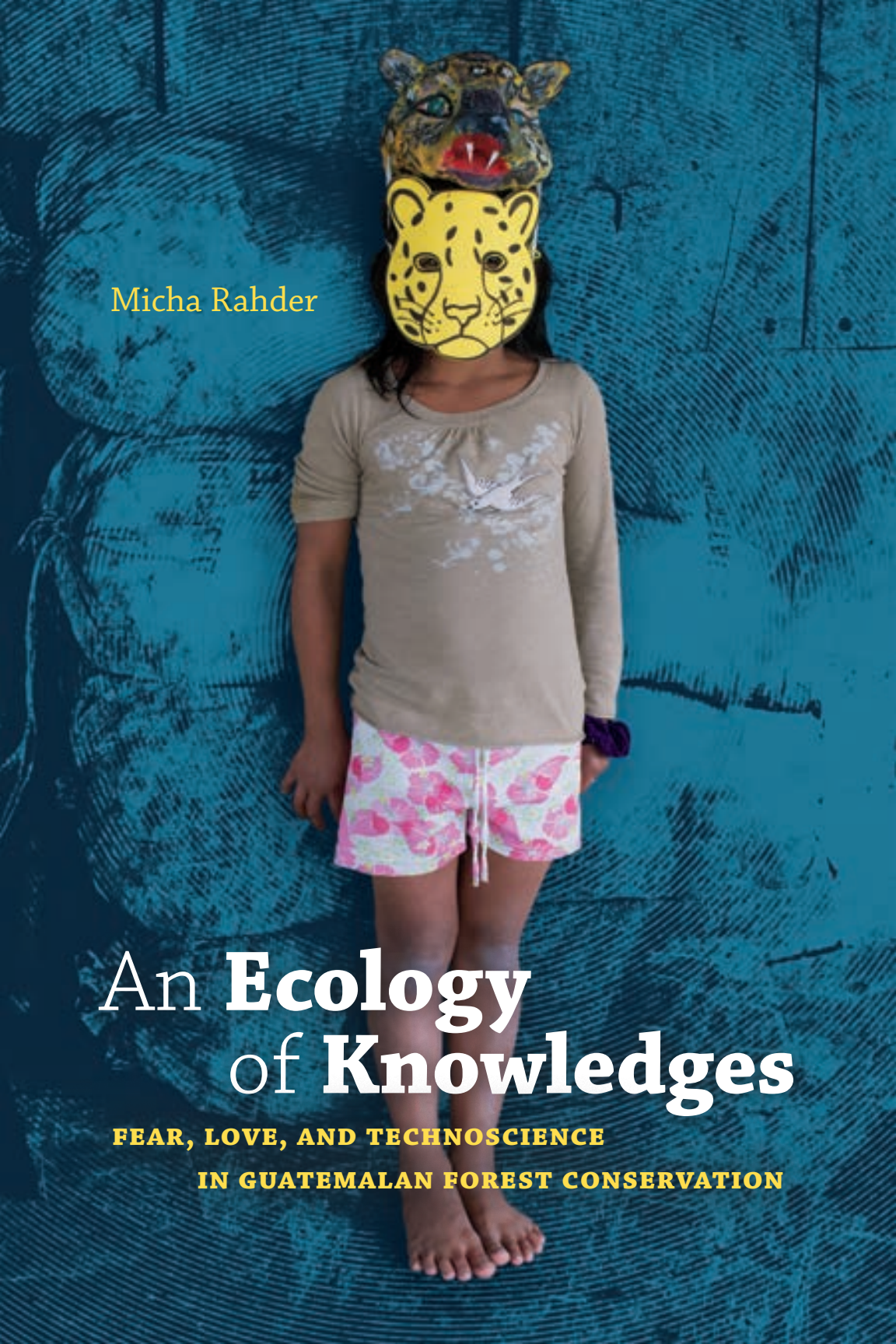

Micha Rahder

An Ecology of Knowledges

FEAR, LOVE, AND TECHNOSCIENCE IN GUATEMALAN FOREST CONSERVATION

AN ECOLOGY OF KNOWLEDGES

EXPERIMENTAL FUTURES: TECHNOLOGICAL LIVES, SCIENTIFIC ARTS, ANTHROPOLOGICAL VOICES

A series edited by Michael M. J. Fischer and Joseph Dumit

MICHA RAHDER

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Cover art: Girl in two jaguar masks, taken in a Q'eqchi' migrant community inside the Maya Biosphere Reserve (photograph by author).

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In loving memory of my father, HARRO RAHDER

When somebody threatens you, in my experience, that's when you're safest. That's the thing. You have to be worried about when people greet you and shake your hand, then when you turn around they kill you. That's the real threat.

Wildlife Conservation Society worker, 2011

Certainty itself appears partial, information intermittent. An answer is another question, a connection a gap, a similarity a difference, and vice versa.

Marilyn Strathern, *Partial Connections*

CONTENTS

LIST OF ABBREVIATIONS

ACOFOP	Asociación de Comunidades Forestales de Petén [Association of Forest Communities of the Petén]
AFISAP	Asociación Forestal Integral de San Andrés, Petén [Integrated Forestry Association of San Andrés, Petén]
ARCAS	Asociación de Rescate y Conservación de Animales Silvestres [Wildlife Rescue and Conservation Association]
CALAS	Centro de Acción Legal Ambiental y Social [Center for Legal Action in Environment and Social Issues]
CARE	Cooperative for Assistance and Relief Everywhere
CEH	Comisión para el Esclarecimiento Histórico [Commission for Historical Clarification]
CEMEC	Centro de Monitreo y Evaluación de CONAP [Center for Monitoring and Evaluation of CONAP]
CI	Conservation International
CICIG	Comisión Internacional contra la Impunidad en Guatemala [International Commission against Impunity in Guatemala]
COCODE	Consejo Comunitario de Desarollo [Community Development Council]
CONAP	Consejo Nacional de Areas Protegidas [National Protected Area Council]
CONRED	Coordinadora Nacional para la Reducción de Desastres [National Coordinator for Disaster Reduction]

DFID	United Kingdom Department for International Development
DIPRONA	División de Protección de la Naturaleza [Nature Protection Division of the Guatemalan National Civil Police]
DOI	U.S. Department of the Interior
FARES	Foundation for Anthropological Research and Environmental Studies
FYDEP	Empresa Nacional de Fomento y Desarollo Económico de Petén [National Enterprise for the Promotion and Economic Development of Petén]
GIS	geographic information systems/science
GPS	global positioning system
IDAEH	Instituto de Antropología y Historia de Guatemala [Guatemalan Institute of Anthropology and History]
INAB	Instituto Nacional de Bosques [National Forest Institute]
INACIF	Insituto Nacional de Ciencias Forenses [National Institute for Forensic Sciences]
INGUAT	Instituto Guatemalteco de Turismo [Guatemalan Tourism Institute]
INSIVUMEH	Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología [National Institute of Seismology, Vulcanology, Meteorology, and Hydrology]
IUCN	International Union for Conservation of Nature
MARN	Ministerio de Ambiente y Recursos Naturales [Ministry of the Environment and Natural Resources]
MBR	Maya Biosphere Reserve
MINUGUA	United Nations Verification Mission in Guatemala
MODIS	moderate-resolution imaging spectroradiometer
NASA	National Aeronautics and Space Administration
NGO	nongovernmental organization
NOAA	National Oceanic and Atmospheric Administration
NTFP	nontimber forest product
OMYC	Organización de Manejo y Conservación de Uaxactún [Management and Conservation Organization of Uaxactún]
PACUNAM	Fundación Patrimonio Cultural y Natural Maya [Foundation for Maya Natural and Cultural Patrimony]

RA	Rainforest Alliance
REDD+	UN Collaborative Programme for Reduced Emissions from Deforestation and Forest Degradation in Developing Countries
SIPECIF	Sistema Nacional de Prevención y Control de Incendios Forestales [National System for Prevention and Control of Forest Fires]
SNEM	Servicio Nacional de Erradicación de Malaria [National Service for the Eradication of Malaria]
SRTM	Shuttle Radar Topography Mission
STS	science and technology studies
TNC	The Nature Conservancy
UCSC	University of California, Santa Cruz
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society

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First, I must thank the forests of Central America for inspiring me with enduring curiosity, beginning with my first trip to Costa Rica at age sixteen. I heard a howler monkey for the first time and never looked back. I thank the forests for hanging on despite the powerful destructive forces working toward their end and for providing endless nourishment to my mind, senses, and politics. These are not things that forests can do alone, however, so I must also thank some of the people who have helped along the way.

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Any names that I have forgotten here should be read back into these acknowledgments, much as any errors in the following text are purely my own and should not be attributed to those named here.

What on Earth Is a Nooscape?

Hiking through Laguna del Tigre National Park, my friend Luis—a Guatemalan veterinarian employed by the Wildlife Conservation Society (WCS)—stopped to point out tracks in the mud. First, a tapir track in dried earth, fading with time. Then, a large feline print in fresh mud, recent. Luis crouched to point out the differences between jaguar and mountain lion tracks—round toes indicated jaguar: endangered, rare, and exciting. Then, a human boot print; its analysis yielded less certainty than the jaguar's. Luis wondered aloud: was this trail walked by a park patrol recently, or did the print signal some intrusion of illegal presence or activity? I was left with an ominous sense of unknowing, unsure how to reconcile the feral excitement of the predator with the shadowy possibility of the poacher, the land usurper, or the drug trafficker.

Laguna del Tigre National Park is part of Guatemala's Maya Biosphere Reserve (MBR), the largest protected area in Central America. The MBR stretches over 21,600 square kilometers of thick, tangled tropical lowland forests, boggy wetlands, and—increasingly—cleared agricultural or ranching landscapes. The reserve overlays the top half of the Petén department, which represents a third of Guatemala's land and shares extensive borders with Mexico and Belize. A patchwork of national parks like Laguna del Tigre, a buffer zone, and a large multiple-use zone divided into concessions, the reserve was intended to balance biodiversity conservation with local livelihoods (see plate 1). While some parts of the reserve have successfully maintained forest cover, other areas are overrun by agricultural expansion and by the cattle ranching, oil extraction, and criminal interests that are muddled with the small-scale action of peasant migrants.

Many MBR conservation institutions avoid Laguna del Tigre, preferring to work in other, better-conserved parks, or with the community-run forest concessions that offer integrated conservation and development opportunities.

Yet abandoning the park poses risks to the future of the entire reserve. With continued frontier migration, oil exploitation, and illegal movement of drugs and humans across the border into Mexico, Laguna del Tigre is one of the MBR's most threatened—and now threatening—areas. In 2017 alone, more than 54,750 acres of forest (larger than the area of Seattle, WA) were burned inside the park. A few of these fires were permitted agricultural burns within semilegalized settlements; some were the unregulated fires of agricultural migrants without settlement agreements; and most were attributed to wealthy ranchers and drug traffickers, for whom clearing wide swaths of forest is a land-grabbing technique. These impacts on the park were invisible during our hike, except through the haunting possibility, offered by the boot print, that this part of the forest might soon be swept up in the violent dynamics of landscape change.

Like a boot print in the forest, flames index human presence, but differences between humans can make these signs as illegible as their interpretation is urgent. Distinguishing between the traces left by agricultural migrants, park protectors, or drug traffickers is a vital but impossible task. The tapir and jaguar tracks tell another, partially connected, story. Here, the tools of tracking that distinguish between species are a good enough way of knowing (at least until it becomes necessary to tell individuals apart, as when a wild cat develops a taste for domestic cattle). Where a boot print can equally index the failure or success of park management, a jaguar print along the same path points to the necessity of continued intervention—which requires knowing the difference between humans. Understanding what is happening on the landscape becomes an urgent act, creating the sites, scales, and possibilities for the never-ending project of forest conservation.

To know that a human, a tapir, and a jaguar walked this path required Luis and me to walk along it as well, leaving new traces as we traced the paths of others. If reported to WCS, our steps might count on future maps of institutional presence, translated into an authoritative measure of state control of the landscape. Reporting the jaguar and tapir prints might translate into evidence of the value of conservation efforts in spaces that carry risk of kidnapping or death. The traces of our walk might therefore attract or deter others from walking the same path, depending on whether those traces are marked by boot prints, scent, sound, patrol reporting form, word of mouth, or GPS points on a map. Each of these traces might shape the future of interventions in this place and across the wider MBR. Throughout the reserve, conservationists labor through the promises and perils of a landscape home to jaguars and

drug traffickers, rare birds and returned refugees. Entangled with irreconcilable difference, violence, rich forest ecologies, inequality, struggle, and hope, conservationists are left with a powerful desire: for clarity, certainty, knowledge of the landscape that might provide a way to change it.

To know a place in order to change it.

This desire drives much conservationist action across the MBR, a landscape beset by many forms of violence, uncertainty, and precarity. In this book, I trace an ecology of knowledges in the reserve. The *knowledge ecology* framework reflects this core conservationist desire, drawing attention to the mutually transformative effects of knowledge-making practices and material more-than-human landscapes. Like the twisted loops of knowing, unknowing, and material change created by Luis's and my reading and leaving of traces along a forest path, the book traces how environmentalist knowing is always about intervening, in multiple ways. I offer two introductory chapters to develop this idea in depth, oriented to somewhat different audiences—the remainder of this brief introduction outlines the theoretical framework of a knowledge ecology and the related concept of a *nooscape*, while the next chapter provides a richer historical and descriptive introduction to the many worlds of the MBR.

Knowledge Ecology and Nooscape

My approach to knowledge ecology builds on long histories of exchange between anthropology and the ecological sciences, as well as on recent work in science and technology studies (STS), political ecology, and the environmental humanities. This approach focuses on two key properties of knowledges: materiality and relation. First, knowledge remains rooted in the material world: I examine how knowledges emerge from situated encounters and relations, and how they fold back into real material impacts on more-than-human landscapes like the MBR. Second, this approach emphasizes relations between a multiplicity of knowledges, examining the coentanglements of distinct and incommensurable epistemologies and worlds.[1]

Knowledge ecology is a form of analysis, the epistemic framework I use to describe and incorporate a multiplicity of epistemic frameworks, like a snake eating its own tail. But ecology is a type of inquiry; it is not an object, place, or space. Like all methods, knowledge ecology enacts its object of study. As global ecology enacts and describes the biosphere, or ecosystem ecology enacts

and describes ecosystems, knowledge ecology enacts and describes what I call a nooscape—patterns of collective thought and action that emerge from and fold back into the material-ecological worlds of northern Guatemala.

The word "nooscape" draws together two very different streams of thought. The first is the idea of the *noosphere*, first proposed by Jesuit priest, geologist, and philosopher Pierre Teilhard de Chardin (1956) and developed further by Vladimir Vernadsky (1945), the Soviet geochemist best known for popularizing the idea of the biosphere. While their two versions of noosphere differed somewhat, the general idea was the same: an emergent global mind.[2] Just as the biosphere is rooted in and emergent from the geosphere, so too is the noosphere rooted in and emergent from the biosphere. Emergence does not mean escape—the biosphere is intimately intertwined with the geosphere through biogeochemical processes, not an independent layer like icing over top of a cake. Similarly, there is no noosphere without interconnection and relation to the whole of the biosphere, and therefore also to the geosphere within that. The noosphere is very literally the mind of the earth. Early versions of this concept described the noosphere as a directed global form of human exceptionalism, but recent reworkings push against both the imagined coherence and anthropocentrism of these framings (Turner 2005; Margulis and Sagan 1995). Margulis and Sagan describe the noosphere as "the aggregate net of throbbing life, from flashing fireflies to human e-mail. . . . Polymorphous, paranoiac, confused, yet intensely imaginative, [it is] the thinking layer of Earth that is largely the unexpected product of animal consciousness" (1995, 138).

I build on these latter conceptions of noosphere, which root more-than-human collective thought in the materiality of earthly life. But this is a book about northern Guatemala, not the whole earth, and the noosphere is locked into the global. Beyond that, the concept remains too holistic for my purposes, too rigidly tied to systems theories of closed loops, nested hierarchies, and discrete levels.[3] Bridging the noosphere with an analysis of partial connections (Strathern 2004), I introduce the alternative of the nooscape. Nooscapes are situated flashes of ecological-knowledge-worlds-in-the-making, emergent phenomena based on relative and situated scalar processes of partial connection rather than nested part-whole relationships.[4] I join the *noos-* prefix, the ecologically emergent mind, with the suffix *-scape*, particularly following Arjun Appadurai's use of the latter in his work on globalization to indicate "fluid, irregular shapes" (1990, 297). Appadurai writes, "I use . . . [the] suffix scape to indicate first of all that these are not objectively given relations which look the same from every angle of vision, but rather that they are deeply perspectival

constructs, inflected very much by the historical, linguistic and political situatedness of different sorts of actors" (1990, 296). Unlike the holistic noosphere, nooscapes do not assume the existence of hierarchically organized spatial or temporal scales (though scalar relations can emerge within them). They are defined in situated practice and lively intra-action, and approach knowledge as an emergent property of contingent but not fully indeterminate more-than-human encounters and relations.

My focus on the embedded materiality of knowledges also builds on recent conversations that link questions of knowing (epistemology) with questions of what is real (ontology). I draw heavily on Karen Barad's (2007) agential realism, particularly her theory of intra-action, which entangles knowing and being together through mutually constitutive encounters and relations (she uses the conjoined term *ontoepistemology* to describe these entanglements). She writes, "the point is not merely that knowledge practices have material consequences but that *practices of knowing are specific material engagements that participate in (re)configuring the world*. . . . Making knowledge is not simply about making facts but about making worlds" (Barad 2007, 91, emphasis in original). Following this insight, I describe how different practices, especially knowledge-making practices, enact multiple ontological realities of the MBR (Mol 2002; Law and Mol 2008), and I use the words "enactment" or "world" to signal these multiples in order to remain focused on their situated creation through particular epistemic practices and embedded ecological relations.[5] My ethnographic ecology of knowledges traces how multiple enactments of the MBR emerge from intra-actions between individual human minds and bodies, institutions, documents, technologies, nonhuman critters, and others. The emergent knowledges and worlds then fold back into other relations across the nooscape, shifting and changing processes like land cover change, drug war violence, neoliberal transparency measures, sustainable timber harvesting practices, and so on.

Multiple enactments of the MBR come together in conservation practice in situated moments of partial connection, producing a nooscape that is more than one but less than many (Strathern 2004; Haraway 1991).[6] The approach to relations and multiplicity that I build within the knowledge ecology framework differs from many ethnographic studies of knowledge, particularly scientific knowledge, which describe the creation of singularity or cohesion out of fields of difference and contradiction. There are many versions of this many-into-one analysis, from classic actor-network theory, in which heterogeneous networks stabilize into something recognizable as fact or truth

(Latour and Woolgar 1986), to Annemarie Mol's (2002) work on multiplicity in medical practice, in which worlds are coordinated to appear ontologically singular despite fundamentally incommensurable enactments of body or disease. This kind of stabilization or singularity is simply not the lived reality for people working or living in the MBR. Enacted MBR worlds do not stay neatly bounded and separate from each other, nor do their exclusions remain manageably in the realm of the unreal. One cannot so easily dismiss the real possibility (or possible reality) of a drug trafficker in the forest, the way one might an aberrant lab result in a hospital. If enactments of multiple natures occur through what Barad (2007) refers to as "agential cuts," my work attends to the ways that these cuts continue to bleed.

Haunted Conservation

The multiplicity of worlds in the MBR does not remain invisible and cannot be coordinated away to the weakened position of perspective. The contradictions between incommensurable enactments are too filled with the potential for violence, the shifting between frames too saturated with embodied affect, such that a singular reality rarely coheres. There is little, if any, agreement about what the landscape is or should be, even within conservationist institutions, projects, individuals, or sites. Rather than presume any enacted reality's ability to deny or exclude its alternatives, then, each enactment in fact relies on its alternatives, on the always incompleteness of their denial and suppression, for the production of certainty, power, profit, or violence—and sometimes too, for love, hope, and the possibility of ongoing life. This produces a sense of haunted conservation practice, where "haunting" refers to the presence of worlds otherwise, multiple MBRs enacted through multiple epistemic encounters.[7]

Following an introduction to the MBR's many worlds, this book is divided into three sections emphasizing different aspects of the nooscape. The first, "Double Visions," explores the symbiotic relations between technoscience and paranoia as two dominant epistemic frames in conservationist knowledge production (chapter 2), understandings of the state (chapter 3), and in the formation of controversies (chapter 4). The second section, "Patchiness and Fragmentation," examines the spatial and temporal heterogeneity of the nooscape, using the examples of population (chapter 5) and fire (chapter 6) to explore the uneven distribution of knowledges and their effects. Finally, the

third section, "Composing and Composting Knowledges," explores how multiple knowledges and worlds are turned back into material interventions and impacts on the MBR landscape, including unexpected and unintended effects. This section includes conservation-influenced identity and livelihood shifts in one reserve village (chapter 7), experimental interventions in wild animal populations (chapter 8), and how imagined futures of the reserve reshape its present (chapter 9). Winding around this structure are short narrative vines, tendrils of connection that grow between and through chapters (indicated by insertions that will direct you elsewhere, like the one beside these lines). In wrapping around the chapters, these vines form spirals of meaning as they appear repeatedly at different points in the text, emphasizing the nonlinear relations between different sites and scales of the nooscape.

Finally, the afterword revisits the idea of the nooscape, particularly the effects of my own embeddedness in MBR knowledge worlds. Throughout this book, I describe the creation of partial, often problematic knowledges in one moment, and in another cite their measures and products as evidence in my own argument. Similarly, my substantial presence throughout the text reflects the shift from a reflexive ethnography to a diffractive one: "[diffractive methodology] is a commitment to understanding which differences matter, how they matter, and for whom" (Barad 2007, 90). Diffractive analysis attends to the patterns that result from relations of difference, including between myself and conservationists, between knowledge-in-the-making and knowledge-as-fact, and between the many other humans and nonhumans intra-acting in the reserve. Diffractive analysis is embedded in agential realism, acknowledging that "we don't obtain knowledge by standing outside the world; we know because we are *of* the world. We are part of the world in its differential becoming" (Barad 2007, 185). As this work has grown from my encounters with multiple worlds of the MBR between 2007 and 2017, it also folds back into material impacts—even though these are buffered by relatively large geographic, linguistic, and sociopolitical distances. In other words, my knowledge claims are not immune from my own analysis of knowledge- and world-making in the reserve. To remove my presence from the text would be ethically and politically at odds with my argument about the impacts of knowledge projects on the landscape.

Above all, this argument works to open space for reflection on the contradictory harms and benefits wrought by environmental projects on contested landscapes like the MBR, in order to push these projects in more just and equitable directions. As a result of the contingent, partial, and contested nature of the MBR's many enacted worlds, conservationist actions end up reactive,

contradictory, and deeply incoherent. Ultimately, however, the apparent incoherency and ad hoc nature of conservation in the MBR is in fact coherent when acknowledging the haunting presence of multiple worlds, particularly those that threaten violence. Conservation actions are oriented not toward an abstract evaluation of best practice on a singular knowable landscape, but toward a carefully calibrated tightrope act balanced between efficacy and danger. This is not exceptional—most conservation projects around the world take place on landscapes crowded with too many possible worlds to ever settle on a best practice or ultimate solution. The stories that follow throughout this book do not represent an isolated case, but rather one instructive for thinking through the complex dynamics of environmental knowledge and action in contexts of instability, inequality, and violence around the world.

Protected areas and conservationist projects in such troubled places are often critiqued as "greenwashed" extensions of (neo)colonialism, state territorial control, ethnic exclusion, or militarized security discourses (Chapin 2004; Bray and Anderson 2005; Berger 1992; Sundberg 1998, 2003; Bryant 2002; Ybarra 2012; Lunstrum 2014; Duffy 2014). Ethnographies of conservation often reveal deep inequalities between transnational environmental organizations and local people (West 2006; Lowe 2006; Doane 2012). These problems and inequalities appear here too, as differential access to networks of power, knowledge, and capital. But they appear differently, based on the difference of my ethnographic location—instead of situating myself primarily among MBR residents, I spent my time in conservationist institutions, with state and nongovernmental organization (NGO) employees. What emerges from this vantage is different from traditional environmental anthropology: with a few exceptions, reserve residents appear mostly in moments of encounter with conservation institutions and their personnel—filtered, in some way, through institutional lenses. I describe a conservationist nooscape, not a local one, the situated knowledges of conservationists taking precedence over MBR residents' relations to the landscape. The latter appear in patches and always in partial connection to institutional worlds.

This may make some readers uncomfortable. My goal is not to disregard local perspectives or needs, but rather to push back against common critiques of conservation by addressing the ways that people working in conservation institutions (many of whom are themselves local) attempt to understand and reconcile multiple human needs with multiple environmental priorities. As repeatedly becomes clear in the chapters that follow, many conservationists struggle deeply with exactly the same questions and issues that academics

mobilize in their critiques. To acknowledge this struggle is not to absolve conservationists of harms done by their programs, practices, or institutions. But recognizing the struggle opens up possibilities for reflection on the part of academic researchers—What are we contributing, if launching criticisms that conservationists themselves are already well aware of? What kinds of worlds do our own knowledges compose and compost into? I do not let conservationists off the hook for policies or practices that further perpetuate violence and inequality. At the same time, I resist the temptation to write off nature conservation as a totalizing project, attending instead to the ways that people working in the reserve enact a contingent and shifting set of discourses and practices, attempting, against incredible odds, to shape a landscape that might be hospitable to both humans and the many nonhumans that make up its tropical lowland forests.

NOTES

Introduction

1 Other versions of knowledge ecology have been framed, many of which overlap significantly with my approach. These tend to focus more on relations between knowledge forms and their institutional and disciplinary contexts, with less emphasis on embeddedness in more-than-human ecological worlds (Bowen 1985; Rosenberg 1998; Star 1995). Boaventura de Sousa Santos (2007), a theorist of Latin American social movements, proposes "ecology of knowledges" as a framework for emancipatory global politics. His is a vision for new relations between existing epistemologies (indigenous, subaltern, modernist science, etc.), while mine is an analytical framework for describing how epistemic multiplicity and contradiction emerge from complex situated relations. The multiplicity of knowledges in the MBR is not always linked to emancipatory politics, but can be as easily linked to violent, destructive, profit-seeking, or oppressive ends.

2 Vernadsky's noosphere emphasizes human dominion of the biosphere through science and technology, while Teilhard de Chardin's is deeply theological and imagines a progressive evolution toward divine unification of humanity through Christ. Both describe the noosphere as a new stage of the evolutionary history of life on earth.

3 For example, one attempt by Felice Wyndham (2000) to resurrect the noosphere in ecological anthropology describes a series of nested levels of mind, from individual to social group to noosystem to noosphere. I do not follow the cybernetic "ecology of mind" proposed by Gregory Bateson (1972) for similar reasons, though my approach to an ecology of knowledges owes much to his work.

4 Ecological theorizations of emergent phenomena are locked into debates about reductionist versus holistic approaches; even attempts to reconcile these two by

moving away from hierarchical levels, as in the work of Ponge (2005), end up reproducing a fundamental dualism of parts and wholes. Philosophers of science Potochnik and McGill (2012) offer a helpful critique of hierarchical thought in ecology, arguing that flexible and context-dependent analyses of scale are more empirically useful than conceptualizations of static, discrete, nested levels. The nooscape builds on the scalar ecology of their approach, sidestepping questions of part-whole relationships in favor of situated process and interaction.

5 In this way, my work aligns with what Anna Tsing calls "world making," which "focuses us on practical activities rather than cosmologies. . . . While most scholars use ontology to segregate perspectives, one at a time, thinking through world making allows layering and historically consequential friction" (2015, 292n7).

6 Swapping in the nooscape for the figure of the cyborg, Strathern's description of multiplicity in a field of partial connections is apt: "The cyborg observes no scale: it is neither singular nor plural, neither one nor many, a circuit of connections that joins parts that cannot be compared insofar as they are not isomorphic with one another. It cannot be approached holistically or atomistically, as an entity or as a multiplication of entities" (2004, 54).

7 This definition of haunting aligns with that of Barad, who argues against subjective or purely epistemic interpretations of the term segregated from ontological reality. She writes, "Hauntings . . . are not mere rememberings of a past (assumed to be) left behind (in actuality) but rather the dynamism of ontological indeterminacy of time-being/being-time in its materiality" (Barad 2017, G113).

Chapter 1. The Many Worlds of the Maya Biosphere Reserve

1 While the number of massacres in the Petén was lower compared to other regions, relative to population density the region was heavily targeted. This was due in large part to the use of the region's forests as bases for guerrilla groups, as well as to long-standing military interest in establishing territorial control over the region (a major factor in the establishment of FYDEP). One key difference from other regions was that many of the massacres and much of the scorched-earth village destruction in the Petén were carried out on Ladino, not Maya, villages.

2 For a more complete history and analysis of this early NGO landscape, see Sundberg (1998).

3 For example, CI started a local NGO branch called ProPetén, which built the Scarlet Macaw Biological Station in Laguna del Tigre National Park and worked extensively with the neighboring village of Paso Caballos. I visited ProPetén's projects in these locations in 2007 during my master's thesis research at Yale University, at which point the local organization was already fully independent from CI. By the time I returned in 2009, ProPetén had sold the biological station to WCS's local offshoot, Asociación Balam (also by this time independent),