heuristically here, exploring it both critically and with an eye for the provocations it raises. Most importantly, we insist that the Anthropocene is emphatically not an epoch of the human (the *anthropos*) but rather a multispecies phenomenon—and a multispecies crisis—through and through (Haraway et al. 2016). Understood in this way, Anthropocene scholarship aligns with the recent “multispecies turn” within anthropology, geography, philosophy, and related disciplines (DeMello 2012; Kirksey and Helmreich 2010; Lorimer 2015; Wolfe 2013), a turn that itself can be traced to a broader “nonhuman turn” and a critical posthumanism (e.g., Wolfe 2009; Braidotti 2013) as well as an array of intellectual and

theoretical developments including but not limited to actor network theory and the politics and ecology of things (Latour 2004, 2005; Ingold 2012); feminist scholarship and the ontological turn (Viveiros de Castro 1998; Henare, Holbraad, and Wastell 2006; Grusin 2017; Kohn 2013); new approaches to materiality (Bennett 2010; Harvey, Krohn-Hansen, and Nustad 2019); affect theory, animal studies, and assemblage theory (Deleuze and Guattari 1987); new media theory, speculative realism, and systems theory (Grusin 2015); as well as postcolonial and decolonial approaches to human–environment relations (Gómez-Barris 2017; Green 2015; de la Cadena 2015).

It is out of this theoretical and analytical trajectory that the methodological experiments of this book grow. We offer a multiplicity of methodological approaches, attuned to a variety of particular landscapes and the specific socioecological histories tied to them. And throughout it all, the former brown coal mines in Soby infuse the methods, remaining a place from which to think and a place to think with, a reminder to always ground ourselves in the concrete. This is because the landscapes of Soby were the practical common testing ground for our first efforts in retooling and reconceptualization. In this miniature landscape of a mere eleven square kilometers, we experimented with the methods needed to study on a planetary scale the more-than-human coordinations and perturbations of the Anthropocene in a critically comparative and curiously transdisciplinary mode. It was by thinking and fieldworking with others within this site that it became clear that “more-than-human” does not mean “without humans”; it does not mean ignoring unequal economic history and (post)colonial political history or indeed human sociality and experience. On the contrary, it means taking the uneven complexity and multispecies entanglement of human existence seriously by not reducing it to the modern conceit of (Western) Man, a peculiarly racialized species in splendid isolation from and yet somehow also in full control over other species. Highlighting the multispecies nature of the Anthropocene is not a denial of human agency, injustice, and suffering. In fact, it is the opposite: a refocusing of diverse histories of human agency, injustice, and suffering through their complicity and synchronicity with relations to nonhuman beings and forces in a multispecies, historical landscape shaped by modernity and colonialism. As the chapters that follow will illustrate, more-than-human methods for the Anthropocene seek to attend to the ways that human injustice and ecological disruption are entangled in

the same treacherous histories (Baker et al. 2020). The chapters explore how we might retool anthropological and aligned disciplinary fieldwork methods and analytics to better deal with multispecies forms of life and death after human exceptionalism. The chapters also address how different disciplinary approaches might be activated together to be attuned to particular landscapes and the socioecological histories tied to them. They show that more-than-human methods are a way of attending to issues of human existence, social justice, colonial history, and geopolitics by studying them in their multispecies entanglements (Tsing, Mathews, and Bubandt 2019).

LEARNING TO TRACE MULTISPECIES TRACKS

So how can we learn to track the histories of more-than-human socialities (Tsing 2013)? Answering this question means experimenting with the ways in which human-centered fieldwork methods might be augmented by the fieldwork methods of biology, ecology, and landscape history without giving up their critical edge and ambitions to be open to serendipity and wonder (Helmreich 2009; Tsing 2015; Myers 2015). It also means rethinking, along the lines already pursued by critical political ecology (Johannes 1981; Pauly 1995; Robbins 2007; Swyngedouw and Kaika 2014; Escobar 2018), how ecological fieldwork practices could learn from ethnographic fieldwork. We offer this book as testimony to the many kinds of method experiments necessary to study multispecies livability. It is our claim and point of departure that the changing conditions for human and nonhuman life on Earth—for which the concept Anthropocene is a contested and admittedly imperfect moniker (Haraway 2016; Yusoff 2018; de la Cadena 2015)—demand new modes of sensing and seeing, new forms of collaboration, and new foci for description in which landscape histories matter. Studies of more-than-human life in the Anthropocene, in short, require new kinds of multispecies fieldwork methods.

Søby was a place to cultivate multispecies curiosities, transdisciplinary collaborations, and landscape histories that such multispecies methods require. In Søby, we experimented with multispecies methods by following the tracks left by humans and nonhumans alike. This meant finding traces inscribed on the landscape, such as in the sand or in the muddy lake sediments. It also meant locating the traces left in the local archives and

scientific reports. In Søby, multispecies methods involved studying the historical forms of deer grazing patterns and forest regrowth areas as much as the memory of Søby's human inhabitants (see chapter 11). In addition to practicing the classical methods of anthropological fieldwork—participant observation, interviewing, and “deep hanging out”; collecting oral histories and undertaking archival studies to get a historical perspective; following pipes and technologies and documents as science and technology studies (STS) scholars might do—multispecies methods in Søby entailed cultivating landscape observations; paying attention to animal etiologies and plant forms; attempting field identification of plants and animals; experimenting with the use of microscopes and wildlife cameras; and seeking additional information from DNA analysis, sediment sampling, and transect studies. It meant reading works from patch ecology and landscape history as well as from anthropology, STS, and history (see chapter 12). It meant developing new forms of “slow collaboration” across disciplines (see chapter 9), and it meant experimenting with new ways of doing-fieldwork-with-others, humans as well as nonhumans (see chapters 6 and 8).

“Rubber boots methods” is the playful name we have given to these more-than-human method experiments across disciplines. The name reflects our practical realization that waterproof footwear was essential in the cold, waterlogged landscapes of the former brown coal mines. The term also grew out of a wish to defend “rubber boots biology,” a derogatory term used in Danish biological circles to denote fieldwork-based biological observations of ecosystemic relations. Rubber boots biology (Danish: *gummistøvlebiologi*) has in recent years been marginalized from university education and research, pressured by more prestigious branches of biology, such as laboratory-based microbiology, molecular biology, computational biology, ecosystems modeling, and biotechnology. This marginalization of field-based approaches is part of an overall institutional trend (see chapter 13). The natural sciences have been moving toward more computational methods and technologies for decades and have become dependent on big data and mathematical modeling for their knowledge production. This is not in itself a problem. We do not categorically suggest that remote sensing and other advanced technologies and practices for data generation, storage, and analysis are not useful; they are! It was, after all, computer modeling and big data that allowed climate change, species extinction, ocean acidification, and

planetary boundaries (Rockström et al. 2009) to emerge as scientific objects, political concerns, and moral problems (Barnosky et al. 2011; Edwards 2010). We wonder, however, what is lost when scientific knowledge production about changing ecosystems is dominated by sensing from afar and by modeling. What realities and stories, what kinds of critical connections, never make it out of the dust, mud, or water of lived lives and fieldwork observations into research results? What sensibilities do we need to cultivate to tell the multispecies stories of a changing world that remote sensing and big data cannot deliver? Rubber boots are the metaphorical device through which we call for and invoke the sensitivities, interactions, and histories necessary to bring out these realities and stories. We do so by noting that these realities and stories are the stuff that makes up fieldwork and that one only gets access to tell such stories by wearing the methodological footwear most appropriate for the terrain and sensibilities of the particular field. Rubber boots methods are the tools and perspectives needed to get into the patchy landscapes of the Anthropocene (Tsing, Mathews, and Bubandt 2019), to notice and generate empirical material for the critical descriptions and analyses required in and for our times. Once walked through and sensed “from below,” environmental and more-than-human histories may well be enriched by the perspectives produced by ecological models or microscopes. And, so we argue, ecological models may well be complemented by multispecies stories (see chapters 1 and 2).

RUBBER BOOTS METHODS IN THE MUDDLE OF OUR TIME

Lowly rubber boots seemed a fitting metaphor for the AURA attempt to restore the broken bonds of empirical, anecdotal, and fieldwork-based research between the human and natural sciences, a type of research that is as denigrated by the inclination toward “high” (often French) theory and speculation in the human sciences as it is by the big data revolution and “evidence-based” styles in the natural sciences. It was “rubber boots biological” skills—detailed attention to landscape change and co-species coordinations—that allowed James Estes and Robert Paine, rubber boots biologists if ever there were, to observe the complex ecosystemic relations between sea urchins, sea otters, and kelp forests in the seas off the Aleutian Islands in Alaska, for instance (Estes 2016). Their careful field observations were critical

to the development of the ecological notions of “keystone species” and “trophic cascades,” ideas that have since become central to extinction studies and debates about planetary limits in the Anthropocene (Estes et al. 2011). Our call for scholars to “put on rubber boots” and experiment with multi-species, transdisciplinary, and landscape-historical field methods should in this light also be seen as an invitation to develop forms of knowledge production that grow from a meandering, curious, and peripatetic imagination even as they are empirically grounded, based on fieldwork. It is a call to cultivate the multiple forms of slow, bodily, and intimate (as opposed to “remote”) sensing implied in fieldwork that for many decades has characterized anthropology as well as biology and other field-based sciences (see chapter 10). Anthropology’s tradition of grounded research and insistence on the value of long-term field-based experiences, observations, relations, and anecdotes as traces of larger patterns seemed, to us, to be a suitable experimental ground on which to restage a transdisciplinary encounter between fieldwork-based methods in a world of science otherwise addicted to models, big data, and “large theory.” At the same time, we are acutely aware that if big data methods are epistemologically tainted, so, too, are fieldwork methods.

Fieldwork as a research practice emerged, after all, at the beginning of the twentieth century as part and parcel of a colonial legacy of exploration, penetration, and political control (Asad 1973; Clifford 1997; Fabian 2000; Stocking 1983b). Indeed, it is hard to imagine a more colonial piece of footwear than rubber boots. Andrew Mathews repeatedly reminded us of this colonial legacy of rubber boots during the conference on which this anthology is based when he playfully and critically referred to the conference title (“Rubber Boots Methods for the Anthropocene”) as “Boots on the Ground” (see also the discussion about the term in chapter 14). Boots give access, they extend thinking and perception, but they also isolate and trample. And here they are not alone. What can be said of boots methods can be said of all methods. The term *rubber boots methods* attempts to make explicit the historicities of war and colonialism that are latent within all scientific methods and seeks to make awareness of these violences part of its application.

Wellington boots, the British word for rubber boots, are named after Arthur Wellesley (1769–1852), the first Duke of Wellington and arguably the

most famous British general, known primarily as commander of the Anglo-Dutch-German army that defeated Napoleon Bonaparte at Waterloo in 1815. Before becoming the Duke of Wellington, however, Arthur Wellesley spent seven years, from 1797 to 1805, in India. Here he led a series of military campaigns against local sultans and rajas from which he not only amassed a considerable private fortune but also—in close collaboration with his older brother Richard Wellesley, the governor-general of India—became the “architect” of the British colonial empire in India (Severn 2007). Propelled by the fame following his victory at Waterloo, the Duke of Wellington went on to become a key political figure, serving twice as British prime minister. It was as such that he in the public mind in England became synonymous with the particularly high leather boots that he wore. The rubber version of the Wellington boot emerged when Hiram Hutchinson in 1852 bought the patent to apply sulfur vulcanization, a technique invented some years earlier by Charles Goodyear, to rubber footwear. It took the First World War to make rubber boots a global commodity. This happened when the British War Office commissioned the rubber boot company “Hunter” to produce rubber boots for standard issue to its soldiers in the trenches of World War I. The start of the twentieth century also saw rubber becoming a key colonial commodity on plantations from Asia to Latin America, where entirely new arrangements of rubber trees, human labor, and colonial control reshaped landscapes and human lives on a global scale (Aso 2018; Garfield 2014; Harp 2016; Stoler 1995; Tully 2011). As the Brazilian rubber plant (*Hevea brasiliensis*) was planted in straight lines on ever larger plantations in Africa, Latin America, and Southeast Asia, rubber joined the ranks of coffee and sugar as a key cash crop in a global constellation linking landscape simplification to regimented labor control and global relations of production and consumption (Mintz 1985; Scott 1998). The Plantationocene, the term suggested for this global constellation as the shadow figure of the Anthropocene (Haraway et al. 2016), is in that sense very much the story of rubber entangled in a history of racial inequality, social suffering, and ecological destruction. Rubber is also the story of the Capitalocene, another contender for the title of our time: the transformation of “cheap” nature into profit by “cheap” labor in the production of goods for “cheap” lives (Patel and Moore 2017). And rubber is the story of the Great Acceleration of human industrial production and consumption after World War II

that now stretches the carrying capacity of the planet beyond its limits (Zalasiewicz et al. 2017). Despite the invention of synthetic rubber, which now accounts for two-thirds of the global use of rubber for the production of tires, belts, and flooring, the production of natural rubber has continued to grow exponentially in the last half decade, fed mainly from megaplantations in Southeast Asia (Kenney-Lazar and Ishikawa 2019). In 1951, the annual global production of natural rubber was around two thousand metric tons; today, it is ten times as much (Umar et al. 2011).

Rubber boots are intimately embroiled in these histories of war, patriarchy, colonization, racism, resource extraction, and ecological change in the same landscapes that we propose to study using rubber boots as a methodological figure. This contradiction is intentional. It serves not as a rubber boot confession, absolving the authors of this volume from their obligation to analyze structures of violence and privilege that have shaped both their fields and their field methods (Smith 2014; Fortier 2017). Quite the opposite, it highlights the tainted nature of all method. The name *rubber boots methods* springs from an attempt to acknowledge that scientific methods are always historically embroiled in the phenomena they seek to study. Rubber boots methods seek to interpellate these histories, not to bury them. Let us offer a concrete example: in the regional dialect of eastern Indonesia, where Bubandt has conducted fieldwork, rubber boots are referred to as *jenggelbot*. The word is an Indonesian adaptation of the English word *jungle boot*, a type of military combat boot developed by the United States Rubber Company and adapted for tropical warfare during the Vietnam War. The word probably came to eastern Indonesia from Borneo, where British special forces used their own adaptations of the U.S. jungle boot—with a higher, Wellington-like cut—during the Malayan Emergency from 1948 to 1960, a guerilla war between Commonwealth forces and the Malayan National Liberation Army that in turn very much grew from the grievances of rubber plantation workers in an export economy in ruins following World War II. Today, people in eastern Indonesia use the word *jenggelbot* to refer to the heavy-duty boots that male workers are issued by mining companies. For the contributors to *Rubber Boots Methods for the Anthropocene*, the fact that rubber boots evoke histories of war, gender, resource exploitation, and the multispecies violence of ecological change is the point: methods are never innocent or pure.

Acutely aware of its etymological problems—the association between rubber boots and war, landed aristocracy, and the colonial legacy of rubber being among them—the chapters seek to “stay with the trouble” (Haraway 2016) of rubber boots methods, making integral the reflexive study of the colonial legacies of scientific methods to their deployment in the field.

Staying with the troubled legacies of our methods, however, also opens up unexpected twists. For as it turns out, rubber boots are more-than-colonial, more-than-patriarchal, and more-than-Western. They are ambivalent and full of tensions—like all colonial phenomena (Cooper and Stoler 1997). Wellingtons may be the footwear of choice for the British landed aristocracy, but they are also highly popular among French smallholders struggling against landed elites. Similarly, “gumboots” may be an icon of colonial endurance for white Pakeha farmers in New Zealand, but settler colonialists are not the only ones who use rubber boots in projects of cultural self-making. As Pierre du Plessis reminded us during the conference on which this book is based, in the 1920s, black stevedores and mining workers in apartheid South Africa developed the “gumboot dance” (called *isicathulo* in the Zulu language) as a nonverbal form of protest against racial inequality and outrageous labor conditions (Erlmann 1989; Mills 2016). Today, in postapartheid South Africa, gumboot dancing, performed in straight lines in mimicry of military parades, has become a major tourist attraction. If colonialism is full of ambivalence, so, too, are protests against it.

As Tsing (2005, 6) points out, the history of industrial rubber is also the rich and ambivalent history of multispecies vicissitudes rather than merely human hegemony or progress: industrial rubber is made in a complex process that involves the savagery of European conquest, the confusion of war and technoscience, but also the resistance strategies of peasants, Brazilian rubber plants, insect pests, and more. It is this very vicissitude, tension, and friction that we emphasize in “rubber boots methods.” Rubber boots are our “figuration” for fieldwork methods that come with genealogies of colonialism but that also open up to the collaborative study of multispecies relations that combine anthropological fieldwork with the denigrated tradition of “rubber boots biology” and ask us to pay “troubled” attention to the entangled human and nonhuman lifeworlds subjugated by colonialism. This attention is indexed by the three sections that make up the anthology: critical description, curiosity, and collaboration. In that sense, rubber boots methods express

an effort to decolonize fieldwork methods across the biological and anthropological traditions and to move beyond narratives about human exceptionalism by suggesting that such efforts require not only critical attention to histories and concepts but also cautious and curious experiments with both natural science methods and Indigenous knowledges.

We invited the contributors to take rubber boots methods figuratively, not literally. “Rubber boots methods” is not a Foot Locker advertisement pitch for a particular kind of methodological footwear; rubber boots methods are a “figuration” for situated multispecies methods (Haraway 2004), choosing whatever methods (metaphorical and actual footwear) that are most appropriate and that allow for most sensibility in the field studied. In the chapters that follow, the authors take us to fields where different rubber boots extensions, such as rubber boots, horses’ hooves, rubber fins, dogsleds, boats, or bare feet become methodological prosthetics that help extend how more-than-human worlds are experienced, thought, felt, and known. Rubber boots methods in their varied forms share an attention to the feet and other means of movement. They emphasize how movement depends on the affordances and histories of the landscapes and seascapes in which it occurs. Rubber boots methods seek to highlight both the sensibilities enabled by the physical contact to the ground (or water) and the tracks and disturbances that all movement leaves behind. Extending calls to see ethnography as a method of walking (Vergunst and Ingold 2016; Kusenbach 2003), rubber boots methods focus on the possibilities of peripatetic thinking and sensing while also suggesting the need to critically historicize our scientific prosthetics and modes of locomotion.

In the broadest sense, rubber boots methods are an injunction to engage with methodology in a new way: an invitation to get out to follow the more-than-human tracks that crisscross the landscape of any field; an invitation also to get outside of one’s own disciplinary comfort zone by experimenting with other methods; and an invitation, finally, to “get out of” the field itself by seeing the landscapes of one’s field as particular landscapes-in-the-making connected historically, politically, and ecologically to the other multispecies landscapes that came before and that exist beside it. Rubber boots methods are an invitation to the critical, curious, and collaborative study of multispecies landscapes.

MULTISPECIES METHODS FOR THE ANTHROPOCENE

We imagine this anthology as a methodological companion piece to *Arts of Living on a Damaged Planet* (Tsing et al. 2017), a collection of analyses by scholars from anthropology, ecology, science studies, art, literature, and bio-informatics that sought, like this volume, to understand the Anthropocene by beginning in landscapes, “the overlaid arrangements of human and non-human living spaces” (Gan et al. 2017, G1). *Arts of Living* sought to understand the varied and ruined landscapes of the Anthropocene analytically through the double figure of monsters and ghosts: the entangled bodily forms of multispecies symbiosis through which nonhuman life proliferates “monstrously” in ruined landscapes that are also haunted by the ghostly histories of more-than-human socialities and destructive processes that have made them what they are. *Rubber Boots Methods for the Anthropocene* is similarly focused on landscapes in their more-than-human spatiality and historicity but takes a methodological rather than an analytical approach. To flesh out what this means by way of example, let us return briefly to the landscape of Søby.

In one sense, the Søby landscape is unremarkable. In another, it is as extraordinary as any landscape in the Anthropocene. Indeed, the drabness of the Søby landscape is an effect of a dramatic history. And make no mistake, the landscape around Søby has changed radically in recent centuries. From the start of the twentieth century, the area became an important source of brown coal, and during the Second World War, the mines supplied up to one-third of the national energy needs in a Danish version of the Great Acceleration. Trenches and holes up to thirty-five meters deep, dug first by hand and eventually by machines, cut through the topsoil, exposing the sand and groundwater underneath. Busy but long since abandoned rail lines transported the brown coal to urban hubs. When mining finally ceased in the early 1970s, the flat heathlands of Søby had disappeared. In their place had become what locals describe as a barren and hilly landscape of sand dunes. Between the dunes, potholes filled with acidic water turned red from the oxidization of pyrite in the soil. It was a lunar landscape made by humans, a polluted wasteland on which even the most insistent reforestation efforts appeared to fail. It was also an unstable landscape that exceeded human agency: the waterlogged, sandy soils made landslides a common occurrence and agriculture untenable as a result (Højrup and Swanson 2018). So, while

the rest of Denmark after the 1970s busied itself building up a mechanized agricultural industry that would finance and feed the growing urban population of this Nordic welfare state increasingly hooked on fossil fuels much more efficient than brown coal (Brichet and Hastrup 2018), the Søby mines were left to their own devices. And these devices, as it turned out, were very much of a multispecies kind. While most humans looked the other way, species of conifer, abandoned survivors from the failed reforestation efforts of the 1960s and 1970s, began to proliferate on their own in the mining spoils. In particular, the lodgepole pine (*Pinus contorta*)—a tree common to western North America—thrived in the mining ruins, aided by its symbiotic alliance with ectomycorrhizal fungi that entangled themselves in its roots (Gan, Tsing, and Sullivan 2018). Pine forests sprouted, as did thistles and other nitrate-philic and weedy plants, in a landscape that by Danish standards was “wild,” unstable, and uninhabited. Roe deer (*Capreolus capreolus*) cautiously moved in, and by the late 1990s, the roe deer were followed by red deer (*Cervus elaphus*), the most prized of all game animals in northern Europe (Forssman and Root-Bernstein 2018). This got the attention of humans. Well-padded hunters soon followed, shooting their first red deer in the area in 2002. Almost overnight, land in the ruined and rewilded Søby mines went from worthless to priceless as hunters paid premium rates for the red deer hunting grounds. In 2007, this former wasteland was declared a national heritage site, owing to both its cultural history and its undomesticated natural beauty (Hoag, Bertoni, and Bubandt 2018).

The former brown coal mines in Søby are a Danish version of the Anthropocene, one might say. They are a patchy landscape of unintended effects, at once specific in its political ecology and yet intimately connected to the simplified agricultural and industrial landscapes of the rest of Europe. In that sense, Søby sits in a patchy landscape that is full of the same ambiguities that characterize the Anthropocene in general. It is a landscape of overturned geological layers, fundamentally remade by the anthropoturbations of the Great Acceleration (Zalasiewicz, Waters, and Williams 2014); a banal landscape shaped by dramatic changes that now, like the structural violence that shaped it, lie hidden from view (Nixon 2011; Swanson 2017b); a multispecies landscape made not just by humans but by cascades of more-than-human action and reaction that shaped what players entered the scene and how they could interact (Bubandt and Tsing 2018b; Haraway et al. 2016).

The ecologist James Estes argues that it was the very simplicity of the Aleutian seascapes that allowed him to identify the trophic relations and cascades between otters, kelp, and urchins—relations that would have been hidden from view by the sheer complexity of trophically more complex ecosystems, such as a tropical forest or a coral reef (Estes 2016, 23). The former coal mines in Soby are a simplified landscape in a similar way, a landscape of fungi, pines, red deer, and humans. Animals, plants, fungi, bacteria, and other nonhumans clearly made history in this landscape. At the same time, it is obvious that these nonhumans did not make history under conditions of their own choosing. Nonhuman history-making, like human history, always happens, as Karl Marx ([1852] 2005, 7) put it, “under circumstances directly encountered, given and transmitted from the past.” The landscape in Soby remade by fungi, pines, red deer, and others was a landscape already made simple by a history of fossil fuel extraction, world war, wastelanding, and state building. But even this history also involved nonhumans. Take brown coal itself. Brown coal, a low-grade fossil fuel, is sedimented rock of compressed peat that in Soby is up to fifteen million years old. Brown coal is partly fossilized nonhuman life. The Great Acceleration of Western modernity, with its dreams of human freedom and control, was powered by the same ironic relation to fossil fuels: it was petrified forms of nonhuman life that fueled human dreams and combustion engines. These are the human and nonhuman histories of Anthropocene landscapes that rubber boots methods seek to draw out, by tracing the braided processes of industrial simplification and more-than-human proliferation (Tsing, Mathews, and Bubandt 2019; Tsing et al. 2017).

While Soby was the first landscape in which we tried to hone rubber boots methods by attending to the histories that can be read in landscape forms and multispecies coordinations as much as in the words and practices of human interlocutors or archival records (Mathews 2018; Bubandt and Tsing 2018a), *Rubber Boots Methods for the Anthropocene* asks its contributors to take the next comparative step: to take the rubber boots methods from Soby to their own fields and to adapt or exchange their methodological rubber boots for whatever methodological footwear is best suited to their particular patch of the Anthropocene. From this provocation, as the chapters will show, a range of transformed rubber boot methods emerged: walking the hills of the Tuscan forests (chapter 1), exploring shrubs in the grasslands of Lesotho (chapter 2), tracking in the Kalahari desert (chapter 3),

following changing settler crops in South Asian farmlands (chapter 4), firing Australian eucalyptus forests (chapter 5), snorkeling in the Indian Ocean (chapter 6), figuring and thinking in the New Delhi monsoon (chapter 7), riding across the South American Pampas (chapter 8), following nonhuman hitchhikers in the global aquarium trade (chapter 9), dogsledding and sailing through the High Arctic (chapter 10), padding the Jutland heathlands (chapter 11), dust balling in a Danish museum (chapter 12), and teaching students to pay attention to landscapes in outdoor university courses (chapter 13). Understanding rubber boots methods as the field-based tools, techniques, and practices that each contributor engages with and develops in doing research, and seeing the resulting methodology as a system of knowledge practices guided by a certain set of “rubber boots-inspired” theoretical underpinnings and principles, the contributions that make up this anthology seek to identify the sensitivities and devices that point toward a multispecies Anthropocene methodology and—so we hope—serve to inspire future empirical studies. The possibilities and limits of rubber boots methods are discussed in a roundtable between Kirsten Hastrup, Ursula Münster, Anna Tsing, and Nils Bubandt in the concluding chapter of the anthology (chapter 14).

METHODS FOR THE CONTEMPORARY MOMENT

Rubber Boots Methods for the Anthropocene joins other attempts to develop methodological approaches capable of “figuring out” and intervening in the contemporary moment. Anthropology, the humanities, and the social sciences engaged in studying environmental crises and Anthropocenic realities have been experimenting with methods for decades. This has included experiments with new modes of doing fieldwork that are critical and self-reflexive (Faubion and Marcus 2009), global in outlook (Burawoy 2000), mobile or multisited by design (Büscher and Urry 2009; Marcus 1998), anticipatory in spirit (Pandian 2019), decolonial in kind (Smith 2012), or driven by analytical curiosity (Fischer 2018) and a multimodal design imaginary (Dattatreyan and Marrero-Guillamón 2019). These varied experiments in the methods and analytical imagination of fieldwork attuned to the contemporary world grow from an attempt to make anthropology public and the discipline “matter” in new ways to the crises of our time (Marcus and

Pisarro 2008). They are also attempts to respond to the changing conditions of life that characterize the twenty-first century—a globalized, mediated, technoscientific, biosocial, crisis-ridden world (Faubion and Marcus 2009)—even as they question what crisis might mean anthropologically in the first place (Roitman 2013). Such novel methodological reflection and innovation is needed because the forces of a globalized world implicate the very conditions of doing fieldwork, necessitating a decoupling of fieldwork from its conventional theoretical fixtures of cultures, peoples, communities, societies, and villages. Situated fieldwork requires new kinds of reflexivity and storytelling in a deterritorialized world that problematizes what the “field” is in the first place (Gupta and Ferguson 1997; Strathern 2004). It also entails a critical distance to scientific authority and truth without giving up on knowledge, shifting epistemological ambitions from grand narratives to “big-enough stories” (Clifford 2013; Comaroff 2010).

The Anthropocene has arguably introduced a whole new set of methodological challenges on top of those that attend to a globalized world. After all, the Anthropocene is the dark planetary ecological twin of globalization and ideas of modern progress. In the wake of the cosmopolitan dreams and fears of globalization of the 1980s and 1990s, the Anthropocene opens up to a very different world: a more uncanny space, planetary in scale but also fragmented; a fractal world populated with growing multitudes of more-than-human actors and agents; a moment in time that grows from a nonlinear form of acceleration as well as from innumerable ambivalent histories; a landscape of queer socialities and more complex relations and interlinkages across species and matter than the concept of “globalization” would ever allow. As Timothy Morton (2016, 10) puts it, “now that the globalization dust has settled and the global warming data is in, we humans find ourselves on a very specific planet with a specific biosphere.” The Anthropocene, as the heuristic concept we take it to be, is in that sense an interruption of global modernity’s narrative about progress, nature, globalization, and the human. The recognition of the power that climate change, ocean acidification, biodiversity loss, and chemical imbalances of nitrogen and phosphorous will have in the future fundamentally challenges modernity’s own account of humans and human society as somehow aloof and in control of their own global fate. It is this failure of modern and secular accounts of human history, Bruno Latour (2017, 84) points out,

that the term Anthropocene sums up, however disputed its date of origin and its definition may be: “The earth system reacts henceforth to your action in such a way that you no longer have a stable and indifferent framework in which to lodge your desires for modernization.”

The study of power in the Anthropocene—meaning power in the classical sense of having an ability to affect the actions and conditions of life of others—has to allow multiple new actors into its accounts. Beyond humans and their institutions, a study of power also has to include documents, laws, technologies, and other material actors to whose power STS has alerted us for some time (Latour 1996; Riles 2006) as well as the profusion of living and chemical beings (animals, plants, bacteria, fungi, vira, protists, CO₂, phosphorous, nitrogen, radiation, and water) on which an emergent and rapidly expanding more-than-human social science focuses (e.g., Tsing 2015; Brown 2013; Ballesterio 2019). And ought a study of power in the Anthropocene not also include spirits and ghosts? After all, it was a Hegelian idea of spirit that drove modern ideas of progress for two centuries. Today, the Anthropocene is a time full of new monsters, ghosts, and spirits (Tsing et al. 2017). Indeed, climate change has come to take the form of a monstrous and unpredictable spirit, conjured up by computer models and scientific fact. This anthology, then, asks what kinds of methods are needed to address this proliferation of protagonists in their multiple human and nonhuman forms. The Anthropocene, we suggest, is a multispecies phenomenon, an uncanny valley (Bubandt 2018, 2022), and a patchwork of landscapes (Tsing, Mathews, and Bubandt 2019; Stengers 2018) that require methods and forms of fieldwork that are more-than-human, that are nonsecular, and that take landscapes as their key unit (Swanson 2017a; Bubandt 2018; Tsing 2015).

If “mobile,” “multisited,” “experimental,” and “anticipatory” methods were the ways in which anthropology (and other human and social sciences) sought to retool itself to understand human life in a global world, we suggest that multispecies and “more-than-secular” methods comprise the methodological retooling necessary to understand more-than-human life in the political ecology of the Anthropocene. Within anthropology, the discipline with which the three coeditors and the majority of our coauthors are most familiar, many “environmental methods” exist, and there are numerous examples of fieldworkers combining tools to explore human–environment

relations in ways that bring forth perspectives beyond the human. One might think of community ecology methods, ethnobotanical observations and vegetation inventories, GIS, topographic mapping, biodiversity indices, terrestrial scanning, plant use recall, and a number of other, more traditional methods for research design and observation, such as participant observation, natural experiments, ethological observation, and household surveys (see Bernard, Ryan, and Wutich 2016; Vaccaro, Smith, and Aswani 2010), as well as methods that include collaborative modalities and postcolonial forms of learning about landscapes (see Strang 2010; Flora and Andersen 2017).

And yet, despite the breadth of methodological experimentation, strikingly few publications are dedicated to multispecies methods. An exception is the recent and excellent volume by Lisa Hamilton and Nik Taylor (2017) titled *Ethnography after Humanism*. Writing from the perspective of critical animal studies, the book outlines the breadth of visual, multisensorial, and “monstrous” methods that might be applied to include animals in research (6). Hamilton and Taylor call for methods that allow us to see, understand, and analyze social relations and worlds that are more-than-human. This is an ambition we share. We also share Hamilton and Taylor’s commitment to ethnography-as-method as well as their critique of ethnography’s historical tendency to obliquely reproduce speciesism and anthropocentric hierarchies of power by its exclusion of nonhumans. However, our exploration of multispecies methods differs from and complements that of Hamilton and Taylor in two ways. First, where Hamilton and Taylor’s multispecies methods rest on an “ethnography for human-animal relations” (53) that grows from critical animal studies and takes the relationships between humans and specific animal species as its focus, *Rubber Boots Methods for the Anthropocene* takes landscapes and landscape history, with their multiplicity of species relations, as its starting point. Following Bubandt, Mathews, and Tsing (2019), we adopt the notion of “patch” from ecology. Any particular “patch” of landscape is unique and yet its uniqueness is generated by its historical-ecological relations to other patches (Pickett and White 1985): a forest is made through its ecological and earth systemic connections to the neighboring grassland, the adjacent sea, and the distant city. Human landscapes in a globalized world are patchy in similar ways. Rubber boots methods seek to study the patchiness of landscapes in their overlapping and mutually conditioning histories of ecology and political economy.

It is out of these entangled histories that specific lifeworlds, human and non-human, emerge. Second, and following from this, *Rubber Boots Methods for the Anthropocene* has as its focus the history of landscapes as they are made by multiple kinds of humans and nonhumans over time rather than the more “microsociological” focus on relations between humans and the lifeworlds of another specific species that characterizes the chapters of Hamilton and Taylor’s anthology. *Rubber Boots Methods for the Anthropocene* is in that sense an experiment with the anthropological tradition of holism, with all of its problems and baggage (Otto and Bubandt 2010), by seeing landscapes as a multispecies “total fact” that is social and natural, political and ecological, in historical ways that can be studied empirically.

Landscapes and seascapes are the analytical lenses through which the chapters in this volume tell their multispecies stories in ways that are both particular and general. The Anthropocene of a rubber boots methods approach is a multispecies landscape or seascape that is historically and spatially patchy in its more-than-human makeup. The method experiments explored and narrated in the chapters of this book range across many “more-than-human” scales, from bacteria and fungi to holobionts, humans, colonial and capitalist histories, and spirits. The chapters show how the landscapes of the Anthropocene grow out of unstable ecologies, open-ended and in-the-making through multispecies histories of many kinds, linked historically to other landscapes. These ecologies—their instability and their uniqueness shaped by their historical relations to other landscapes in ways we call “patchy”—demand a commitment to curious, collaborative, and critically descriptive method experiments through which both the historical uniqueness and structural linkages of these multispecies landscapes can be captured.

Anthropos and the Material (Harvey, Krohn-Hansen, and Nustad 2019) is another recent book that seeks to broaden ethnographic methods to embrace and work with objects of study beyond the human. The focus here is on the ways in which ethnography can engage with more-than-human and material relationalities and on the political forms and spaces that emerge in such engagements. As such, the approach to method is mainly analytical rather than empirical. Some chapters of *Anthropos and the Material* address the methodological challenges that multispecies relations and world making present to ethnography (Tsing 2019), but emphasis is mainly on the

conceptual and analytical repertoires required to collapse existing boundaries between natural and human histories (Harvey, Krohn-Hansen, and Nustad 2019, 4). Of course, the boundaries between method and analysis are fuzzy. Methods are always effects of analytical attention and the form of the particular empirical object engaged with. Neither methods nor the analytical objects that one appreciates through them are ever isolated phenomena (see chapter 12). They cohere to each other and to the histories of the scholarly engagement out of which they grow. Still, unlike those of *Anthropos and the Material*, the majority of the chapters of this book begin in empirical experiments with method rather than in analytical deliberation. We also differ in the confidence we have in the ethnographic method being able to retool itself in disciplinary isolation. *Anthropos and the Material* suggests that a novel approach to the material should be specifically anthropological. We very much agree and sympathize with this ambition to put ethnography at the methodological center of a novel approach to more-than-human worlds. At the same time, the chapters in *Rubber Boots Methods for the Anthropocene* take as a shared starting point that fieldwork in Anthropocene landscapes demands transdisciplinary experimentation and that anthropology does not have all the necessary tools to open up for the required understanding, sensitivities, and critical engagements with multispecies relationalities in ruined ecologies. Several chapters explore how different scientific, shamanic, and other modes of noticing and knowing can be brought together for such studies, and although anthropology plays a central part in this knowledge production, the discipline of anthropology as such is not our only methodological anchor. We believe that a retooling of anthropology's methods requires venturing beyond analytical reflection into the empirical muck of our times as well as an experimentation with methods beyond those of ethnography. This is why critical description, curiosity, and collaboration are the pillars of our common exploration.

CRITICAL DESCRIPTION, CURIOSITY, AND COLLABORATION

Three characteristics unite the methodological experiments in *Rubber Boots Methods for the Anthropocene*: an empirical, descriptive approach that insists on being *critical*; *curiosity* about multispecies worlds; and a *collaborative* ambition that seeks to cross disciplinary and epistemic divides. Rubber

boots methods are critical, insisting on empirical descriptions that are historically founded and that challenge the limits of the real. Rubber boots methods practice curiosity about the social relationships that all beings, whether human or nonhuman, establish with each other. And rubber boots methods are collaborative because we need to employ all modes of knowing and efforts of engagement based on empirical and fieldwork-based curiosity to find pathways for coexistence. The method experiments presented in this book thus share a critical (that is, empirical, but not empiricist), curious, and collaborative description of the way landscapes come into being through historical relations and coordinations, human as well as nonhuman, in what might be called a “patchy Anthropocene” (Bubandt, Mathews, and Tsing 2019). The current and evolving patchiness of the Anthropocene is very much formed by colonial and capitalist histories, but these do not take the form of a hegemonic and exhaustive logic (Bear et al. 2015). Because it is more-than-human, patchiness is also more-than-capitalist and more-than-Western. A patchy Anthropocene, we suggest, following scholars of STS (Law 2004), is a particular kind of mess that requires a methodological rather than a theoretical approach.

Starting with methods rather than analytics, ontology, or epistemology, this collection gathers thirteen empirical studies of the multispecies messiness of contemporary life that ask some of the big questions of our time. How, for instance, can the shared tradition of empirical fieldwork be retooled to study co-species socialities in a grounded way when the ground upon which we stand, the landscapes we inhabit, the oceans we navigate, and the air we breathe are themselves changing in dramatic ways? Can our methods for the Anthropocene be designed to capture *both* the ontological specificity of each patchy case *and* the planetary scale of our current mess? What does it take to make methods transdisciplinary and collaborative as well as self-reflexive and critical? Might we study co-species relations in all of their ecological, historical, and political complexity while also challenging the secular logic that informs most Western accounts of this complexity? How might we, in other words, design methods for the Anthropocene that can deal with the more-than-human in terms that are also more-than-Western? The chapters in this book address these questions through distinctive accounts of practical methodological experimentation as well as through dialogical “slow science” that has an eye for failures and mistakes as well as achievements.

Working across disciplines is often hard, and it takes time: time to learn each other's languages and to understand (and accept/respect) different epistemological logics and practices. Borrowing the words of Marilyn Strathern (2004), the ground on which such cross-disciplinary collaborations take place is often not common. Therefore, in this book, we celebrate the possibilities offered by this uncommon ground, make space for slow and multiple experimentation and reflexivity across disciplines, and pay attention to the spaces of possibility (and impossibility) that reveal themselves in engagements across disciplines. Celebrating such possibilities does not mean denying that they may lead down many a blind alley. Each contribution is united by the shared understanding that methods are experiments; they are about trial and error, and each researcher or research team must learn from failures and successes alike. For this reason, in this book, we do not present a how-to guide that will lead readers step by step through a multispecies fieldwork or a systematic approach to analyzing multispecies data. Neither is this anthology a guide to collaboration, because every team collaboration is different, depending on the object of study and who is joining around the table (Swanson 2015). Combining critical description, curiosity, and collaboration in different ways, the authors of the thirteen chapters that follow engage with their fieldwork to show how this methodological premise shifts the very terms of analysis.

The book is divided into three parts mirroring the three characteristics that unite rubber boot methods. Part I, "Critical Description," demonstrates how empirical description emerges from critical engagement with historical and more-than-human landscape change. This also means a historical awareness of the rubber boots methods deployed. In his chapter, Andrew S. Mathews walks through the formerly cultivated chestnut forests of the Monte Pisano in central Italy, seeing wherever he goes patches and landscape structures. Combining landscape observation, map making, and archival work, Mathews provides five scaling stories about plant-human relationships through the methods of walking, noticing, and drawing: morphology, landscape structure, species distribution models, and stories about coordination. Colin Hoag follows dwarf shrub encroachment on grasslands in the high-altitude mountains of Lesotho in his chapter, arguing for attention to landscape "forms" as a specific dimension of rubber boots methods. Critical description of landscape forms draws history and power into thinking

about ecological processes and thus combines—or rather works across—approaches and methods from anthropology and ecology. Pierre du Plessis takes us to Botswana's Kalahari Desert, where he demonstrates how tracking can be made into a method for critical landscape description, a form of multispecies noticing that is empirical and imaginative and that, in the words of his teacher, "is good because it tells you that you are here and that you are not alone." Through the experience of tracking a grumpy aardvark, du Plessis shows how tracking as method cultivates multispecies empathy and perspectival sensibility that is situated and collaborative. At the same time, du Plessis makes tracking a rubber boots method through a historical awareness of the colonial legacies of tracking in the Kalahari. In his chapter, Daniel Münster is on the track of a spate of farmer suicides in Kerala, South India, at the turn of the twenty-first century, arguing that a critical description of the historical landscape changes associated with a succession of settler crops gives a vital multispecies clue to the deteriorating environmental living conditions under which suicides occur in Kerala. Maybe we need to pay critical attention to the landscape changes wrought by cassava and lemongrass, pepper, ginger, and bananas, to understand why life became unbearable for so many Kerala settler farmers in the new millennium? Perhaps, Münster's chapter implies, we need to broaden classical social determinist ideas of "anomie" to understand human suffering and suicide (Durkheim [1897] 1997). Münster also demonstrates that cassava, recently highlighted as the quintessential crop deployed to escape state power and settler colonialism (Scott 2009), was, in Kerala, the first settler crop. Rubber boots methods show that plants and power may align in multiple ways.

Part II is titled "Curiosity." We argue that it is necessary first and foremost to be curious, to wonder, and, through curiosity, to allow new questions to emerge about the world. This curiosity is, as the following chapters show, always grounded in questions that emerge from a direct engagement with the field site. Such a materially based engagement upends even basic categories, such as fire, water, air, and earth. Jon Rasmus Nyquist takes us to the forests of Western Australia, where he engages with the materiality of prescribed burning to propose a fire method for the Anthropocene. He follows the forests that burn to see how fire feeds off and synthesizes its surroundings without being reducible to them. From the pulse of fire to the plants that grow back after a burn, he outlines a method of burning for knowing

a warming world. Nils Bubandt, in his chapter, snorkels the tidal zones of West Papua, arguing for a multispecies tidalectic methodology that attunes to the shifting zone of critical overlap between land and sea. Tides go in and out, rhythmic and rising, and Bubandt's rubber flipper methods follow such rhythm to frame this critical zone within histories of colonialism and capitalism, challenging terracentrism to argue for multispecies amphibian methods that take us beyond the "mainland of the real" and allow us to notice not only the fish and invertebrates but also the spirits that inhabit coral reefs. Harshavardhan Bhat, in contrast, engages with the lively and pulsing quality of monsoonal winds to propose a method and methodology of stickiness. Troubling the term *monsoon* as a colonially imposed hegemonic weather formation, Bhat proposes a sticky method for knowing atmospheres in which one feels first through the body the anticipation of summer rains gathering. In an Anthropocenic world where atmospheric science imposes its knowing on climate change, Bhat uses his South Asian fieldwork to ask what it might mean to employ other methods for knowing air, winds, and storms, in which "times of the rains" are conceived of in conversation with each other. In her chapter, Rachel Cypher rides horses through the pampas of Argentina on the margins of soybean landscapes, showing how riding may be a method for landscape attention. Critical to this attention is the awareness that riding itself has become a marginal activity on the pampas as industrial, mechanized soybean farming has colonized the landscapes of cattle ranching. Riding, Cypher argues, is an inherently affective multispecies method of landscape attention, a specific form of a more generalized commitment to what Cypher calls "affective empiricism"—curious, critical, and affective method/ologies for a multispecies Anthropocene.

Part III is titled "Collaboration." As the chapters of this part make clear, the arts of working across disciplinary difference are varied, difficult, disturbing, and unsettling. But the arts of methodological collaboration are also, precisely because of this, immensely important. Following Donna Haraway's mandate to "stay with the trouble," the authors of the chapters in Part III exploit the methodological trouble in which they find themselves, giving themselves over to it even as they often feel fatigue and despair. Working across disciplinary difference, these chapters show, is like working across difference in anthropology, rewarding precisely because it disturbs, challenging taken-for-granted *ways of knowing the world* and, in so doing, upending

anthropology's epistemological and ontological methods and opening up new insights into multispecies worlds.

Joseph Klein, Stine Vestbo, Peter Funch, and Anna Tsing bring us on a wild rubber boots journey that has as its center the question of collaboration across disciplines. Their objects of study are aquarium hitchhikers, organisms that come along for the ride in the live coral trade. Through their shared struggle to develop a project across ecology, biology, and multispecies anthropology, the authors develop three key insights: that the living world is composed of nested holobionts, that human disturbance transforms these, and that supply chains generate and redistribute this human disturbance. At the end, they include a model research proposal for future collaboration between biologists and anthropologists, asking whether the aquarium trade unintentionally acts as a global vehicle for weedy sponge invaders. In their chapter, Kirsten Hastrup, Janne Flora, and Astrid Oberborbeck Andersen take us to the Avanersuaq (Thule) region of Northwest Greenland to follow the tracks, trails, and traces of humans and animals in an interdisciplinary project that combines anthropologists, archaeologists, and biologists. Along these paths, they tease out the challenging but productive frictions between different disciplinary approaches and epistemological positions. They find that, despite sharing the same landscape as field site, distinct understandings of the "empirical" may be at play. *Sensations*—the acknowledgment of the interplay of forces at work in shaping the world—become the methodological pathway to understanding that fields are always more-than-anthropological, constituted by a plurality of materialities, temporalities, and viewpoints, human and more-than-human. Meredith Root-Bernstein, Filippo Bertoni, Natalie Forssman, and Katy Overstreet, in their chapter, put on rubber boots and draw us through the muddy terrain of the Søby brown coal mines in Denmark. In the process, they explore how disturbance might be not merely an object of study but also itself a method—a way to experiment, play with, and learn about the affordances and historical structures of a multispecies world. This chapter, itself a coauthored collaboration between an ecologist, two STS scholars, and an anthropologist, studies ecologically disturbed patches—deer meadows, the waterlogged pits of abandoned mines, and a pig farm—and allows these disturbed landscapes to disturb in turn the rubber boots metaphor by exploring how zigzagging between fields with different methods can be productive of new insights about emotional and

affective registers of humans and more-than-human actors in Anthropocene landscapes. In Nathalia Brichet's chapter, we find ourselves inside the milky white fluid of a cholera bottle at a Danish museum. Starting with this bottle, with its unknown but likely lethal content, Brichet seeks to find "common ground" from which collaboration between an anthropologist and a museum research project, with epidemiologists, microbiologists, and cholera researchers—and the opening of the bottle as an object of research—might proceed. Such common ground is never solely defined by the fieldworker. Through a series of fieldwork encounters—from research on pandemics in a Philadelphia museum to virulent strains of cholera emerging from horizontal gene transfer—Brichet argues for an unsettling approach in the making of a shared and collaborative object of interest, and of ecologies, in the Anthropocene.

While many of these chapters trouble the conception of the field, Heather Anne Swanson makes the university her "field" and asks what it takes for the university to be relevant in the Anthropocene. Focusing on the teaching of rubber boots methods in her chapter, Swanson highlights the strong institutional and neoliberal forces that prevent the teaching of curious, collaborative, and critical methods and takes us on fieldwork in a methods course in which she and Pierre du Plessis attempted to put the lessons from AURA's "slow seminars" into didactic practice. "Rubber boots teaching," Swanson argues, needs to be informed by the same feminist scholarship and "slow science" that inform rubber boots methods. This commitment to situated, empirical knowledge implies a blurring of the distinction between the classroom and the field. It means not merely teaching students the abstract theories of the Anthropocene or debating the epistemologies and ontologies of multispecies ethnography but also taking students into the landscape, allowing them to practice the modes of multispecies curiosity, the transdisciplinary methods, and the critical historical attention that rubber boots methods require.

Together, the thirteen chapters chart the outline of a rubber boots anthropology, a multispecies methods of the otherwise in which methods are rethought in direct response to the more-than-human disruptions of a patchy and multiple Anthropocene. In its various forms, this means affectively tracking, walking, riding, snorkeling, dogsledding, sailing, sampling, teaching, and getting lost in the disturbed landscapes of our time with curious,

collaborative, and critical attention to its changing multispecies assemblies. The chapters argue for methods that are wide-ranging and that emerge in a reflexive engagement with the material and historical conditions of fieldwork on a disturbed planet. This means that rubber boots methods have to be themselves disturbed.

The afterword to the volume, “Troubling Methods in the Anthropocene,” is a transcribed and edited version of a roundtable discussion between scholars Kirsten Hastrup, Ursula Münster, Anna Tsing, and Nils Bubandt. It touches on many of the issues that we have outlined in this introduction by tracing four lines of inquiry: towards critical description, mixing methods, decolonizing methods, and methods for a nonsecular Anthropocene. The conversation addresses the possibilities as well as the challenges and limits of transdisciplinary experiments with methods in the Anthropocene and offers a general snapshot of how AURA sought to push anthropological responses to the concept of the Anthropocene from conceptual critique to critical description. In the spirit of the anthology as a whole, the roundtable discussion seeks to be a curious and collaborative opening that is critical rather than consensual. While the other chapters of the anthology provide empirical examples of how researchers learn and experiment with curiosity, collaboration, and critical description, the roundtable—in lieu of a conclusion—situates these chapters in a larger conversation and suggests ways forward for future research engagements.

REFERENCES

- Asad, Talal, ed. 1973. *Anthropology and the Colonial Encounter*. London: Ithaca Press.
- Aso, Michitake. 2018. *Rubber and the Making of Vietnam*. Chapel Hill: University of North Carolina Press.
- Baker, Janelle, Paula Ebron, Rosa Ficek, Karen Ho, Reyna Ramirez, Zoe Todd, Anna Tsing, and Sarah Vaughn. 2020. “The Snarled Lines of Justice: Women Ecowarriors Map a New History of the Anthropocene.” *Orion Magazine*. <https://orionmagazine.org/article/the-snarled-lines-of-justice/>.
- Ballesterio, Andrea. 2019. *A Future History of Water*. Durham, N.C.: Duke University Press.
- Barnosky, A. D., N. Matzke, S. Tomiya, Guinevere O. U. Wogan, Brian Swartz, Tiago B. Quental, Charles Marshall et al. 2011. “Has the Earth’s Sixth Mass Extinction Already Arrived?” *Nature* 471, no. 7336: 51–57.

- Bear, Laura, Karen Ho, Anna Tsing, and Sylvia Yanagisako. 2015. "Gens: A Feminist Manifesto for the Study of Capitalism." <https://culanth.org/fieldsights/652-gens-a-feminist-manifesto-for-the-study-of-capitalism>.
- Bennett, Jane. 2010. *Vibrant Matter: A Political Ecology of Things*. Durham, N.C.: Duke University Press.
- Bernard, H. Russell, Gery W. Ryan, and Amber Y. Wutich. 2016. *Analyzing Qualitative Data: Systematic Approaches*. 2nd ed. Los Angeles, Calif.: SAGE.
- Braidotti, Rosa. 2013. *The Posthuman*. Cambridge: Polity.
- Brichet, Nathalia, and Frida Hastrup. 2018. "Industrious Landscaping: The Making and Managing of Natural Resources at Søby Brown Coal Beds." *Journal of Ethnobiology* 38, no. 1: 8–23.
- Brown, Kate. 2013. *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters*. Oxford: Oxford University Press.
- Bubandt, Nils. 2018. "Anthropocene Uncanny: Nonsecular Approaches to Environmental Change." In *A Non-secular Anthropocene: Spirits, Specters and Other Non-humans in a Time of Environmental Change*, edited by Nils Bubandt, 2–19. AURA More-Than-Human Working Paper 3. Aarhus, Denmark: Aarhus University Research on the Anthropocene (AURA). <http://anthropocene.au.dk/working-papers-series/>.
- Bubandt, Nils. 2022. "The Uncanny Valley of the Anthropocene: Short Stories about the Undead under the Brightest of Lights." In *The Anthropocene and the Undead: Cultural Anxieties in Contemporary Narratives*, edited by Simon Bacon, 67–84. Washington, D.C.: Lexington Books.
- Bubandt, Nils, Andrew Mathews, and Anna Tsing, eds. 2019. "Patchy Anthropocene: The Frenzies and Afterlives of Violent Simplifications." Special issue of *Current Anthropology* 60, no. S20.
- Bubandt, Nils, and Anna Tsing. 2018a. "An Ethnoecology for the Anthropocene: How a Former Brown-Coal Mine in Denmark Shows Us the Feral Dynamics of Post-industrial Ruin." *Journal of Ethnobiology* 38, no. 1 (online suppl.): 1–13. <https://bioone.org/journals/journal-of-ethnobiology/volume-38/issue-1/0278-0771-38.1.001/Feral-Dynamics-of-Post-Industrial-Ruin-An-Introduction/10.2993/0278-0771-38.1.001.short>.
- Bubandt, Nils, and Anna Tsing. 2018b. "Feral Dynamics of Post-industrial Ruin: An Introduction." *Journal of Ethnobiology* 38, no. 1: 1–7.
- Burawoy, Michael, ed. 2000. *Global Ethnography. Forces, Connections and Imaginations in a Postmodern World*. Berkeley: University of California Press.
- Büscher, Monica, and John Urry. 2009. "Mobile Methods and the Empirical." *European Journal of Social Theory* 12, no. 1: 99–116.
- Chakrabarty, Dipesh. 2009. "The Climate of History: Four Theses." *Critical Inquiry* 35, no. 2: 197–222.
- Clifford, James. 1997. *Routes: Travel and Translation in the Late Twentieth Century*. Cambridge, Mass.: Harvard University Press.
- Clifford, James. 2013. *Returns: Becoming Indigenous in the Twenty-First Century*. Cambridge, Mass.: Harvard University Press.

- Comaroff, John. 2010. "The End of Anthropology, Again: On the Future of an In/Discipline." *American Anthropologist* 112, no. 4: 524–38.
- Cooper, Frederick, and Ann Laura Stoler, eds. 1997. *Tensions of Empire: Colonial Cultures in a Bourgeois World*. Berkeley: University of California Press.
- Danowski, Deborah, Eduardo Viveiros de Castro, and Bruno Latour. 2014. "The Thousand Names of Gaia: From the Anthropocene to the Age of the Earth." <https://thethousandnamesofgaia.files.wordpress.com/2014/07/position-paper-inkl-para-site.pdf>.
- Dattatreya, Ethiraj G., and Isaac Marrero-Guillamón. 2019. "Introduction: Multimodal Anthropology and the Politics of Invention." *American Anthropologist* 121, no. 1: 220–28.
- de la Cadena, Marisol. 2015. *Earth Beings: Ecologies of Practice across Andean Worlds*. Durham, N.C.: Duke University Press.
- Deleuze, Gilles, and Félix Guattari. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. London: Athlone.
- DeMello, Margo. 2012. *Animals and Society: An Introduction to Human-Animal Studies*. New York: Columbia University Press.
- Demos, T. J. 2017. *Against the Anthropocene: Visual Culture and Environment Today*. Berlin: Sternberg Press.
- Durkheim, Emile. (1897) 1997. *Suicide: A Study in Sociology*. London: Routledge.
- Edwards, Paul N. 2010. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*. Cambridge, Mass.: MIT Press.
- Erlmann, Veit. 1989. "'Horses in the Race Course': The Domestication of Ingoma Dancing in South Africa, 1929–39." *Popular Music* 8, no. 3: 259–73.
- Escobar, Arturo. 2018. *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Durham, N.C.: Duke University Press.
- Estes, James. 2016. *Serendipity: An Ecologist's Quest to Understand Nature*. Berkeley: University of California Press.
- Estes, James, John Terborgh, Justin Brashares, Mary E. Power, Joel Berger, William J. Bond, Stephen R. Carpenter et al. 2011. "Trophic Downgrading of Planet Earth." *Science* 333, no. 6040: 301–6.
- Fabian, Johannes. 2000. *Out of Our Minds: Reasons and Madness in the Exploration of Central Africa*. Berkeley: University of California Press.
- Faubion, James D., and George Marcus, eds. 2009. *Fieldwork Is Not What It Used to Be: Learning Anthropology's Method in a Time of Transition*. Ithaca, N.Y.: Cornell University Press.
- Fischer, Michael J. 2018. *Anthropology in the Meantime: Experimental Ethnography, Theory, and Method for the Twenty-First Century*. Durham, N.C.: Duke University Press.
- Flora, Janne, and Astrod O. Andersen. 2017. "Whose Track Is It Anyway? An Anthropological Perspective on Collaboration with Biologists and Hunters in Thule, Northwest Greenland." *Collaborative Anthropologies* 9, no. 1–2: 79–116.
- Forssman, Natalie, and Meredith Root-Bernstein. 2018. "Landscapes of Anticipation of the Other: Ethno-ethology in a Deer Hunting Landscape." *Journal of Ethnobiology* 38, no. 1: 71–87.

- Fortier, Craig. 2017. "Unsettling Methodologies/Decolonizing Movements." *Journal of Indigenous Social Development* 6, no. 1: 20–36.
- Gan, Elaine, Anna Tsing, and Daniel Sullivan. 2018. "Using Natural History in the Study of Industrial Ruins." *Journal of Ethnobiology* 38, no. 1: 39–54.
- Gan, Elaine, Anna Tsing, Heather Swanson, and Nils Bubandt. 2017. "Introduction: Haunted Landscapes of the Anthropocene." In *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, edited by Anna Lowenhaupt Tsing, Heather Anne Swanson, Elaine Gan, and Nils Bubandt, G1–14. Minneapolis: University of Minnesota Press.
- Garfield, Seth. 2014. *In Search of the Amazon: Brazil, the United States, and the Nature of a Region*. Durham, N.C.: Duke University Press.
- Gómez-Barris, Macarena. 2017. *The Extractive Zone: Social Ecologies and Decolonial Perspectives*. Durham, N.C.: Duke University Press.
- Green, Lesley. 2015. "The Changing of the Gods of Reason: Cecil John Rhodes, Karoo Fracking, and the Decolonizing of the Anthropocene." *e-flux journal*, June 9. <http://supercommunity.e-flux.com/texts/the-changing-of-the-gods-of-reason/>.
- Grusin, Richard. 2015. *The Nonhuman Turn*. Minneapolis: University of Minnesota Press.
- Grusin, Richard, ed. 2017. *Anthropocene Feminism*. Minneapolis: University of Minnesota Press.
- Gupta, Akhil, and James Ferguson, eds. 1997. *Anthropological Locations: Boundaries and the Grounds of a Field Science*. Berkeley: University of California Press.
- Hamilton, Lindsay, and Nik Taylor. 2017. *Ethnography after Humanism: Power, Politics and Method in Multi-species Research*. New York: Palgrave Macmillan.
- Haraway, Donna. 2004. *The Haraway Reader*. New York: Routledge.
- Haraway, Donna. 2016. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, N.C.: Duke University Press.
- Haraway, Donna, Noboru Ishikawa, Scott F. Gilbert, Kenneth Olwig, Anna Tsing, and Nils Bubandt. 2016. "Anthropologists Are Talking—about the Anthropocene." *Ethnos* 81, no. 3: 535–64.
- Harp, Stephen L. 2016. *A World History of Rubber: Empire, Industry, and the Everyday*. Chichester, U.K.: Wiley.
- Harvey, Penny, Christian Krohn-Hansen, and Knut G. Nustad, eds. 2019. *Anthropos and the Material*. Durham, N.C.: Duke University Press.
- Helmreich, Stefan. 2009. *Alien Ocean: Anthropological Voyages in Microbial Seas*. Berkeley: University of California Press.
- Henare, Amira, Martin Holbraad, and Sari Wastell, eds. 2006. *Thinking through Things: Theorising Artefacts Ethnographically*. London: Routledge.
- Hoag, Colin, Filippo Bertoni, and Nils Bubandt. 2018. "Wasteland Ecologies: Undomestication and Multispecies Gains on an Anthropocene Dumping Ground." *Journal of Ethnobiology* 38, no. 1: 88–104.
- Højrup, Marie, and Heather Swanson. 2018. "The Making of Unstable Ground: The Anthropogenic Geologies of Søby, Denmark." *Journal of Ethnobiology* 38, no. 1: 24–38.

- Ingold, Tim. 2012. "Toward an Ecology of Materials." *Annual Review of Anthropology* 41: 427–42.
- Johannes, Robert E. 1981. *Words of the Lagoon: Fishing and Marine Lore in the Palau District of Micronesia*. Berkeley: University of California Press.
- Kenney-Lazar, Miles, and Noburo Ishikawa. 2019. "Mega-plantations in Southeast Asia: Landscapes of Displacement." *Environment and Society: Advances in Research* 10: 63–82.
- Kirksey, Eben, and Stefan Helmreich. 2010. "The Emergence of Multispecies Ethnography." *Cultural Anthropology* 25, no. 4: 545–76.
- Kohn, Eduardo. 2013. *How Forests Think: Towards an Anthropology beyond the Human*. Berkeley: University of California Press.
- Kusenbach, Margarethe. 2003. "Street Phenomenology: The Go-along as Ethnographic Research Tool." *Ethnography* 4, no. 3: 455–85.
- Latour, Bruno. 1996. *Aramis, or the Love of Technology*. Cambridge, Mass.: Harvard University Press.
- Latour, Bruno. 2004. *Politics of Nature: How to Bring the Sciences into Democracy*. Cambridge, Mass.: Harvard University Press.
- Latour, Bruno. 2005. "From Realpolitik to Dingpolitik—an Introduction." In *Making Things Public: Atmospheres of Democracy*, 14–41. Cambridge, Mass.: MIT Press.
- Latour, Bruno. 2017. *Facing Gaia: Eight Lectures on the New Climatic Regime*. London: Polity Press.
- Latour, Bruno. 2018. *Down to Earth: Politics in the New Climatic Regime*. Oxford: Polity Press.
- Law, John. 2004. *After Method: Mess in Social Science Research*. New York: Routledge.
- Lorimer, Jamie. 2015. *Wildlife in the Anthropocene*. Minneapolis: University of Minnesota Press.
- Malm, Andreas, and Alf Hornborg. 2014. "The Geology of Mankind? A Critique of the Anthropocene Narrative." *Anthropocene Review* 1, no. 1: 62–69.
- Marcus, George E. 1998. *Ethnography through Thick and Thin*. Princeton, N.J.: Princeton University Press.
- Marcus, George E., and Marcello Pissarro. 2008. "The End(s) of Ethnography: Social/Cultural Anthropology's Signature Form of Producing Knowledge in Transition." *Cultural Anthropology* 23, no. 1: 1–14.
- Marx, Karl. (1852) 2005. *The Eighteenth Brumaire of Louis Bonaparte*. New York: Mondial.
- Mathews, Andrew. 2018. "Landscapes and Throughscapes in Italian Forest Worlds: Thinking Dramatically about the Anthropocene." *Cultural Anthropology* 33, no. 3: 386–414.
- McNeill, John R., and Peter Engelke. 2014. *The Great Acceleration: An Environmental History of the Anthropocene since 1945*. Cambridge, Mass.: Belknap Press of Harvard University Press.
- Mills, Dana. 2016. *Dance and Politics*. Manchester, U.K.: Manchester University Press.
- Mintz, Sidney. 1985. *Sweetness and Power: The Place of Sugar in Modern World History*. New York: Penguin.

- Moore, James W. 2016. *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism*. Oakland, Calif.: PM Press.
- Morton, Timothy. 2016. *Dark Ecology: For a Logic of Future Coexistence*. New York: Columbia University Press.
- Myers, Natasha. 2015. "Conversations on Plant Sensing: Notes from the Field." *Nature-Culture* 3: 35–66.
- Nixon, Rob. 2011. *Slow Violence and the Environmentalism of the Poor*. Cambridge, Mass.: Harvard University Press.
- Otto, Ton, and Nils Bubandt, eds. 2010. *Experiments in Holism: Theory and Practice in Contemporary Anthropology*. Oxford: Wiley-Blackwell.
- Pandian, Anand. 2019. "Introduction: An Ethnographer among Anthropologists." In *A Possible Anthropology: Methods for Uneasy Times*, 1–14. Durham, N.C.: Duke University Press.
- Patel, Raj, and James Moore. 2017. *History of the World in Seven Cheap Things*. Berkeley: University of California Press.
- Pauly, Daniel. 1995. "Anecdotes and the Shifting Baseline Syndrome of Fisheries." *Trends in Ecology and Evolution* 10, no. 10: 430.
- Pickett, S. T. A., and P. S. White, eds. 1985. *The Ecology of Natural Disturbance and Patch Dynamics*. Amsterdam: Academic Press.
- Riles, Annelies, ed. 2006. *Documents: Artefacts of Modern Knowledge*. Ann Arbor: University of Michigan Press.
- Robbins, Paul. 2007. *Lawn People: How Grasses, Weeds, and Chemicals Make Us Who We Are*. Philadelphia: Temple University Press.
- Rockström, Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin, Eric Lambin, Timothy M. Lenton et al. 2009. "Planetary Boundaries: Exploring the Safe Operating Space for Humanity." *Ecology and Society* 14, no. 2: 32.
- Roitman, Janet. 2013. *Anti-crisis*. Durham, N.C.: Duke University Press.
- Scott, James. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, Conn.: Yale University Press.
- Scott, James. 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. New Haven, Conn.: Yale University Press.
- Severn, John. 2007. *Architects of Empire: The Duke of Wellington and His Brothers*. Norman: University of Oklahoma Press.
- Smith, Andrea. 2014. "Native Studies at the Horizon of Death: Theorizing Ethnographic Entrapment and Settler Self-Reflexivity." In *Theorizing Native Studies*, edited by Audra Simpson and Andrea Smith, 207–34. Durham, N.C.: Duke University Press.
- Smith, Linda T. 2012. *Decolonizing Methodologies: Research and Indigenous Peoples*. New York: Zed Books.
- Steffen, Will, Wendy Broadgate, Lisa Deutsch, Owen Gaffney, and Cornelia Ludwig. 2015. "The Trajectory of the Anthropocene: The Great Acceleration." *Anthropocene Review* 2, no. 1: 81–98.
- Stengers, Isabelle. 2018. *Another Science Is Possible: A Manifesto for Slow Science*. Cambridge: Polity.

- Stocking, George W. 1983a. "The Ethnographer's Magic: Fieldwork in British Anthropology from Tylor to Malinowski." In *Observers Observed*, edited by G. W. Stocking, 70–120. Madison: University of Wisconsin Press.
- Stocking, George W., ed. 1983b. *Observers Observed: Essays on Ethnographic Fieldwork*. Madison: University of Wisconsin Press.
- Stoler, Ann L. 1995. *Capitalism and Confrontation in Sumatra's Plantation Belt, 1870–1979*. Ann Arbor: University of Michigan Press.
- Strang, Vera. 2010. "Mapping Histories: Cultural Landscapes and Walkabout Methods." In *Environmental Social Sciences: Methods and Research Design*, edited by Ismael Vaccaro, Eric Alden Smith, and Shankar Aswani, 132–56. Cambridge: Cambridge University Press.
- Strathern, Marilyn. 2004. *Commons and Borderlands: Working Papers on Interdisciplinarity, Accountability, and the Flow of Knowledge*. Oxford: Sean Kingston.
- Swanson, Heather. 2015. "Who's in the Room? The Importance of Multidisciplinary Spaces for Anthropology and STS." *HAU: Journal of Ethnographic Theory* 5, no. 1: 445–48.
- Swanson, Heather. 2017a. "The Banality of the Anthropocene." In *Dispatches: Cultural Anthropology* (blog), February 22. <https://culanth.org/fieldsights/1074-the-banality-of-the-anthropocene>.
- Swanson, Heather. 2017b. "Methods for Multispecies Anthropology: Analysis of Salmon Otoliths and Scales." *Social Analysis* 61, no. 2: 81–99.
- Swanson, Heather, Nils Bubandt, and Anna Tsing. 2015. "Less than One but More Than Many: Anthropocene as Science Fiction and Scholarship-in-the-Making." *Environment and Society: Advances in Research* 6: 149–66.
- Swyngedouw, Erik, and Maria Kaika. 2014. "Urban Political Ecology: Great Promises, Deadlock . . . and New Beginnings?" *Documents d'Anàlisi Geogràfica* 60, no. 3: 459–81.
- Tsing, Anna Lowenhaupt. 2005. *Friction: An Ethnography of Global Connections*. Princeton, N.J.: Princeton University Press.
- Tsing, Anna Lowenhaupt. 2013. "More-Than-Human Sociality: A Call for Critical Description." In *Anthropology and Nature*, edited by Kirsten Hastrup, 27–42. New York: Routledge.
- Tsing, Anna Lowenhaupt. 2015. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton, N.J.: Princeton University Press.
- Tsing, Anna Lowenhaupt. 2019. "When the Things We Study Respond to Each Other: Tools for Unpacking 'the Material.'" In *Anthropos and the Material*, edited by Penny Harvey, Christian Krohn-Hansen, and Knut G. Nustad, 221–44. Durham, N.C.: Duke University Press.
- Tsing, Anna, Andrew Mathews, and Nils Bubandt. 2019. "Patchy Anthropocene: Landscape Morphology, Multispecies History and the Retooling of Anthropology." *Current Anthropology* 60: S186–97.
- Tsing, Anna Lowenhaupt, Heather Anne Swanson, Elaine Gan, and Nils Bubandt, eds. 2017. *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. Minneapolis: University of Minnesota Press.

- Tully, John. 2011. *The Devil's Milk: A Social History of Rubber*. New York: Monthly Review Press.
- Umar, H. Y., D. Y. Giroh, N. B. Agbonkpolor, and C. S. Mesike. 2011. "An Overview of World Natural Rubber Production and Consumption: An Implication for Economic Empowerment and Poverty Alleviation in Nigeria." *Journal of Human Ecology* 33, no. 1: 53–59.
- Vaccaro, Ishmael, Eric A. Smith, and Shanka Aswani. 2010. *Environmental Social Sciences: Methods and Research Design*. Cambridge: Cambridge University Press.
- Vergunst, Jo Lee, and Tim Ingold, eds. 2016. *Ways of Walking: Ethnography and Practice on Foot*. London: Routledge.
- Viveiros de Castro, Eduardo. 1998. "Cosmological Deixis and Amerindian Perspectivism." *Journal of the Royal Anthropological Institute* 4: 469–88.
- Wolfe, Cary. 2009. *What Is Posthumanism?* Minneapolis: University of Minnesota Press.
- Wolfe, Cary. 2013. *Before the Law: Humans and Other Animals in a Biopolitical Frame*. Chicago: University of Chicago Press.
- Yusoff, Kathryn. 2018. *A Billion Black Anthropocenes or None*. Minneapolis: University of Minnesota Press.
- Zalasiewicz, Jan, Colin Waters, and Mark Williams. 2014. "Human Bioturbation, and the Subterranean Landscape of the Anthropocene." *Anthropocene* 6: 3–9.
- Zalasiewicz, Jan, Colin Waters, Alexander Wolfe, Anthony Barnosky, Alejandro Cearreta, Matt Edgeworth, Erle C. Ellis et al. 2017. "Making the Case for a Formal Anthropocene Epoch: An Analysis of Ongoing Critiques." *Newsletters on Stratigraphy* 50, no. 2: 205–26.
- Zylinska, Joanna. 2014. *Minimal Ethics for the Anthropocene*. Ann Arbor, Mich.: Open Humanities Press.

This page intentionally left blank