ROUTLEDGE STUDIES IN ANTHROPOLOGY

Anthropology and Nature

Edited by
Kirsten Hastrup

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On the basis of empirical studies, this book explores nature as an integral part of the social worlds conventionally studied by anthropologists. The book may be read as a form of scholarly "edgework," resisting institutional divisions and conceptual routines in the interest of exploring new modalities of anthropological knowledge making.

The present anthropological interest in the natural world responds to large-scale natural disasters, new health concerns, and global climate change, increasingly stressed in scientific and public debates. This has given rise to a keen sense that nature matters to society at many levels, ranging from the microbiological and genetic framing of reproduction, over co-species development, to macro-ecological changes of weather and climate. Given that the human footprint is now conspicuous across the entire globe, in the oceans, on the continents, and in the atmosphere, it has also become clear that society matters to nature. While the perspectives of the natural and the social sciences may differ, they are increasingly dependent on each other for a comprehensive understanding of the mutual constitution of natural and social forms. The book opens up a creative space for reflection on the composite and integrated life-worlds of people beyond old dualisms.

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Preface and Acknowledgements

This volume takes anthropology a step forward by addressing nature directly, not as external to social life but as an integral part of it. The book may be read as a form of scholarly edgework, resisting institutional divisions and conceptual routines in the interest of exploring new modalities of anthropological knowledge making. It is also a book that testifies to the generative power of anthropology, as engaged in discovering, defining, and creating significant objects, relations, and scales. Such generative power always rests on the edge between reasonable certainty about the workings of the world, and the manifest uncertainties just beyond the horizon.

For anthropologists the empirical work implies directing their attention towards the complex meshwork of human life as lived, and this is precisely what the chapters of the book set out to demonstrate in each their own way. In the process of ethnographic exploration, the chapters testify not only to the entanglement of things natural and things social, but also to the entwinement of analytical perspective and ethnographic material. This allows for new ways of perceiving and scaling the object of anthropology, and we sense how a vital and creative space for future anthropological studies opens up, acknowledging that all worlds are emergent, and that science therefore always operates on the edge of the known. The book thus paves the way for further probing into the co-constitution of species, of animate and inanimate elements, of social and biological potentialities, and of human and other life forms. Along such fault lines, new worlds emerge as objects of anthropological interest, through which they may become temporarily manifest.

Anthropological knowledge interests always reflect pressing concerns in the world, primarily because anthropologists work *with* the world. Wars, religious conflicts, colonial or postcolonial problems, issues of equality or discrimination, battles over land-rights, epidemic diseases, hunger catastrophes, economic crises, and so forth have been subjected to anthropological interest in the course of its history. At present the intense interest in the natural world is partly a response to large-scale natural disasters and global climate challenges, and to a keen sense that *nature matters to society*. It matters at many levels, ranging from the micro-biological constituents of

the body and the genetic framing of reproduction, over co-species development and the sociality of non-humans, to macro-ecological changes of landscapes, weather and climate. Given that the human footprint is now conspicuous across the entire surface of the globe, in the oceans as well as in the atmosphere, it is difficult to claim that nature is what is given and permanent, whereas societies are ephemeral and largely immaterial in the history of the planet. This again implies that *society matters to nature*, and some natural scientists look towards the social sciences for an understanding of how people think and how societies work with nature.

The volume is the outcome of an international conference held in Copenhagen, September 2011. I want to thank the audience for their vital contribution to the general discussion, and to thank the Royal Danish Academy of Sciences and Letters and the Carlsberg Academy for opening up such formidable and generous venues for what turned out to be an immensely stimulating and lively event. Henny Pedersen, as always, was the pivotal force in the organization of the conference, and should be gratefully remembered. At an important moment in the editorial process, Martin Arvad Nicolaisen provided vital and skillful help for which he must be thanked.

Nathalia Brichet and Frida Hastrup provided an extra dimension to the conference by an on-location exhibition of ethnographic objects, with accompanying video interviews with anthropologists having worked in different fields with the implications of climate change for social life. The exhibition gave the conference participants a vivid sense of the entanglements at play in the talks, and demonstrated the communicative force of objects—materializing the intricate relations between thinking and things.

The exhibition featured the research made within the project *Waterworlds*, funded by the European Research Council (ERC), and allowing the research group to experience the vitality of a truly intellectual laboratory over a period of five years. The ERC is gratefully acknowledged for the difference it has made, and ultimately for having made this innovative anthropological volume possible.

November 2012
Kirsten Hastrup

1 Nature
Anthropology on the Edge

Kirsten Hastrup

This introductory essay sets the scene for the chapters to follow by identifying the edge upon which their arguments run—the edge of emerging worlds. Theoretical advancement in anthropology today is precipitated by new insights into the deep-seated entanglements of natural and social, of human and non-human, and of organic and non-organic forms. Through such entanglements, worlds emerge simultaneously as empirical and analytical objects, and the volume explores new modes of thinking about this generative process.

In a seminal volume on *Nature and Society*, published in 1996, the dualism between the two concepts was explored and challenged from a range of ethnographic and theoretical perspectives. The general idea was to revisit "the place of nature and the environment in anthropological theory and social discourse" (Descola & Palsson 1996: 1), and to probe the possibilities for a new ecological anthropology, to put it briefly. Thanks to works like that, we are now in a position to take the next step—beyond the dualism. The chapters in this book generally take off from a unified view of world(s) as the combined product of natural and social life, albeit with different analytical emphases.

In the predecessor to the present volume, similar views were intimated, but there is still an important intellectual shift between the two sets of arguments. While in the early 1990s anthropologists still worked to dismantle the dualism, and attacked the 'Western' conceptual hegemony by means of ethnographies from 'other cultures', we now seem to have completed the move that Phillippe Descola anticipated when he wrote in conclusion to his own chapter in *Nature and Society*:

> Once the ancient nature-culture orthogonal grid has been disposed of, a new multi-dimensional anthropological landscape may emerge, in which stone adzes and quarks, cultivated plants and the genome map, hunting rituals and oil production may become intelligible as so many variations within a single set of relations encompassing humans as well as non-humans. (Descola 1996: 99)

It is such an anthropological landscape that is canvassed in the present book. There is no us and them, no definitive boundaries between human and non-human, and no space for science outside of the world it engages with (Rossiter 2007). To probe nature as part of any anthropological analysis is to search for a new understanding of the (temporary) wholeness of whatever worlds emerge in the anthropological study.

This takes me to the subtitle of this chapter, introducing an anthropology on the edge. I argue that in the process of assembling natural and social worlds into new wholes, anthropological analysis takes us close to the notion of edgework, studied by sociologists and socio-psychologists, and pointing to risk-taking experiences (Lyng 2005). While mostly studied at the level of individual risk-taking, such as skydiving, drug use, graffiti making, and delinquency, what connects such activities is "a common attraction to exploring the limits of human cognition and capacity in search of new possibilities of being" (ibid.: 4). While the individual contributors to the present volume hardly would see their own writing as a form of skydiving or bungee jumping, collectively we do take a certain risk on behalf of anthropology. If there is no distinct entity of society, how may the social sciences fare at a time where institutional pressures and control measures such as bibliometric counts and impact factors already seem to favour the natural sciences when it comes to meter out the deserved funds within the academic audit culture (Strathern 2000)?

Society was the constitutive notion when the social sciences emerged in the 19th century, fostered by Auguste Comte and later Émile Durkheim. For the latter, society bifurcated into modern and primitive forms. Durkheim's dualism lost both its empirical and its theoretical power in the latter half of the 20th century, due to new postcolonial and global realities, and the distinction between sociology and anthropology no longer runs along the distinction between modern (complex) and primitive (elementary) forms of social life. If there still is a distinction between the disciplines, it is possibly in methodological emphasis, largely associated with quantitative and qualitative methods, respectively—true to the origin. I shall not elaborate on this here, but simply note that in the present volume the authors explore the limits of 'society' as we have so far understood it. There is a strong will to theorize the unconfigured, and not-yet-conceptualized, emergent worlds both near and afar, and on a multiplicity of scales.

Thus the arguments presented in this volume can be seen as edgework practice, resisting institutional calculation and conceptual routinization in the interest of exploring new possibilities of being. It is a practice that carries with it a sense of the generative power of anthropology—and other scholarly pursuits—engaged in discovering, defining, and creating significant objects, relations, and scales. Such generative power always rests on the edge between reasonable certainty about the workings of the world, and the manifest uncertainties just beyond the horizon. Arguably, this edge is immanent in any scientific pursuit, destined to destabilize old certainties

along with the creation of new ones; one never reaches a definitive peace of mind. For anthropologists today, the practical work implies directing all their skills of attention towards the complex meshwork of human life as lived, and towards the worlds emerging from that life, striving to understand people's actions in the *same* way as they do (Strathern 1999: 10); this challenges conceptual dualisms which may potentially destabilize anthropology, but also open up for unprecedented insight. In this introduction, I shall attempt at qualifying some of the domains that have emerged as anthropological hotbeds of edgework in recent years, and present a series of pertinent questions relating to the fluid field.

DISCIPLINARY COMMITMENTS: THE QUESTION OF FLEXIBILITY

There is an implicit irony in hedging in anthropological edgework by the bounds of a book. One might see this as succumbing to a general feature of the present era, which is actually the other side of the edgework approach, where individual risk-taking converges with, rather than deviates from, societal and institutional demands for adventurous business and financial risk-taking (Lyng 2005: 11–12). Truly, times may be seen as favouring edgework also in scholarship; yet within academia itself, freedom remains circumscribed by organizational frameworks that only allow for so much license, lest departments be deprived of funding and positions cancelled. Gideon Sjoberg (2005), writing of political and institutional censorship at the University of Texas in the Cold War (and beyond), reminds us forcefully of the intellectual risks that some academics have run (and still run) in the interest of knowledge and academic freedom. Times have changed, but when creativity is universally praised and even expected from all corners, this in itself becomes an institutional straightjacket, pushing scholars to simply declare the new, rather than giving it time to emerge through a keen attention to detail and pattern. Truly new knowledge cannot simply be asked for, but it may emerge in the course of *work*—edgework—provided a degree of institutional flexibility is in place.

In a groundbreaking essay, Gregory Bateson defined flexibility as "uncommitted potentiality for change" (1972: 497). This serves as a poignant reminder to academic institutions not to commit too much scholarly energy to other matters—notably in the form of accounting—that will cut back the potentiality for scientific revolutions of sorts. When we think of edgework as an exploration of the limits of human capacity, Bateson's parable of the acrobat on high wire, illustrating the salient point, is more than appropriate. To maintain the position on the wire, the acrobat must be free to move from one position of instability to another, and his arms must have maximum flexibility to secure the stability of more central parts—for that purpose, the span of the arms is often extended by a long stick. If the

arms are locked, the acrobat will fall. During the period when the acrobat is learning to walk on the wire, and thus learning to move the arms in an appropriate way, a safety net is necessary; this gives him the freedom to fall off the wire. "Freedom and flexibility in regard to the most basic variables may be necessary during the process of learning and creating a new system of social change" (ibid.: 498). In academic work, the institution must provide the safety net and give scholars time and space to learn to walk the tightrope towards emerging worlds, and thus enable them to push the horizon further forward (and closing others behind).

In a sense, anthropology has operated on the edge since its inception. As Vincent Crapanzano has suggested, anthropology is in essence "an interstitial discipline" (2004: 5). "The beauty of the field lies in its fluidity–its resistance to tight compartmentalization and territorialisation" (ibid.). Whatever moves forward anthropology has made, they have not made up a straight line, of course, and have owed as much to extrinsic changes in the world as to intrinsic qualities. Again, there is a larger point in this, namely that revolutions in science are not necessarily earth shattering, but simply reflect new knowledge interests and value judgements. I shall briefly refer back to Thomas Kuhn, whose notion of scientific revolution has generally been seen as shifts in understanding that immediately rendered old knowledge obsolete. In an afterword to the second edition of his book, Kuhn himself tempers this:

> A revolution is for me a special sort of change involving a certain sort of reconstruction of group commitments. But it need not be a large change, nor need it seem revolutionary to those outside a single community, consisting perhaps of fewer than twenty-five people. It is just because this type of change, little recognized or discussed in the literature of the philosophy of science, occurs so regularly on this smaller scale that revolutionary, as against cumulative, change so badly needs to be understood. (Kuhn 1970: 180–81)

In Kuhn's comprehensive work on the Copernican revolution (1957), which led to the more general work on scientific revolutions, he shows how it primarily depended upon factors outside of the world of astronomers, belonging to a larger historical and intellectual development. The Copernican revolution was not precipitated by new astronomic discoveries, but by a new way of understanding old ones, due to renaissance learning and scholastic critique of received wisdom (Kuhn 1957: 132). In anthropology of the past two decades, it may likewise be difficult to make claim to new discoveries, but the commitments have been reconstructed in response to historical and scientific developments in the world—to which anthropology has also contributed by seeking to grasp them in new terms. We know very well, of course, that anthropologists never speak in one voice, and that many currents of thought co-exist at any point in time, yet emerging

clusters of generative studies testify to particularly creative spaces of intellectual work at certain points in time. I would contend that we find ourselves at such a point.

In present day anthropology, it seems that a major reconstruction of group commitments is owed to a rethinking of the alleged boundary between nature and society, whether explicitly or implicitly. The current vigour of anthropology is (also) related to factors that are extrinsic to the discipline, viz. the major changes to planet Earth. In early 21st century, half the human population on the planet lives in urban spaces, and the surface of the planet is globally marked by human presence. Additionally, humans have left massive fingerprints on the atmosphere, accumulating since the 19th century industrial revolution. In consequence, a new geological era has been announced, the Anthropocene, replacing the Holocene, which have seen human society develop from small hunting bands, through the agricultural revolution in the Neolithic, and until the present age of global land-use, including forestry, mining, farming, and so forth, accompanied by such massive pollution of the ocean and overexploitation of marine resources that depletion is if not exactly imminent, then at least a realistic outcome.

In response to this, environmental anthropology has been reinvigorated and it has been suggested that an "anthropology of the environment affords valuable insight into our relationship with the environment, which may assist policy makers, project designers, and peoples impacted by today's environmental problems" (Shoreman-Ouimet & Kopnina 2011: 6). While the intent is well taken, the environment is still seen as external to social communities; this is of course a function of the very definition of the natural environment. Within the present volume, it is precisely this externality that is probed from various angles. We are, admittedly, walking on a razor's edge here, captured in words that no longer fit the deep anthropological insight into the complexity of actual worlds at this age and day. Another response to this complexity has been to suggest that we have come to 'nature's end', not necessarily implying the end of the world, but a beginning of 'the age of environment', according to Sörlin and Warde, who further qualify their view: "Nature needs no humans, but there is an environment only where humans live and where humans have entered into a self-conscious relationship with their surroundings" (Sörlin & Warde 2009: 2–3). In the Anthropocene, all nature has in some way become environment in this sense, defined by and defining human life on the planet. This development, which is at the same time natural, social, and scientific, in our view has internalised the environment into both social and anthropological trajectories. This again has led to the present concern about nature in anthropology—nature as implicit in social and intellectual life, which again is complicit in the makings of nature.

It is a concern with a long and winding pedigree in anthropology, reflecting different times and horizons. When in late 19th century anthropology

became professionalized as the comparative study of culture, and the first chair was established at Oxford University (in 1896), with E.B. Tylor as its first incumbent, the horizon was defined by evolutionism. Tylor made a case for all humans possessing equal capabilities for advancement and understanding, if education were available. The human mind could be cultured in different ways, but its nature was one. Tylor also wrote extensively on animism, featuring a non-separability between the physical and spiritual world. This just goes to say that since its professional inception, anthropology has found itself caught up within a discussion of the relationship between things natural and things cultural. This was further nurtured when fieldwork became the sine qua of anthropological practice in early 20th century, inserting anthropologists in other environments, and affecting their senses in multiple ways.

Fieldwork was not invented by anthropologists; it was well known in geography, archaeology, botany, and geomorphology, to name a few companion disciplines, and it had been practiced inadvertently by comparative philologists and folklorists. The hallmark of fieldwork is the direct bodily and sensory engagement with the object of study, which is a foundational experience (K. Hastrup 1994). In the field, one soon realizes that not everything could happen anywhere; the actual spaces facilitate particular formations of life, while not determining them. Even as anthropologists configure their object of interest, they realize that worlds cannot be freely invented.

Enlightenment scientists practiced fieldwork on a grand scale. While signposted as a means to inspect and map the actualities of the world, Enlightenment science came to set the agenda also for classifying its nature and relating to it. A formidable representative of the tradition of discovering—and interpreting—nature by going there is provided by German geographer and biologist Alexander von Humboldt (1769–1859), whose travels to America not only reshaped the map, but also created a new sense of nature's life. Committed to a universal science, it was the detailed attention to the individual elements and their circumstances that allowed him to generalize and to convey "the wonder and variety of natural phenomena intending thereby to provide the reader with the same real fascination and pleasure that he derived from both the scientific and the aesthetic contemplation of Nature's delights" (McCrory 2010: 122). His brother Wilhelm von Humboldt (1767–1835) at the same time was developing a new theory of language, and of education—resulting in the creation of the Humboldt University in 1809. Both brothers realized that there was more to knowledge than what met the eye, and it was essential that young people be encouraged not only to engage with nature but also to cultivate a critical reflection upon the nature of scholarship.

Wilhelm von Humboldt's work owed very much to the philosophical works of Johann Gottfried Herder (published 1784–1791), whose universal history of humankind was a remarkable Enlightenment achievement. Herder's work is particularly interesting for its stress upon the ways in which

cultures had grown out of nature, yet remained intimately linked with the different continents. This would have been part of the general background also for Alexander von Humboldt seeing himself as a "historian of nature" (McCrory 2010: 66), within his larger commitment to a universal science. As Copernicus had done, Humboldt also responded to the calling of the times, which he *then* sought to demonstrate.

Mary Louise Pratt has discussed how Alexander von Humboldt's goal as a scientist also became his goal as a writer (1992: 121). For anthropologists familiar with the notion of 'writing culture', it may not come as a surprise that nature is also 'written', but it may not yet be generally acknowledged within the natural sciences themselves. While in many ways aligned with industrialism (Humboldt was first trained as a miner), he was also steeped in the spiritualism of the day, and wrote of animate worlds coming to life in the very texts he produced. Pratt gives the following example from Humboldt's work 'On Steppes and Deserts' in his *Views of Nature* (1808):

> Scarcely is the surface of the earth moistened before the teeming Steppe becomes covered with Kyllingiae, with the many-panicled Paspalum, and a variety of grasses. Excited by the power of light, the herbaceous Mimosa unfolds its dormant, drooping leaves, hailing, as it were, the rising sun in chorus with the matin song of the birds and the opening flowers of aquatics. Horses and oxen, buoyant with life and enjoyment, roam over and crop the plains. The luxuriant grass hides the beautifully spotted Jaguar, who, lurking in safe concealment, and carefully measuring the extent of the leap, darts, like the Asiatic tiger, with a cat-like bound on his passing prey. (Humboldt 1808, quoted in Pratt 1992: 122)

While such prose certainly contributed to the planetary consciousness of the time, it also intimated a new kind of writing about nature. Humboldt's project lives as much *in* the text as outside of it, and it is "orchestrated by the infinitely expansive mind and soul of the speaker" (ibid.). Seen from here and now, Alexander von Humboldt operated on a similar edge as we do in the present volume—the edge of cognition. Like anthropological fieldwork today, Humboldt's travels were not so much directed at finding new facts as they were instrumental to facilitating the knowledge of patterns and relations. Humboldt wrote:

> Two main aims guided my travels, published as the *Relation historique*. I wanted to make known the countries I visited, and to collect those facts that helped elucidate the new science vaguely called the Natural History of the World, Theory of the Earth or Physical Geography . . . I was passionately keen on botany and certain aspects of zoology, and flattered myself that our researches might add some new species to those already known. However, rather than discovering new, isolated

> facts I preferred linking already known ones together. The discovery of a new genus seemed to me far less interesting than an observation on the geographical relations of plants, or the migration of social plants, and the heights that different plants reach on the peaks of the cordilleras. (Humboldt's *Personal Narrative*, quoted in McCrory 2010: 66)

In the course of his work, Humboldt measured the world and invented 'climate', meaning "in the most general sense all changes in the atmosphere which noticeably affect the human organs"—including temperature, humidity, barometric pressure, or wind (Heymann 2010: 587). This definition linked climate to both location and human experience. More generally, he insisted that there was more to nature than could be captured in simple classification; he was drawn towards an understanding of the people and their language, partly with a view to his brother's interests, but mainly as part of his own commitment to a universal science—fostering new academic group commitments in early 19th century. In some ways, we are back there, without a shared idea of a law underlying the whole creation, but certainly with a view to multiple, yet underexplored connections, potentially also opening new avenues of interdisciplinary exchange on matters relating to the interpretation of nature (K. Hastrup 2013b).

SLEEPING PARTNERS: THE QUESTION OF REPRODUCTION

Reproduction is different from repetition or replication; it points to continuation but not necessarily to sameness. In important ways, we have collectively reproduced anthropology since the 19th century, yet it is no longer the same. From where we are now, we may envisage new futures. The potentiality is not without restraints, originating in previous steps taken on the tightrope—to refer back to Bateson's analogy. Partly in consequence of two centuries of effort to establish trustworthy sciences, we have come to realize the implications of choosing one path towards knowledge over another. We have had to leave behind what Ian Hacking has called the menu-card view of scientific enterprise, that is, the view that if you do not have a particular dish today, you can come back and have it tomorrow (Hacking 1987: 238). That is not so in science, where any new step reconfigures the possible future steps. We cannot undo earlier steps, while we certainly cannot repeat them either. Reproduction is implicit in the changes we experience. This means that even as we reconfigure our discipline and realign our group commitments, we bring a number of sleeping partners along. Human reproduction offers a privileged view into this process, and one that is particularly apt in the present context, because our ideas of kinship offer a theory "about the relationship of human society to the natural world" (Strathern 1992: 5).

Other theories have embraced the relation from a different vantage point, and once again we shall move back to the beginnings of anthropology, not simply to know our history but more significantly to revisit earlier moments of potentiality. This time we shall look back to the pre-Enlightenment era, when the Americas and their inhabitants came into view and in significant ways defied recognition. The newfound lands were not even "seen as something new—indeed Columbus resolutely refused to believe until his dying day that was new—but merely an extension into a new geographical space of both the familiar and the fantastic dimensions of the Atlantic world as it was known through the writings of commentators both ancient and modern" (Pagden 1982: 11). This is a token of reproduction, if ever there was one, but also one that could not continue on the basis of repetition. It points to what Robert Paine, at the occasion of the Columbus quincentenary, called "the most intriguing question for anthropology coming out of the scholarly literature of that occasion, namely how, in the West, the unknown is apprehended, then and now: in the Age of Discovery and by anthropology, yesterday and today" (Paine 1995: 47).

It remains an intriguing question, which hits the backbone of the present volume: How may we claim newness while also reproducing something inherently recognizable as anthropology? Columbus 'knew' the new world in terms of canonical knowledge as known from the Scriptures, but eventually these were challenged by new "referential knowledge" (Paine 1995: 51ff). Canonicity and referentiality are two distinct kinds of knowledge in Paine's terms; the canon exists as a totality and wards off doubt, while referential knowledge is open to doubt, and—among other things—uncouples the unknown from the known, at least to a degree. This releases two meanings of 'the new': "There is 'the new' of discovery and 'the new' of invention" (ibid.: 52). To discover a new planet or a new culture is no small accomplishment, but it hinges upon previous identification of such things as 'planets' and 'cultures'. That is where the invention comes in and distinguishes itself from discovery, by suggesting something ontologically new (ibid.: 53).

While Alexander von Humboldt in his writings can be said to have (re-)invented America (Pratt 1992: 109ff), it had indeed first been 'discovered' in terms of well-known European categories. Today, I surmise, discovery and invention are not as separate as Paine envisaged, nor are canonicity and referentiality actually separate processes of interpreting the world. When the familiar and the unfamiliar became assembled in the new world, the observers of America first classified the unfamiliar by their resemblance to something known: pumas as lions, jaguars as tigers, and so on (Pagden 1982: 11). In the long run, it was impossible not to recognize difference, and gradually not only new species but also new words entered into the European vocabulary. The natural categories expanded, but within an already established classificatory scheme, with which the world (surprisingly) still

lives. When it came to describing humans, there was greater resistance to recognition, of both sameness and difference.

> Classifying men is not, after all, like classifying plants. For when regarding his own species, the observer not only has to decide what he is seeing, he also has to find some place for it in his own world. This task is made all the more urgent, and the more difficult, if the observer is possessed, as all Europeans in the sixteenth century were, by a belief in the uniformity of human nature, a belief which required every race to conform, within certain broad limits, to the same 'natural' patterns of behaviour. (Pagden 1982: 13)

In pre-anthropology times there were few terms by which to classify humans. Mankind was by canonical standards something in itself, defying incorporation into natural systems. In the 18th century, much to the consternation of the Pope, Linnaeus included people in his classification of animals, and invented the term *homo sapiens* as distinct from *homo monstrosus* (Pratt 1992: 32). By 1758, *homo sapiens* had been divided into six classes, with each their physical features—Wild Man, the American, the European, the Asiatic, the African, and the Monster. Concerning the difference between the European and the American, we note that the American was regulated by customs, in contrast to the European, who was governed by laws. 'Social' facts here begin to creep in upon the physical appearance, where semantics had earlier failed to deal with social or cultural life.

In the northernmost parts of America a separate subspecies of humans was identified by Otto Fabricius, a Danish naturalist who had served as a missionary in Greenland (Holtved 1962). In his *Fauna Groenlandica* (1780), he put man first among the living creatures, immediately followed by walrus; he thus disregarded the taxonomic scheme but confirmed the Christian idea of man's primary place among the living. He links *Homo groenlandicus* to the *Homo americanus*, and refers to the Esquimaux of the Hudson Bay area. About the Greenlandic man he says: "A human being, who moves by day, dirty red in colour, with black, straight, thick head hair, almost beardless . . . They call themselves *Innuit* (singular *Innuk*), which is a common term for them and other peoples, and *Kalalik* (singular *Kalalek*), a term specially for them" (Fabricius, quoted in Thalbitzer 1962: 11ff). Fabricius then goes on to describe their physical appearance in further detail, their habitat and their food, and ends by describing how they live in a natural state: "Without god and without ruler they are governed by rules."

Natural man had definitively entered the scene in 18th century knowledge, no longer testifying to the discoverers' notion of society-less humans but as a natural state of mankind with such rules as befitted their state. This was accompanied by the development of a notion of 'natural law', being the foundation of *all* human life, according to Montesquieu, whose work of *The Spirit of the Laws* (first published in 1748) heralded

the dawn of modern legal thinking. Montesquieu defined laws, in the broadest sense, as "the necessary relations deriving from the nature of things" (1989: 3), and he goes on to define *natural* laws as those that derive uniquely from the constitution of our being, listing the quest for peace as the first natural law, the seeking of nourishment as the second, the entreaty between the sexes as the third, and, finally, the desire to live in society as the fourth natural law (ibid.: 6–7). Once this last desire is fulfilled the need for *positive* laws arises, but they remain secondary to the natural law. "As soon as men are in society, they lose their feeling of weakness; the equality that was among them ceases, and the state of war begins"—this entails a necessity for laws that will govern the rights of nations, and other political and civil rights (ibid.: 7).

Natural law thus reflects a universal human constitution, and we can see how family life and reproduction are at the core of this along with peace and nourishment, always seen as more than merely biological matters. It is in the realm of natural law that we would look for the incest taboo, the giant step out of the natural state taken by humans, as suggested by Claude Lévi-Strauss, the great surveyor of the human mind; the incest taboo was the first thoroughly *cultural* step (Lévi-Strauss 1964). The species continued as a species among others, but had become distinctive by mating outside the family. The other species later became objects of myth, where leopards, tigers, snakes, and birds abounded and continued to tempt, to court, or to terrify humans. The constitution of humanity as a species was a universal principle, but it could not in itself explain the great variety of cultural forms. Lévi-Strauss, who was often accused of idealism in the 1970s and 1980s, was keen on explaining his detailed understanding of cultural variations by reference to a meticulous reading of their natural environments. He noted the physical surroundings, the positions of the stars, the predominant fauna and flora, and claimed that only a thorough mapping of such natural elements would allow the anthropologist to understand the pattern of thought (ibid.: 9). The universal and the particular co-mingled in this vision of the interface between nature and culture, and while in some ways a vision of the past, it still exists within the larger space for contemporary anthropological thinking that I am here canvassing and which also includes the Enlightenment interpreters of nature.

While the Lévi-Straussian view of the great leap out of nature may be difficult to sustain, it remains true that anthropologists have seen the field of kinship and relatedness as the natural backbone of social life. More than that, kinship and reproduction were at the base of social reproduction at a larger scale. With recent developments in genetics and in 'artificial' reproduction, natural and positive laws can no longer be kept apart. The desire to reproduce is no longer exclusively fulfilled within the entreaty between the sexes, and this is one more inducement to revisit the place of nature within the closest social bonds. With recent developments in genetics, such a move is further precipitated; there is a growing industry responding to an urge to

map people's risk profiles, and the quest for 'genetic citizenship'—knowing oneself through knowing one's genes and creating new alliances across established divides on the basis of common genes (Heath et al. 2004).

Gisli Palsson has convincingly argued that "humans now reinvent themselves in a new sense and on a fundamentally new scale, deliberately altering their bodily constitution and development by exchanging genes, tissues, and organs with both conspecifics and other organisms," a move that is associated with 'biosociality'; this concept definitively collapses the duality between nature and society (Palsson 2009: 4ff). With such developments, and beyond the question of sexual reproduction and fertility treatment, a comprehensive question of reproduction is at stake in anthropology. If, or when, nature and society have become sleeping partners in the planet's existence, a major concern becomes how to make sure that it will continue to provide a basis for new generations, new social groupings, and scientific visions. This is why edgework is called for, responding to a new urge for interstitial cognition.

COMPANION SPECIES: THE QUESTION OF CO-CONSTITUTION

If the human species has succeeded in maintaining a boundary between nature and culture, by throwing up protective ramparts around its own world (Lévi-Strauss 1973), we also know that humans have experimented on the boundary in many ways and asked questions athwart it. The new bio-socialities not only rest on manipulations with the singular bodies of humans, but also with the species. Experiments are made with transplants of organs from pigs to humans and, conversely, pigs are being genetically manipulated and cloned with human genes known to instigate Alzheimer's disease, to mention just a few examples from science on the edge. This would have upset most 'natural' schemes of purity and danger until very recently; species after all were defined as mutually exclusive and consorting with pigs would be more than degrading.

In the 19th century, a similar qualm about purity related to issues of race. While even humans and pigs now (for some purposes) are seen to be of the same kind, in the hey-day of imperial expansion, a firm line was drawn within humanity between the Indian and the British races during the latter's rule. Originally, "the British grounded their authority in the bodily difference between ruler and ruled, thereby ensuring that the body became the central site where racial difference was understood and reaffirmed in British India" (Collingham 2001: 8). Gradually the imperial body deteriorated, however, as did the boundary between colonizer and colonized—and not only due to disease, although this was part of the weakening of the body. When interracial sexual relations became more open, it went far deeper than sexual morality, and became an issue of racial morality (ibid.: 183). This was seen to severely undermine the imperial power.

As mentioned above, Linnaeus had suggested several subspecies of man, including the European and the Asiatic, which again deserves mentioning. About the European, he had noted (among other things) that he was "Fair, sanguine, brawny . . . gentle, acute, inventive. Covered with close vestments. Governed by laws." The Asiatic was "Sooty, melancholy, rigid . . . severe, haughty, covetous. Covered with loose garments. Governed by opinions" (quoted in Pratt 1992: 32). As Pratt observes, the categorization is explicitly comparative, and constitutes an attempt at naturalizing the myth of European superiority. In view of the distinction made by the close vestments of the European and the loose garments of the Indian, it is significant that one of the tokens of British imperial power was a (counter-intuitive) resistance to wear loose garments among the colonists, even in spite of the recommendation by British doctors (Collingham 2001: 41). Linnaeus would have been more than a little surprised if he had lived to see the intimate interracial relations that were later to take place.

Part of the scientific drive in the Enlightenment, including the quest for universal (or world) histories such as Herder's, was actually located in the wish to appropriate the causal connections and make the world work according to human needs. Human progress was seen to depend on the identification of the mechanisms by which the world moved and the ability to impact them through human ingenuity and will. It was the time when the world was ordered in taxonomic systems in line with Linnaeus, and when science was driven by a quest for universals that would allow generalization. Anna Tsing has noted two intriguing features of such generalizing ambition:

> First, generalization to the universal requires a large space of compatibility among disparate particular facts and observations. As long as facts are apples and oranges, one cannot generalize across them; one must first see them as 'fruit' to make general claims. Compatibility standardizes difference. It allows transcendence: the general can rise above the particular. For this, compatibility must pre-exist the particular facts being examined; and it must unify the field of inquiry. The searcher for universal truths must establish an *axiom of unity*—whether on spiritual, aesthetic, mathematical, logical, or moral principles. (Tsing 2005: 89)

The second intriguing feature, noted by Tsing, is that in the social domain of knowledge seeking and collaboration, incompatible observations can actually be turned into compatible ones on the basis of tiny convergences and an agreement upon natural objects, to paraphrase her (ibid.). With a view to the history of science that we are here exploring, the notion of 'history' itself can be seen as an objectified entity, a universal against which one may measure differences between epochs and paradigms. However, since the Enlightenment quest for universal knowledge and explanation, we have realized that human history is always made within a complex framework of

knowing, understanding, and acting upon the world—not only as it presents itself but as it is interpreted, tested, dealt with, and imagined. We have also come to realize that concepts and species that were once bounded may merge from another perspective. Neither history nor evolution can be explained by reference to a universal scheme, which rests in place only for so long as we disregard the complexity of actual histories, agents, points of view, and temporalities.

We may find an acknowledgement of this even in the master-narrative of evolution—and hence of universal history—itself. I am here thinking of Darwin's notion of entanglement, of which he wrote in *The Origin of Species* (1859):

> It is interesting to contemplate an entangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent on each other in so complex a manner, have all been produced by laws acting around us . . . There is grandeur in this view of life, with its several powers, having been originally breathed into few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved. (Darwin 2008: 210–11)

Here we sense the potential of the notion of entanglement, comprising a variety of mutually defining life forms as well as the larger laws of life and evolution. Darwin's notion of entanglement lingers between the descriptive and the analytical; it both points to a visible mess of phenomena, and to a way of qualifying it. This *qualification*, I suggest, is a kind of theory, implicitly acknowledging the simultaneity of matter and understanding, and the profound oneness of empirical facts and epistemological precepts.

With this, we shall move back to the question of co-constituting species, which is one of the prominent questions on the edge of anthropology. Clearly, the primal domestication of animals shaped human society, as did the invention of agriculture in the Neolithic. This is so much taken for granted that we have almost overlooked the fact that it signals a co-constitution of humans and animals, and humans and grain. Multiple ethnographies of cattle-breeders, herders, and farmers have been written that implicitly testify to this fact, however, while also showing how developments of another order affect sociality deeply. A case in point is provided by Piers Vitebsky, whose book on *The Reindeer People* (2006) not only addresses the mystery of domestication, but also shows how the Eveny of Siberia have negotiated both "the power of nature and the cruelty of history" (2006: viii) clinging to their herds and to the surface of the earth.

In the same harsh region of northeastern Siberia we find the Yukaghirs, a hunting people who—in the words of their ethnographer—hold that humans and animals can turn into each other and take on each other's bodies; when hunting, the hunter mimes the animal and assumes the viewpoint of his prey, allowing him to seduce and kill the animal—to put it briefly (Willerslev 2004). At the same time, the hunter projects his own humanity onto the animal, thus seeing it as a person; the details are fascinating, but it suffices to note here that the Yukaghirs are (were) engaged in a deliberate act of species-crossing. Now they are confronted with radical ecological changes, and due to the thawing of the permafrost and the emergence of new wetlands, the reindeer is subsiding as their main prey, and being replaced by the elk; the Yukaghirs still trick the prey by imitating the reindeer, however (Willerslev 2009). Apparently the elk has not noticed that its seducer is of another species (according to Willerslev, it is extremely short-sighted!), yet the general point holds—that for the hunter to succeed, he must achieve an animal perspective upon his prey.

We are currently witnessing the emergence of multispecies ethnography (Kirksey & Helmreich 2010). This is not only based upon experiences such as Vitebsky's and Willerslev's, but on a more fundamental recognition that human life is deeply entangled with other life forms, be it in the shape of microbial cultures in our food (Paxson 2008), or in the form of dogs that become significant others (Haraway 2003, 2008). We have seen how nature itself is enacted through a domestication of salmon (Lien & Law 2011), and we know that socialities are created by mushrooms (Tsing 2010). In short, within the bounds of social life, humans have endless, actual or potential, companion species—which posits an edgy question of co-constitution forcing anthropology to rethink the fluid boundaries of its object. Even geography has become hybrid (Whatmore 2002), as has oceanography where new anthropological studies of 'microbial seas' (Helmreich 2009) have made oceanographers and biologists discover new oceanic realities and thus refashion the future of scientific knowledge.

FEROCIOUS FACTS: THE QUESTION OF INTEGRATION

A last question needs to be addressed here, namely how the wild and unexpected may be integrated into a new kind of anthropology, wary of defining a 'natural disaster' simply by its social implications, for instance. How may one balance the knowledge of violent natural forces beyond control without singling them out as individual causes of social disruption or change? One answer has been to see them as non-human agents working along with human agents in shaping and reshaping the social (Latour 2005). While this is certainly apt in many ways, we still have to continuously develop a tool-kit for a true theoretical integration of the ferocious into the ordinary,

without resorting to notions of normalcy being basically in equilibrium, which disaster temporarily disrupts. What happens to our vocabulary when violent (natural) forces hit particular places after which they never really become the same again?

One powerful example is the Asian tsunami of December 2004, which destroyed vast stretches of coastland around the Indian Ocean and killed some 250,000 people. This was by all accounts a major natural catastrophe, which still marks the lives of many people. As Frida Hastrup has shown in a recent monograph dealing with the implications of the tsunami in a Tamil fishing village on the Indian coast (2011), recovery does not mean to forget or to return to the past but to gradually integrate the event of destruction in the everyday. The survivors "have been engaged in a process of recovery that consisted in gradually folding the tsunami into the ordinary," as she aptly phrases it (2011: 129). She further sums up that what she has shown in her book

> is that the recovery process in post-tsunami Tharangambadi featured as and required a fundamental flexibility with regard to how both the disaster and the village have been conceived. I have suggested that the villagers have engaged in a complex work of conceptualisation, in which the disaster and the ordinary continuously emerge as figures complicit in each other to jointly make up an everyday life . . . This is to say that out of the encounter between the figures of wave and village, an everyday life comprising both has emerged as yet another figure. This process of figuring, as I see it, is theory-making, and as such it is an activity that both the villagers and I have been engaged in. (F. Hastrup 2011: 129)

This process of co-figuring the wave and the village is precisely what we must strive to understand in new anthropologies of the infiltration of non-human and human agencies in the make-up of the world.

In a slightly less dramatic but equally portentous work, Julie Cruikshank has studied the encounter between different stories about glaciers in Northwestern America (2005). Glaciers are far from inanimate, and increasingly less so, as global warming accelerates; local narratives abound, some of which are reminiscent of the Little Ice Age back in the 16th century and continuing through the 18th. Cruikshank demonstrates how the glaciers play an active role in negotiating the modern terrain of science, history, and politics in the mountains where the different kinds of knowledge add each their own bit to the larger puzzle. This is significant, because in her comprehensive analysis of various views upon the glaciers, she succeeds in making an anthropological point that resonates deeply with the ambition of the present volume. She adds substance to the critique of seeing indigenous knowledge as a closed epistemological *system*, which inevitably will start to fragment when new issues of authorizing knowledge arise. The distinction of traditional environmental knowledge (TEK) presupposes an

equally distinct, and equally untenable presumption of a unified 'modern' kind of knowledge. Cruikshank suggests that "we need to enlarge spaces for local knowledge by taking into account those generative sources of meaning that make no sharp separation between changing biophysical worlds and changing social worlds" (Cruikshank 2005: 257). Here she is in accord with Frida Hastrup's view, quoted above, in suggesting that the lived worlds are constantly moulded and remoulded in dialogue with the surroundings, including environmental events, peoples, and stories from 'elsewhere'—wherever that may be.

> In the Gulf of Alaska, where European and Aboriginal forms of internationalism have been enmeshed for two centuries, physical places and people have always been entangled. In the future, they are likely to be more entangled than ever before. Local knowledge in northern narratives is about unique entanglements of culture and nature, humans and landscapes, objects and their makers. (Cruikshank 2005: 259)

The two examples from India and America presented above point to the general question of how to integrate the sometimes violent agency of the 'natural' world into the 'social' without levelling everything and denying the forces residing 'outdoor' their own mighty presence. Because there can be no systemic inclusion, nor indeed, exclusion of such agency in ever-emerging worlds, anthropology does face a challenge of integrating the wild and unexpected into their analyses—in the same manner as all people have to incorporate ferocious and non-repeatable facts into their daily lives.

In some cases, the non-repeatable may become a recurrent feature; a case in point is provided by Corsican bush-fires that happen every summer, but in different places, giving rise to endless speculations about social relations. It is closely monitored whose fields and cattle are the more threatened, and whether the fire is owed to humans, be they careless French tourists or feuding arsonists, or something else (Candea 2008). The fires become vehicles of plotting sociality, and because they "cover their own tracks, by destroying the clues" their course never determines the results (ibid.: 207). Increasingly, scientific attempts at better understanding the fires on their own scale enter into the equation, but the fires still distribute persons and concerns in a very direct way. "The fire brings home in a frighteningly immediate way the extent to which persons are themselves distributed across and invested in a range of human and non-human entities—the fire makes it obvious that they 'belong' to such entities as much as the reverse" (ibid.: 209). The flames not only destroy land (or reopen it for grazing), they also induce affects, corresponding to the different scales by which different persons or groups evaluate their own losses and potential enmities. An important lesson of this study is that people explicitly deploy themselves on different scales according to their relation to the fire (ibid.: 211). This again is a significant point, when integration of the unique into the continual is

discussed. There is no, and cannot be any, fixed answer to that, once we have left behind the notion of society as a closed 'social system'. We are bound to go along with whichever scale presents itself as significant with respect to the current concern (K. Hastrup 2013a).

Introducing scaling as a point for consideration on the edge of anthropology takes me to the final example of (allegedly) nature-induced disruptions of social life, this time in the heart of so-called modernity, as susceptible to ferocious forces as any other world—irrespective of its own self-constitutive views. When in the spring of 2010, the volcano hiding beneath the Icelandic glacier Eyjafjallajökull erupted, modern travellers experienced a degree of strandedness that caused what seems a disproportionate amount of havoc (Birtchnell & Büscher 2011). It provided a surprisingly clear window to the demand for mobility in the present age, where everybody seems always to be going elsewhere (while 'everybody' probably is still a minority). Flotillas of ships were allegedly sent to rescue UK citizens stranded in Europe, but they never arrived, while stranded air passengers toured between terminals and airports; such was the craze that few simply sat down and considered staying where they were, even if those who did actually fared much better (ibid.). The analysis shows how the eruption and the ash cloud led to expanding disruptions. The authors have it thus:

> Volcanic dust is invisible but cumulatively disruptive to aircraft engines and an unknown in terms of expert knowledge and risk management. A handful of only decades-old systems and infrastructures, and equally embryonic technical standards around ash safety began to unravel leading to cascading disruptions. The complex systems that are vital for economic exchange, work, and leisure were revealed to be insufficiently supported by complex systems of knowledge and mitigation of science, global insurance mechanisms, and institutional risk assessments . . . All these systems collapsed due to an unforeseen natural calamity that led to a loss of control and breakdown. (Birtchnell & Büscher 2011: 4)

In this case the natural disruption did not directly afflict people's health, let alone cause any casualties, but such was the unhingement for many of the stranded travellers, that the world outside of the terminals and stations could witness how far mobility has come to shape modern notions of freedom and worth. Modern cosmopolitans scale their world by their global mobility.

While in this section I have referred to natural forces, this is obviously not to relegate them to a space beyond society. On the contrary, as all the examples have shown, they infiltrate the social, actually and imaginatively. While some would claim a posthumanist position in order to let things speak (Henare et al. 2007; Holbraad 2011), I am not sure that we need to make that claim, certainly not when the things are such natural forces as dealt with here. Once we have acknowledged the entanglement of elements, forces, natures, things, organic and inorganic materials, people, places,

concepts, and imaginations, we need not take any particular position except the one that offers the best view to a particular matter of concern. It is from that position we may integrate ferocious facts into our theories about world-making.

THE PRESENT VOLUME: THE FLOW OF ARGUMENTS

Over the preceding pages, I have moved rather freely within a large historical and conceptual space, reminding us both of the brevity of scientific history and the immensity of the steps taken. We have also sensed, I hope, how much baggage we carry with us from our predecessors, who explored, measured, and classified the world in ways that became formative for centuries of thinking and acting within the world. Time has now come to return to the present and to the volume before us. While there is no way I can do justice to the rich ethnographies and dense arguments of the chapters below, it does seem appropriate to briefly present them in a flow that will allow both their individuality and their shared concerns to transpire.

In presenting the chapters, I have in mind Veronica Strang's (2006) analysis of the transformations of nature and its resources along the Brisbane River in Australia, where people use the water for a multiplicity of purposes, transforming it to different kinds of value, and where the river is therefore never 'the same'. We find ourselves thrown back to Heraclitus, who from the time around 500 BC reminds us that one cannot step into the same river twice, because it keeps changing. His larger vision was of a world where everything is in flux, from the stars to the grains of sand, and that therefore it is impossible to entertain a notion of universal laws. All depended upon time, place, and perspective applied. Following the flow of arguments in the chapters below, we realize that with each new bend of the river, and each new tributary, water is redefined and redefines the social—while remaining the same river. This also applies to the nature running through the chapters to follow.

In *Chapter 2*, Anna Tsing invites us into the world of mushroom sociality, insisting that humans are not the only social organisms. From this starting point we move to the satoyama forest in Japan, as a prime example of a more-than-human sociality with a long history in Japanese peasant life. Such forests are now being restored as learning pieces about the interface between human labour and natural resources, and they provide an apt site to begin exploring the human involvement in multispecies worlds. Anthropological work is a particular way of tracing the doings of others, and this requires following the practical arrangements and dynamic interactions of other species along with human fumbling. The chapter makes a strong case against the genetic understanding of sociality, and for the revitalization of critical description as an art that builds on the anthropological power of observation and dares take the more-than-human sociality seriously.

In *Chapter 3*, Frida Hastrup takes us to the Bay of Bengal and to some bio-conservation projects, designed to protect the nature along the coast, threatened from the sea in particular. Through their work in bio-conservation, people living and working along the coast are engaged in an implicit analytical practice, allowing some elements of the protected zone to stand out as worthy of protection, while other elements are allowed to fall back into an undistinguished and insignificant environment. The analysis shows how natures are manufactured and valued within the diverse projects, which somewhat paradoxically define the object of protection in the process of implementation as much as in preconceived categories and project plans. Thus, while nature is explicitly valued and designed for protection, nature never fills out the entire space along the coast. In general, the chapter demonstrates the paradox of simultaneous entanglement and separation of the two domains, and shows how the natural and the non-natural emerge in conversation with each other.

In *Chapter 4*, Maria Louise Bønnelykke Robertson and Cecilie Rubow place themselves on sandy beaches and in shallow lagoons in the Pacific, where they have worked in two separate island nations. Currently, international concern is about climate change and sinking islands; this concern is locally translated into practical issues of how to position oneself and how to craft a living space in relation to lagoons, fish traps, and other elements in those assemblages that make the islands liveable. The chapter focuses on the handling of everyday challenges related to the dynamic zone at the shore, where life has become more precarious due to a whole lot of interrelated features, out of which individuals, NGOs, educationalists, fisher-folk, and navigators will stick to each their own version of the socio-natural reality and scale the world in as many ways. The main point is that the movements of water, sand, and people continuously make, unmake, and remake the world of both islands and islanders.

In *Chapter 5*, Sarah Whatmore theoretically intensifies the discussion of co-existent versions of nature by taking us into the geographical imaginary and the inventiveness of knowledge controversies in which the dis-orderings of techno-nature, in the event of 'natural' hazards for instance, foster new thoughts in those affected by them and place new demands on research practices. The idea is to recharge the political potency of nature in more-than-human terms. The posthuman position gives access to an uncharted space for human reflection, neither outside nor inside of the old dichotomies, but in the space between them. The argument derives empirical substance from an experiment with flooding in the UK, where scientists and people affected by flooding collaborated, and where the different versions of flooding could converge in practice.

In *Chapter 6*, Morten Axel Pedersen gives the question of nature making a new twist, pondering the possibility of some nature being beyond human reach, as it were. We are back in the 'great outdoors', the wilderness where human powers cannot interfere with nature. The argument is based upon

fieldwork among Mongolian hunters and nomads, renowned for their shamanism and other practices that enable diverse entities, animate or inanimate, to change form. This apparently points towards a seamless cosmos of beings and things that cannot be distinguished as either natural or human, but which is always potentially both. In actual practice, it is argued, some entities and some places may always fall out of the animistic landscape and become 'islands of nature', i.e. isolated objects or places that are no longer relational. This goes to suggest that occasionally, bits of 'culture' accidentally become unmade and fall out into a nature that is a residual or, indeed, a second culture.

In *Chapter 7*, Andre Gingrich brings this theme into the history of ideas by inviting us to take a deep historical view of the position of humans in relation to nature, and suggesting that it is not simply attributable to Enlightenment science, but has deep resonances in the great monotheistic religions. These are founded upon an idea of humans as the crown of creation, above and beyond the rest of creation, seen as subordinate and at the service of humans. While stressing that there is no reason to moralize against binary oppositions, Gingrich suggests that the establishment of a 'Third Space' may facilitate new understanding, and enable the development of a new language for dealing with nature—falling in or out of culture—in productive ways, which are already incipient in new anthropological theories, but not yet sufficiently aligned to allow for a joint leap forward.

In *Chapter 8*, Steve Rayner and Clare Heyward suggest that it is unlikely that the concept of nature will ever be discarded, because of its long pedigree and its political usefulness. The political use is demonstrated in three separate domains; the role of weather records as constitutive of the modern nation state; the myths of nature in environmental politics; and the idea of planet Earth as in dire need of global action. The conclusion is that while we may give up the concept on scientific grounds, it may still not be possible to discard it as a political tool for regulating human behaviour.

In *Chapter 9*, Signe Howell shows how nature is rhetorically constructed in a particular political and organizational practice, designed precisely to regulate behaviour. Through her analysis of the global REDD+ initiative, designed to fight deforestation and reduce CO_2 emission, she shows it to rest on unclear notions of both forests and the people living in them. By showing the practical and discursive problems on the fault line between nature's movements and people's responses, we are led to see how the REDD+ initiative is based on an untenable opposition between nature and society. It will of course remain unstable in practice, but the design of the REDD+ projects cannot but continue to implicitly uphold it, even as they speak about people of the forest.

In *Chapter 10*, Gisli Palsson explores another boundary between nature and culture, which reflects back on the preceding chapters. By addressing the trajectory of the academic debate on the border between the animal and the human kingdoms, the chapter shows how the central argument has

always related to the language faculty. To highlight this, we are offered a close view of the singular life of one chimpanzee, and not least his relationship with a human family and their joint making of a laboratory, where the 'almost-human' could be studied and possibly report back to the Academy, as in a short story by Kafka, vividly presented in the chapter. The protagonist in the present narrative is Nim Chimpsky, an American zoo-born chimpanzee, who was destined to help academics to better understand how and to what extent he made and used signs, and who was therefore adopted into a human family on Manhattan. While the claim to a uniquely human language faculty has been tempered, and the autonomy of human language questioned, what remains is still a slippery borderland between species—and a somewhat disturbing view of cross-species collaboration in science.

In *Chapter 11*, Ayo Wahlberg takes us to another destabilized border between what is natural and what is artificial in social life, by addressing the issue of human fertility and reproduction. It gives a particular edge to the discussion that it is based on fieldwork in fertility treatment clinics in China where government has worked hard at reducing the birth rate. One awkward consequence of the one-child policy is that the pressure to actually have the one permissible child is all the greater for it, all while (biological) fertility is decreasing in China as it is in Europe. The discussion is framed by a pertinent parallel between the anthropogenic modification of the earth and the anthropogenic changes to the body, affecting both of these 'systems' beyond their own powers of reproduction, and therefore needing yet another helping hand from humans. In the Anthropocene, humans are doubly implicated in micro-biological as well as macro-ecological processes, and their agency are increasingly perceived as both destructive and regenerative.

In *Chapter 12*, Karsten Pærregaard analyses the (anthropogenic) meltdown of the glaciers in Peru, and discusses how the vision of the political body of the state changes along with the increasingly manifest water problems. The chapter explores how the populations of the Andean highlands adapt to the changes by reconfiguring the cosmological order, and investing more trust in the state. It is as if their lives are becoming circumscribed to such a degree that they must appeal to formalized structures rather than rely on received wisdom. The central tenet of the chapter is a fine-grained analysis of the entanglement of water resources and politics, testifying to the ever more perforated boundary between nature and society on the one hand and the changing role of the state in the wake of glacier meltdown on the other.

In *Chapter 13*, Kirsten Hastrup describes another world constituted with ice, namely the Arctic. The chapter focuses on the co-constitution of knowledge, places, and peoples since 19th century exploration and mapping of the Arctic region, over the early 20th century ethnographic descriptions and the conceptual fixation of the Eskimo culture, to later Cold War infringements upon the region. All of these moves conjoin in the present responses to climate change and other challenges in North West Greenland, elicited

in fieldwork. The major point of the chapter is to show how both peoples and places emerge out of motley interests and specific concerns, local and scientific, as well as ancient imaginaries. In the process, a strong case is made for the co-configuring of social and natural worlds that are entangled by default rather than design.

In *Chapter 14*, Tim Ingold addresses the comprehensive question of how one might actually design environments for life, acknowledging both scientific expertise and the wisdom of inhabitants. Design is about shaping the future of the world we live in, and it is part and parcel of the process of dwelling. Dwelling means to be enmeshed with fellow inhabitants in lifeworlds, so vividly described and analysed in the rich ethnographies also of the preceding chapters. The intransitive nature of 'to dwell' denotes a process that has no beginning and no ending, but carries on through. This is what living means, and what designs for life should support, all while acknowledging the multiplicity of inhabitants and the infinitude of their entangled futures, hopes, and dreams.

With the last chapter we get a sense of having made a full circle, remembering how in the first chapter, Tsing took the reader to the satoyama forest in Japan, which is currently being redesigned to install a renewed sense of multispecies living. If I were to close the flow of the arguments with some general statement it would be to emphasize not only the well-balanced steps that the authors take on the edge of anthropology as a theoretical enterprise, but also the power of ethnographic fieldwork in moving anthropological thinking forward and enabling it to address emerging realities. As suggested by Andrew Mathews about Mexican forestry practices (2011: 235), "we need breadth in time and space to be able to notice the kinds of hesitations, reversals, and institutional reconfigurations" that are part of any negotiation within the space of natural configuration. This is certainly not to suggest that ethnography consists in unmediated facts from the world out there, but to celebrate the ethnographic attention to detail in seeking to understand how worlds emerge in a continuous process of confluence and dissociation, of movements of people and things, and of imaginaries both fixing and transcending the horizon. Through such understanding, new knowledge about human life on the edge between the given and the potential carries anthropology forward.

With the extensive documentation of the co-constitution of social and natural agents, be they hunters or designers, water or trees, ice or fish, sand or sperm, chimpanzees or engineers, turtles or mushrooms, the book shows how worlds are made and remain dynamic, because people are forever immersed in lifeworlds that are larger than human. As Ingold has it: "Whether our concern is to inhabit the world or to study it—and at root these are the same, since all inhabitants are students and all students inhabitants—our task is not to take stock of its contents but to *follow what is going on*, tracing the multiple ways of becoming, wherever they lead. To take these paths is to bring anthropology back to life" (Ingold 2011: 14).

In that sense anthropology is a kind of experimentation within a world that is neither social nor natural, but implicated in multiple connectivities that we are just now beginning to understand, and where our edgework takes off.

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2 More-than-Human Sociality
A Call for Critical Description

Anna Tsing

How could it have ever occurred to anyone that living things other than humans are not social? The more one thinks about it, the more ridiculous an opposition between human sociality and non-human—what? 'non-sociality'?—becomes. If social means 'made in entangling relations with significant others,' clearly living beings other than humans are fully social—with or without humans. Yet, as this volume discusses, an opposition between nature and society has been quite conventional in the modern humanities and sciences. The opposition defines what we call the social sciences, which almost never deal with the intrinsic sociality of non-humans, that is, those social relations that do not come into being because of humans. I was trained in this tradition too. I am embarrassed to see that, in my earlier work, I sometimes defined social as 'having to do with human histories.' Now this seems quite strange. The concept of sociality does not distinguish between human and not human. 'More-than-human sociality' includes both.[1]

My own wake-up call occurred after an interview with a mycologist curating the fungi collection at the University of Copenhagen Botanical Gardens. I asked him about his dissertation research, and he explained that he worked on mushroom sociology. I was surprised. I had not known there was a field called mushroom sociology. Yet, of course! Whole fields of biological inquiry have been devoted to the social lives of non-human beings. For almost a century now, these fields have been underfunded and commonly dismissed as 'mere description'; perhaps that is why they had escaped not only my thinking, but the thinking of most social scientists. Recall, too, that this negative assessment as 'mere description' has also been applied to anthropology. We have something in common. Indeed, the moment we seekers of the 'social' notice descriptive biology and natural history, something new is clear: We may have allies in studying sociality, and we might think together about how to study social relations and networks.

Perhaps some social science readers may think at this point, "Spare us such allies: socio-biologists, who reduce social life to reproductive strategy, along with evolutionary psychologists, who explain the worst features of the status quo as inevitable; these are not our theories of the social." These

are not the allies I have in mind. Those theories explain away social life, rather than getting curious about it. I'm thinking instead of those, on both sides of C.P. Snow's (2001) 'two cultures' (the humanities and the natural sciences), who are avid about arts of description. If we want to know something about social life, our first step is to immerse ourselves in its ways, to learn it. Across the divide between humans and other species, we have work to do together.

I'll call that work 'critical description': critical, because it asks urgent questions; and description, because it extends and disciplines curiosity about life. At the intersection of ethnography and natural history, we have a lot to learn about how humans and other species come into ways of life through webs of social relations. Now that we are beginning to imagine an anthropogenic Earth in which humans are everywhere, involved in shaping everything, we need to know what more-than-human socialities are being made, with or despite of clearly formulated human intentions. And now that we are beginning to imagine an environmentally engaged humanity in which other forms of life are everywhere, involved in shaping everything, we need to know what more-than-human socialities are being made, with or despite of clearly formulated human intentions. The task of this essay is to open the door to this kind of work, to extend an invitation to social scientists not afraid of learning about new and different kinds of sociality.

Opening a door is a specific kind of intellectual task, requiring imaginative leaps as much as data and argumentation. To lay out the ground in which we can even consider more-than-human sociality, I need to ask some alarmingly big questions. First, how did anyone ever come up with the idea that non-humans are *not* social? Second, how can anyone study the social worlds of other species if they can't talk to us? Third, how can we expect to appreciate more-than-human sociality if we can't get around the limitations of specifically human knowledge? Fourth, what use is any of this in knowing the world? These are the questions I will raise in what follows. It should be clear, however, that a small essay such as this one can only open such questions, not fully and properly answer them.

Before this, too, there is one small piece of groundwork I can't seem to avoid. What about things that are not alive? Aren't they social too? I cannot think of a good reason to argue that non-vital things are not social. After all, they are constituted in relations with others. They react; they are transformed. There is no reason not to extend social theory to rocks and rivers. Yet, there is also something specific about life. Eduardo Kohn (n.d.) has a useful way of guiding us here: He argues that living things include futures in what they do in the present. The yet-to-come is part of the way living things react; we offer our living designs in regard to potential futures. This is not the case with rocks or other non-vital things. I think this makes a difference, not to the definition of sociality, but to the kinds of critical description upon which analysts might embark. Critical description of living things maps those designs, intentional or unintentional, that gesture

toward the future, making worlds for the yet-to-come as well as for the present. This essay focuses on the sociality of living things.

My ability to write about these issues depends on good company. I am inspired by Donna Haraway's (2007) commitment to relearning humans as one "companion species" among others. Bruno Latour's (2005) actor-network theory opened the door to theories of the social in which non-humans play a central role. Tim Ingold's (2011) insistence that we attend to life in motion reworks the possibilities of a more-than-human anthropology. Eduardo Kohn's (n.d.) assertion that forests 'think,' that is, do representational work, helps immensely. These are just a few of the theorists who push me forward. While the distinctiveness of my approach will be clear in what follows, it is less important than the contributions that these authors and more, taken together, are making to what I am calling critical description. Many social and natural scientists are already doing critical description; my job here is to appreciate our unfolding work from a new angle.

HOW COULD ANYONE EVER IMAGINE LIVING THINGS WERE NOT SOCIAL?

The moment one considers the obviousness of more-than-human sociality, the question of how we could have missed it jumps out. Of course, this is much too big a question to consider properly here, and perhaps the most useful contribution of raising it is to bring many answers to mind in every reader. There are many currents of history that congealed in a social science oblivious to non-humans. Still, there seems to me one small current that is usefully addressed to help us reopen this history. This current is the genealogy of 'freedom' as an attribute that separates humans from all other living things. If humans are free, while other species are mechanical toys, then perhaps human sociality is entirely unique. But do other species really lack freedom?

In the good-and-evil religions that grew up in the ancient Middle East, from Zoroastrianism to Islam, and of course including Christianity, God asks humans to choose the morally proper path: This is freedom. Humans are alone among God's creatures in being asked to choose between good and evil. The Christian form of thinking about freedom as moral choice was inherited by the European Enlightenment, which transformed freedom into a secular exercise. Still, at least at first, secular freedom was still a moral choice. (Only later in the hands of utilitarians did it become merely the ability to pick among options, as the consumer chooses purchases.) Moral freedom was freedom of the will; it was not embodied in action, but rather a kind of mental determination. For Immanuel Kant, indeed, moral freedom was contrasted with the sensual dynamics of nature, which were mere technical achievements. Freedom was the ability to transcend nature's call through attention to what ought to be done.[2]

Anthropologist Talal Asad (1993) usefully contextualizes Kant's notions of freedom within local genres of political discussion as well as the policies of the repressive Prussian state in which Kant lived. Following Foucault, Asad argues that, because subjects of the state were allowed little political room for manoeuvre, all they could do was think. In contrast, Asad points out, Muslim philosophers have had quite different social forms and fora; their philosophies are often philosophies of action, not will alone. Yet, in all its limitations, Kant's philosophy offered a charismatic view of the role and rule of humans; humans are distinguished from the rest of nature by a morally based freedom of action. Human sociality, it would follow, is based on moral reason, while other creatures blindly obey the demands of nature. No wonder their social worlds seemed insignificant.

Step outside for a moment to the world mycologist Alan Rayner (1997) conjures in titling his book about life's cross-species challenges *Degrees of Freedom: Living in Dynamic Boundaries*. Thinking through fungi, Rayner argues that all living things have freedom to manoeuvre within the worlds each of us helps to make. For each species, freedom depends on the bodily form we have inherited; through it, we navigate the world. In this, humans and fungi are rather similar: We both want to learn more about the worlds we inhabit, for example, even as we also change those worlds. Yet fungi have freedom to do lots of things we humans can never imagine, for example, growing into new shapes the better to explore our environments. Like comic book heroes, they transform themselves in action. We think we are so special. But, just as with others, our freedom is both limited and facilitated by what our bodies can do.

The idea that freedom is essentially an act of will gets in the way of learning about other forms of freedom. Freedom becomes intentionality and planning. Yet human actions are only rarely executed from a blueprint. An academic talk read from a script is an example of this, and its odd and formal singularity as a kind of human action makes the point. Most of the time, we do the best we can with the circumstances we find, just as other creatures do. Planning is only one element in our repertoire, and it hardly defines our freedom to act. The first step in appreciating more-than-human sociality is to embrace a wider sense of what freedom to act might mean—for humans and non-humans. This requires recognition that the morality-and-planning definitions of freedom are products of an exotic and limited cultural tradition, rather than good descriptions of how we live in the world. We need to take freedom back from the Kantians; we need to rethink its range and potential.

Anthropologists are already thoughtful practitioners in this. We rarely imagine the social as encompassed by moral codes enacted through intention and planning. We are the discipline that pays special attention to learning about the social by 'being there', rather than just asking the opinions of a few powerful people. We learn other socialities by experiencing them, not through blueprints, but as ways of life. Those of us who have tried fieldwork

in radically unfamiliar situations know how important it is to bumble our way into the sociality of others, at least until we find our feet. Clifford Geertz's (1973) cockfight story of running from the police and ending up, with other fugitives, having tea in someone's garden is exemplary: We learn social forms by being thrown into surprising situations. Fieldwork 'immersion' works because we are forced to enter other ways of life—that is, to become social—before we have any idea what we are learning.

But, of course, other living beings have ways of life too. Social relations are the forms through which ways of life are organized. They do not have to be organized through conscious direction to be social. Indeed, to stay as far as possible from the confusion between human consciousness and planning and the social, I will stay away from animal sociology in this chapter. Too often, animals are brought into discussions of social worlds by showing that their consciousness and communication overlaps with that of humans. By human standards, then, they are at least sort of social. This is the freedom we know through post-Christian common sense: The social emerges as we communicate our common and divergent *intentions*. Here we are still in Kant's world of moral freedom disconnected from action; it limits our curiosity.

Freedom is hardly the whole problem. Consider, for example, the problem of Being. In Heidegger's (2008) discussion of 'worlding', animals, unlike people, are "poor in world." But at least they have some ability to make worlds, according to Heidegger! In contrast, plants, to Heidegger, have no ability to make worlds at all—because they have nothing to compare to human consciousness. To work against the limits organized by this presumption, in the rest of this chapter I avoid animals and go straight for the social lives of plants—and their common companions, fungi. Plants and fungi do not have Levinas' ethical faces, nor mouths to smile and speak; it is hard to confuse their communicative and representational practices with our own.[3] Yet their world-making activities and their freedom to act are also clear—if we allow freedom and world-making to be more than intention and planning. It is from this shared potential of freedom and world-making that we can proceed into more-than-human social lives.

HOW CAN WE STUDY SOCIAL WORLDS OF BEINGS THAT CAN'T TALK TO US?

Social scientists are used to talking to people as a way of learning. Since we can't speak directly to them, how do we know anything about the social lives of plants and fungi? Two approaches are common: attention to assemblages and attention to form. Assemblages are just those we find assembled: the plants that grow around each other on a particular landscape, for example. My inclusion of fungi with plants comes from a common assemblage arrangement: Most plants get their non-carbohydrate nutrients through the

help of symbiotic fungi. Some fungi live inside plants; others twist around plant roots. Fungi feed from their plant hosts as they provide them with nutritional supplements. Many plants gather several species of fungi, and most fungi link up with several species of plants, often at the same time, forming a web across the forest. Still, these arrangements are not open to all comers. Some plants and fungi prefer each other. For humans to find out about such preferences is hard work, but not impossible. For example, one method of assessment has to do with forest succession. Some fungi prefer plant pioneers, the first to fill open spaces. Others prefer to live among the shade-tolerant species that slowly come in to replace the pioneers. Furthermore, the fungi participate in making these forest worlds: Some fungi facilitate the spread of forests, making it possible for trees to grow in what otherwise would be daunting places for plants; other fungi facilitate the succession of one kind of forest into another. The mushroom sociologist I met in Copenhagen wrote his dissertation on these kinds of problems.

A second approach is observation of bodily form. Humans don't always think about bodily form as an expression of sociality because, like many animals, we have determinate body structures. We develop our basic form between conception and adolescence; afterwards, we can lose a limb or gain a layer of fat, but we don't develop a different interface with the world. Our social lives have to do with how we move around and meet others. Many plants and fungi, in contrast, are indeterminate in their bodily form. They keep growing and changing throughout their lives. Even if they can't pick up and move to another place, they can grow into new environments and social fields. Their form shows their biography; it is a history of social relations through which they have been shaped. Alan Rayner (1997), thinking from fungi, and Francis Hallé (2002), thinking from plants, are superb spokespeople for this perspective. Thus, for example, a tree with thick lower branches probably grew up without too many neighbours, even if you find it now surrounded by other trees. If it had grown up in the shade of others, those thick lower branches would not have developed. A tree with multiple trunks may have a fire or an ax in its biography. A gentle concave curve near its base is a sign of coppicing: That stem grew up from a stump.[4]

Fungi grown on artificial media offer a privileged glimpse of social histories inscribed in form. (The artificial medium is important only because it allows we limited humans to see the fungus, which otherwise might be in wood or in the ground.) The fungus explores the medium, leaving traces of what it finds in its bodily form. Fungal growth solves complex mazes to find patches of food. It retreats in the presence of hostile competitors. Most surprisingly, perhaps, one fungus sometimes joins a similar-enough other as an entangled mosaic. In one lovely experiment, white and brown varieties of *Pholiota nameko* became entangled and produced white-and-brown spotted mushrooms—not as offspring from a mating, but as bodily developments from the mingled pair (Babasaki et al. 2003). Form can be a materialization of social relations.

Despite these exotic details, both assemblage and form are completely familiar tools for anthropologists. Whenever we study a social gathering, a community, or an institution, we pay attention to assemblages: Who is included? What kinds of status relations do they have to each other? Every time we look at material culture, performance, or even the everyday working out of social life, we pay attention to form. Indeed, some of our sites for looking at social form are human bodies—as in enactments of gender, religion, ethnicity, or in fashion or tattooing. We know how to read social relations through form. This is common ground. There is no reason that extending our analyses to these other socialities should invoke the fear, retreat, and contempt or envy that sometimes arises when humanists confront the natural sciences. Wouldn't it enrich our studies to include more-than-human socialities? We could see human histories within a multispecies field of histories.

There are some issues, indeed, for which our exclusive focus on human sociality really hurts us. I think particularly of questions of environmental change. If we want to know something about environmental change, we need to know about the social worlds other species help to build.

Furthermore, this is where a nature/society dichotomy can cause the most trouble: We think we already know how to study nature, as anthropologists. We study it in relation to human goals and needs. Anthropologists study things as gifts, as commodities, as signs, and as tools. But all of these are human projects for being with things. None allow things to have their own socialities. In contrast, in the approach I am suggesting, humans would have to join more-than-human socialities. We might not always be in charge. We might get to know other-than-human worlds in which we participate, but in which we don't make the rules.

The social lives of plants and fungi may or may not include humans. Now that humans have established themselves across the planet, it is hard to find a place where humans are not relevant. However, it is not a prerequisite of plant and fungal sociology that humans be involved. Their social relations do not need to be authorized by humans to count. Human actions may be an indirect rather than a direct stimulus to the social relations of plants and fungi. Sometimes, humans are not key players at all.

Writing about bacteria, sociologist Myra Hird (2012: 69) speaks of radical asymmetry: "[W]hile bacteria are largely indifferent to our thriving," she writes, "we are utterly dependent upon the teeming assemblages of dynamic microbes that make up and maintain both our corporeality and our biosphere" (see also Hird 2009). Hird argues that there is not much humans can do, other than physically obliterate the planet, that will make much of a difference to bacteria. Plants and fungi have been more sensitive to human disturbances. I need human histories to tell of plant and fungal socialities. Still, as with bacteria, I need to keep in mind their relative autonomy from human designs. Plant and fungal exercises of freedom do not depend on their interactions with humans.

BUT AREN'T WE LIMITED BY OUR HUMAN KNOWLEDGE?

We only know more-than-human socialities through human knowledge practices, including practices of living. We identify other species' ways of life through working engagements, through thought projects, and through their inclusion in our technology-enhanced experimental designs. The practical arrangements through which we know them shape what other species *are* to us. We'll never have the chance to become plants. That is, indeed, a limitation.

But 'limitation' is not the only way to think about this situation. Our humanness is also a starting point, an opening for getting involved in multispecies worlds. Our explorations take us into new and varied social arrangements, human and otherwise. We are continually developing new ways to learn about others, extending our ways of living and knowing. We are participants as well as observers; we recreate interspecies sensibilities in what we do. We don't just identify non-humans as static others, we further learn them and ourselves *in action*, through common activities.

Our own human involvement in multispecies worlds is thus a place to begin. Our doings are a way to trace the doings of others. This requires following the practical arrangements and dynamic interactions of other species along with human fumbling. We might begin with arrangements humans set into motion, but then trust guides such as form and assemblage to tell us about social relations in which we are only indirect participants.

In this way, what I am proposing goes beyond how sociologists have addressed non-humans through questions of technology, on the one hand, and ethics, on the other. Technology refers to tools that help humans do the things we want to do. Technologies are human prostheses. Humans are always relevant players in the social networks of technology. While it is possible to follow the materials that go into a technology beyond their moment of assembly into a human tool, most analyses of technology—such as Bruno Latour's actor-network theory—are most interested in the interface between humans and things, as this makes technologies possible (e.g. Latour 1996). Similarly, analyses of ethics can focus on human relations with non-humans. The important moment is the interchange between person and other: for example, Derrida (2008) looking at his cat. In contrast, I am proposing methods that would move from technological and ethical object making to pursuing the social worlds of these objects in motion. To take one key example, we could explore multispecies landscapes—identifiable to us as ethics and technology, indeed, but more lively than that in their interspecies socialities. Here we would meet the challenges of critical description. Human plans would be important, but we would not just follow human plans; humans would be one of many historical agents. All the varied trajectories that have made an impact on the landscape would be relevant, human and otherwise. Together these would make up the landscape's polyrhythms, that is, its enactment of multiple conjoined histories.

HOW DOES THIS HELP US KNOW PARTICULAR LANDSCAPES?

So far, I have been laying the groundwork for bringing more-than-human sociality into our understandings of the social. To develop this approach, I need not only an example but also further specification of critical description. Let me turn to a particular multispecies landscape to see what kinds of social relations and histories might be relevant. My landscape is the satoyama forest of central Japan, the useful peasant forest.[5]

Satoyama can refer to the entirety of traditional peasant landscapes, including rice fields, vegetable gardens, irrigation channels, village paths, and tree plantations (Takeuchi et al. 2003). The heart of the satoyama concept, however, is the peasant woodland, and my discussion here focuses on that landscape component. Satoyama forests are not tree plantations; they are not planted but they are heavily used, and shaped in the using. Satoyama forests provide wood for firewood and charcoal making, and they are the source of non-timber forest products, such as mountain vegetables, chestnuts, bamboo shoots, mushrooms, forage, and green manure. Satoyama forests have become an object of research and advocacy in recent years because they have been in a sharp decline caused by conversion to other uses, on the one hand, and plant succession resulting from farmers' neglect, on the other. Since the 1970s, citizen groups and scientists have agitated for the restoration of satoyama forests. Satoyama forest thus refers both to an imagined social assemblage and to real forests. I follow my informants, scientists and citizen advocates, to see this object. It is a technology and an ethical matter. It is also a site of more-than-human socialities. Following my informants here allows me to let them lead the way between self-consciously human stakes and more-than-human world-making. Along the way, I'll use numbers and italics to signal postulates for the critical description of multispecies landscapes.

One: I begin with human investments because they frame the object. The satoyama forest, advocates explain, is a place of beauty and biodiversity. It is a key place for nurturing perceptions of the four seasons, they say, perceptions dear to their sense of national consciousness. In the satoyama forest, one can watch flowers opening in spring, chase dragonflies in summer, gather mushrooms among turning leaves in fall, and admire snow in winter (e.g. Kishi 2006). But passive admiration is not enough. Work is necessary to know the satoyama because work places people in the social world of other living things. For people to learn to appreciate the satoyama forest, they must make it produce for them, even if all it produces now is tourist and educational value along with specialty products such as tea-ceremony charcoal and gourmet mushrooms. The satoyama landscape must be a working landscape; otherwise it has nothing to teach.

I learned quite a few things working with advocates to restore satoyama forest. I learned how human disturbance—both planned and unplanned—has helped to shape forest architecture. Satoyama forests are open forests

dominated by deciduous oaks and red pines. They exist in that form because of peasant landscape disturbances: coppicing; burning; logging; shifting cultivation. Coppicing is the practice of periodically cutting down trees that grow again from stump sprouts. Deciduous oaks make the best wood for firewood and charcoal. Cutting them maintains their forest dominance by keeping them forever young and quick-growing. Coppiced oaks regrow before other seedlings can become established. Meanwhile, Japanese red pine is a pioneer species whose seedlings need light and bare mineral soil; it does not occur in central Japan's hilly forests without disturbances—human or otherwise—such as fires, erosion, and deforestation. Before the use of fossil fuels, Japanese peasants removed much of the organic matter on their forest floors for use as green manure. This helped create the bare mineral soils loved by pine seedlings. They also cut trees and burned to create meadows and to open forest for shifting cultivation (e.g., Suzuki 2002). All this encouraged red pines, the second key component of the satoyama. Deciduous oaks and red pines create an open forest with an admixture of other trees and a diverse ground layer and wildlife. This is the secret not only of the satoyama forest's biodiversity but also of the four seasons so admired by artists and ideologues.[6]

But also, two: It is dynamic relations among these species, not their individual enrollment as human tools, that create the forest's web of social relations. Light-loving species survive because of forest clearing for firewood and the coppicing of oaks—not because farmers purposely rear them. The distinctive plants and animals of the satoyama forest thrive in the disturbed open woodlands created by peasant practices. Red pine and its associates would disappear from these forests if peasant practices did not create open spaces; yet peasants were not planting these pines, whose seeds spread and germinate readily wherever humans expose bare mineral soils. One might call the relations that grow up together in the satoyama forest a kind of multispecies design, but an *unintended* design. This almost-oxymoron highlights the independent social trajectories of the living things that gather in the satoyama forest, making worlds for themselves and for each other.

The satoyama forest exudes multispecies livability particularly through contrast to the kinds of forests that have grown up to replace it. Again, this is the working experience of scientists and advocates. Looking at those other forests through the window of a car is perfectly acceptable. Inside those forests, however, it is dark, crowded, and foreboding. Dark forests of two kinds have replaced satoyama woodlands: plantation forests and forests of neglect. Each has a multispecies story worth telling. To even begin to tell these stories offers a reminder of the entangling of multiple scales and trajectories in the making of social landscapes.[7] *Thus, three: Many histories, human and otherwise, come together in sites of more-than-human sociality. One is not enough.* Let me raise a few, emphasizing their simultaneous multiple scales.

The two most valuable timber species in Japan are not represented in the satoyama forest. These are *sugi*, *Cryptomaria* or Japanese cedar, and *hinoki*, Japanese cypress. Both are aromatic and insect resistant; both have been in demand since ancient times for building temples and mansions. That is why they are not represented in satoyama, although they occur in mixed forests. Sugi and hinoki were claimed by aristocrats even when they grew near peasant villages. By the late 19th century, state-sponsored plantations of these two trees had become common, and these plantations account for the view expressed in the English-language literature that Japan is a "green archipelago," good on forests (Totman 1989). It was only after World War II, however, that sugi and hinoki plantations took off across central Japan on both private and state land. Broadleaf and pine forests were cut down; sugi and hinoki plantations took their place.

After the devastation of World War II, wood plantations were a national priority, especially as foreign currency was saved for oil, so no wood could be imported. Wood prices were high, and there was lots of rural labour. Plantation planners thought this situation would continue, and they encouraged close planting on steep slopes, which would require hand thinning and harvesting. Close planting meant that the plantations were dark and monotonous; little else could grow in their deep shade, and forest animals without browse quickly became pests. Then oil became cheap, and the government gave in to pressure from the construction industry to import cheap timber procured from Southeast Asia. The price of domestic wood plummeted. No one wanted sugi or hinoki except for a few specialized uses, such as ornamental posts in traditional Japanese rooms. Rural labour moved to the city. No one was left to thin the trees (Iwai 2002). It became too expensive to manage the new forests at all, and they were abandoned, crowded, dark, and increasingly full of pests and rots (Ishikawa 2009). Neither was there recreation pleasure there; besides, the mass production of plantation pollen had caused a wave of allergies that made urban people abandon trips to the countryside altogether. *Thus, four: "The best-laid schemes o' mice an' men/ Gang aft agley" (Burns 1786). Contingency is key to both human and non-human histories.* This is one half of the story of why satoyama started to look so good.

The other half is the story of species change in those forests that were not converted to wood plantations. The change started when the price of oil dropped. Farmers stopped using firewood and charcoal, turning instead to imported fossil fuels. They stopped gathering green manure, buying artificial fertilizers instead. They stopped coppicing and raking. They stopped disturbing the forest. Without these peasant disturbances, new species took over.

Central Japan sits at the meeting point of two suites of species: From the northeast Asian mainland come species such as deciduous oak and pine, while from the southwest come species such as evergreen oak and laurel. Peasant disturbance helped maintain the northern suite of species—not

just trees, but a whole assemblage, including characteristic ants and dragonflies. Without peasant disturbance, and with fires suppressed, southern species advanced. Evergreen oaks and laurels displaced deciduous trees (Tabata 2001). In place of the open, seasonally changing forest, they created a closed, dark canopy with few seasonal changes. The shrubs and herbs of the undergrowth died out in the shade. The birds and animals of the satoyama forest left. The new forests were dense with closely spaced evergreens; even more than the plantations, they did not permit human entry. Worse off yet were the pines. Without light openings, new pines could not get established. Even mature pines were under stress from the shade of the spreading evergreen oaks and laurels. Invasive species such as giant bamboo added to the problem. Under these conditions, a pine wilt disease carelessly imported from the United States at the beginning of the 20th century spread. Red pines died, and with them their associates (Suzuki 2004). *Five: Changes in the species mix have social consequences for both humans and non-humans. Species change is not just about metaphors.*

These are the contrasts that inspired research and advocacy for satoyama forest. But restoring satoyama forest turned out to be quite different than putting in a tree plantation. The goal of restoration was necessarily *indirect*—that is, encouraging an effect by changing other things that might allow other-than-human sociality to take over the work. Interspecies interactions have been the heart of both research and restoration. Two brief examples can illustrate.

Gray-faced buzzards, which mate in Siberia and northeast China, migrate to Japan in April to nest and raise chicks, staying until the end of October before flying south. As one researcher put it, "Why do the buzzards fly to Japan? The answer is not known, but maybe the secret is in the satoyamas" (Azuma 2003: 106). Male buzzards feed themselves and incubating females by perching on tall trees to survey the landscape for small amphibians, reptiles, and insects. By putting radio transmitters on male buzzards, the research team found that the birds are willing to wait only 14 minutes without finding any food before moving to a new surveying site. The wealth of frogs and insects of the satoyama forest and nearby rice fields makes satoyama an ideal site for raising buzzard young. *Six: Social worlds pulse with multiple rhythms.*

My second example is research and restoration for matsutake, the high-value gourmet mushroom that is the main subject of my current research (Matsutake Worlds Research Group 2009). Matsutake is an associate of pines in the satoyama forest. Like other ectomycorrhizal fungi, matsutake wrap around tree roots, obtaining their carbohydrates from the trees even as they assist the trees in gaining water and other nutrients. Matsutake help trees grow even as they require tree hosts to survive. As mentioned before, satoyama pines—the most important host trees for matsutake in Japan—are dying. As a result, the matsutake fungus is dying too. Matsutake

mushrooms were abundant in the first half of the 20th century in central Japan, but by the late 1970s, they had become rare.

Because people love matsutake, they are concerned: The pleasure and price of masutake make it a charismatic object for satoyama forest restoration. But no one knows how to make this mushroom grow through direct human action. Despite millions of yen invested in university and corporate science, no one has succeeded in producing a matsutake mushroom in a laboratory or a plantation. The best anyone can do is restore the pines of the satoyama forest and hope matsutake develop with them (Ito & Iwase 1997). This is a long-term proposition. As one retired man, who has been busy restoring satoyama forest, explained, he does not expect to see any matsutake in his lifetime in the forest he works to restore. He is working for the forest, and for the future, he said. It is up to more-than-human sociality to make the matsutake emerge.

He may never see the mushrooms, but for them he immerses himself in the lifeworld of the forest. Thinking through dialogue between human Self and non-human Other may not be enough to learn multispecies worlds-in-the-making. *Seven: Humble yet ubiquitous organisms, such as fungi, draw us into worlds of many interacting species. This is a useful vantage for knowing ourselves as participants in more-than-human sociality.*

REVITALIZING CRITICAL DESCRIPTION

Delving into the life of the satoyama forest helps us think about why anthropologists might want to know about more-than-human sociality in considering environmental change in relation to landscape transformation. But how should anthropologists take on this responsibility? We might make some observations ourselves about other-than-human social relations; after all, we are already quite good at arts of observation. We also need collaborations with researchers who have focused more particularly on some of the social relations about which we want to know. Although such collaborations have been neglected, there are lots of good reasons to get to know some phytosociologists, mycosociologists, and, of course, animal sociologists. One stimulus might be our common history of struggle for the social. Consider the following: Yet another reason most anthropologists have never heard of non-human sociologies is that they have long fallen out of favour in biology. The Copenhagen curator I mentioned in beginning this essay told me that he no longer works in mushroom sociology, because there is no funding or recognition for the field. You might think I want to lay the blame on the high prestige fields of biochemistry and genome studies, but my target is older—a field that begins at the turn of the last century. At that point, the excitement in biology turned to an emergent population genetics, the field that studies the successful expansion of populations. Population geneticists argued that mutations succeed when they outcompete others;

thus they expand. This innovation brought together Mendelian genetics and Darwinian evolutionary theory; the revolution this spawned is called the 'modern synthesis'. It became the centre of theory and innovation in the biological sciences.

One thing stands out to me about population genetics: It depends on a deeply impoverished understanding of sociality. The field's thinking depends on self-contained and non-reactive individuals. Within a species, individuals compete to establish future generations. Across species, they know only predators or prey. No other social relations are possible. This was a productive simplification, of course. The mathematical modelling of population dynamics depended upon it. However, it was hardly a platform for thinking about other-than-human social relations. It did its best to kill off professional natural history, and with it multispecies sociologies.

This kind of productive simplification is familiar to social scientists: We know it from the field of economics, established around the same time on the same principles. In neo-classical economics, individuals are self-contained maximizers with simple relations of competition with others. Social relations are reduced to costs and benefits. Here too the simplifications have been very powerful, establishing the hegemony of this science over all other sciences of the human. Anthropology grew up in the shadow of utilitarian individualism. Because of the latter's power, we have been fighting to enrich the domain of the social throughout the history of our discipline. This is true too of the brave souls in other-than-human sociologies. To formulate enriched understandings of social relations, they have had to work against the grain of the non-social simplifications of population genetics. In one sense they have had the advantage over humanists struggling within the social sciences; no one in biology has suggested creating a discipline in which species multiplicity is irrelevant. Natural historians live *with* the simplifications of population biology, rather than the situation in anthropology, where we must live *against* neo-classical economics. We might learn from their "both-and" skills in elaborating on how social relations make up our world. Perhaps they will benefit from our critical positions as well.

Such collaborations might make it possible to understand human sociality neither as conquest of other species nor as a parallel to other ways of being—but instead as an ingredient in social worlds in which both humans and non-humans live together. More-than-human sociality is our world as well as theirs.

NOTES

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2. My understanding of Kant's position on freedom has been much influenced by the interpretation of Pheng Cheah (2003).
3. For a passionate and poetic plea to extend Levinas' ethics to non-humans, particularly dogs, see Rose (2011).
4. I am indebted to Andrew Mathews for these examples, which describe trees he pointed out during a forest walk.
5. I am indebted to Shiho Satsuka for introducing me to the satoyama forest. I had the privilege of visiting quite a few satoyama restoration projects between 2005 and 2009; I was led by land owners, scientists, students, housewives, retired people, and other volunteers and advocates. I am grateful to many scholars of the satoyama who walked me through their research sites and findings, including Drs. Kishi, Kitagawa, Kuramoto, Natuhara, Takeuchi, Yamada, and Yoshimura. My contribution is only to put the results of their research about satoyama into the context of my argument about more-than-human sociality.
6. To hold on to social science readers, I have identified species in this essay only by common names. Some of the key species discussed here and below are as follows: deciduous oak: see particularly *konara*, *Quercus serrata*; red pine: *akamatsu*, *Pinus densiflora*; sugi: *Cryptomeria japonica*; hinoki: *Chamaecyparis obtusa*; pine-wilt nematode: *Bursaphelenchus xylophilus*; giant bamboo: *Phyllostachys edulis*; grey-faced buzzard: *Butastur indicus*; matsutake: *Tricholoma matsutake*.
7. See Tsing (2012) for a discussion of scale in landscape histories.

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3 Qualifying Coastal Nature

Bio-conservation Projects in South East India

Frida Hastrup

INTRODUCTION: QUALIFICATIONS OF NATURE

This chapter explores two bio-conservation projects currently unfolding in the coastal village of Tharangambadi in South East India. One is a state-sponsored wildlife and coastal protection scheme that aims, among other things, at protecting endangered animals living off the coast and at shielding particular areas against the sea; the other is undertaken by cultural heritage advocates who work to salvage and restore a historic part of the village and preserve fragile coastal landscapes.

By exploring these bio-conservation projects—including, importantly, the composite terrain made of their designs and concrete implementation—I engage with the complex ways in which people living and working along the coast of Tharangambadi analyze and manufacture nature. For all its oxymoronic feel, the notion of nature as manufactured in the course of ongoing project work captures the point of departure for this chapter, namely that in anthropological thinking nature can perhaps best be understood as an outcome of generative and analytical practices, without which it would not come to life in our field as an object of interest, neither for the anthropologist nor her interlocutors. In that sense, as I will show, nature emerges as a more than natural object in the course of its being defined and worked out.

What the bio-conservation projects that I focus on here partake in, then, can be described as localized processes of *qualifying nature*. The notion of qualification as I refer to it here points to the creative, evaluative, and analytical practices entailed in sorting out nature, that is, defining some elements of the coastal landscape as appropriate, reliable, and natural things in the world to be conserved and promoted as such, while singling out others as interferences in the proper nature to be combated as inappropriate and as threats both to and from the coastal world. From the composite domain of coastal nature, as I will show, elements are cut out from one another and generated as in or out of place.

My overall argument is that such processes of qualifying nature implied in the projects of bio-conservation in Tharangambadi are tentative acts of

nature making that take place in a paradoxical realm where controllable and incontrollable participants combine, where both planned and unforeseen elements come to life and play a role, and where comprehensive project designs collide with improvisation, confusion, and sudden necessity. In their employing all at once these ambiguous and contradictory features—and in the process sanctioning elements as either appropriate or inappropriate—the bio-conservation projects, I suggest, prove to be thoroughly experimental activities that play out in concrete encounters in the field, through which which a natural world is continuously created, drafted, analyzed, and enacted anew. As such, embedded in coastal encounters, the bio-conservation projects and the implied qualifications can be seen to work as theorizations of what is natural about coastal nature.

At stake, then, is not just a smooth and complete sequential transfer of project designs into reality, a plan working on an already given nature, as if this relation were merely a matter of implementation, the greater or lesser success of which can then be assessed. Rather, the projects are in themselves practical and analytical activities that produce and bracket nature and the natural in particular ways as the project work bumbles along (cf. Greenough & Tsing 2003). To put it differently, one might say that however well drafted a bio-conservation project may be, the objective does not determine or exhaust the object. Instead, the object of bio-conservation—a nature sanctioned and sorted through particular qualifications—seems to be contingently generated in a whole cluster of practices, only some of which are and can be anticipated and charted in advance. All of these practices, I suggest, combine into what the projects *are* and make up what the coastal nature they conserve or combat even *is*.

Understanding bio-conservation projects as contingent practices that qualify the coastal nature by creatively sorting its elements makes them both more and less than self-fulfilling. Through the practices the projects become sites of ongoing analytical activity where the participants, whether people, project posters, plants, or others, reflect and reflect on what the coastal world is, can be, or should be, probing the overarching question of what natural objects are. As such, the projects do not just speak to the creation of a particular coastal nature such as that surrounding Tharangambadi; as I will discuss, they also have a general bearing on the always creative making of anthropological objects, whether one is concerned with nature or other things (cf. F. Hastrup 2013).

To further explore the current processes of qualifying nature in and around Tharangambadi I turn, first, to a state-initiated wildlife conservation and coastal protection scheme to look closer at how this project work realizes an official state policy of preservation and how, in the course of the work, it both accommodates, excludes, and improvises on natural objects. Second, I focus on a heritage initiative targeting the fragile local landscape through conservation efforts, to highlight the ways in which the project posits Tharangambadi as a model heritage town to be preserved

as such and how the project work both laments and celebrates unruly elements of the coastal nature, the existence and proper handling of which both threaten and provide the village with its model-like nature. Finally, I reflect on the ways in which the qualifications in the project work give us an opportunity to think about anthropology's nature.

GUARDING THE COAST: PROTECTIVE MEASURES ON THE SHORE

When I call on him, Ramachandran, who is employed by the South Indian state of Tamil Nadu to implement and oversee wildlife conservation and coastal protection initiatives near Tharangambadi, willingly tells me about his work. According to his job description, comprising two more or less separate tasks, Ramachandran's work consists in searching the beach during the night in order to collect dug-in eggs from threatened sea turtles living in the Bay of Bengal neighbouring the village, count them, dig them back into the sand inside a fenced-off pit of beach protected from humans and other potential predators, and when they hatch transport the small turtles out to the sea in an attempt to help the endangered turtle population regenerate. He shows me the small notebooks that he usually keeps in his working shed near the fenced sand pit on the beach or in his own house in Tharangambadi. In the notebooks he meticulously records the number of collected turtle eggs on any given night, keeps the dates of their reburial in order to estimate the date of hatching, and keeps check of the quantity of turtles transported to the surf and set free in the ocean. If not for the wildlife protection scheme, Ramachandran explains, people or others will eat the turtles, and the species will be radically decimated or even extinct. This, Ramachandran offhandedly adds, would be dangerous to people, because the number of surviving turtles is directly linked to the number of tropical storms hitting the shore. The more turtles that grow into adulthood in the nearby waters, the fewer severe cyclones are bound to make landfall. This connection comes as a surprise both to me and to my local assistant, who asks Ramachandran to elaborate. He repeats by explaining that fewer turtles growing into adulthood in the waters of the Bay of Bengal coast will lead to more frequent cyclones striking villages along the shore, most of which are still in the process of recovering from the Asian tsunami that struck the region in December of 2004 (F. Hastrup 2011a). Intrigued, we go on to ask him how this can be; why is it that protecting turtles in the waters equals protecting people on the shore? In response, Ramachandran just shrugs and says that in fact he really does not know how this mechanism works and that he is not at all sure whether it is true. As he explains, he had just been informed of the connection between cyclones and turtles by the government official from the Forest Department, who had trained him when he was first employed in the wildlife protection scheme many years

before. Thinking aloud for a little while, indeed Ramachandran expresses doubt about the soundness of the theory, but still asserts that neither he nor, by implication, his government employer can tell for certain because nature will be nature.

Even if the validity of the connection between wildlife survival and human survival is at best opaque, Ramachandran carries out his work and seems to take some pride in servicing his community by fighting against uncontrollable cyclones by way of other nature in the shape of sea turtles. My point here is that it does not seem to be a problem that Ramachandran is not fully convinced of what exactly his work accomplishes or whether it responds to what he was originally commissioned to do. As Andrew Mathews has shown in his work on Mexican forestry, conservation might work not as much on the basis of a complete knowledge transfer from project maker to practitioner, as on the basis of a co-existence of knowledge and non-knowledge. As he states it: "The project of knowing forests succeeded not because all involved were persuaded, but because they were not fully persuaded" (Mathews 2011: 236). When seen as a process of qualifying nature by sanctioning its various elements and placing them in separate boxes, the bio-conservation work that Ramachandran undertakes amounts to a theory of what can be perceived as natural along the coast, even if one of the apparently original objectives –the prevention of cyclones—fades from the equation.

In Ramachandran's work, the issue of putting elements of nature in the right boxes turns out to be a literal exercise as well as an analytical qualification. In the course of my visits, he shows me various documents that form part of Ramachandran's official terms of reference for the wildlife protection project: A poster on the wall in his working shed displays all the endangered species that the programme targets; a small booklet lists the species with their Latin names and presents their respective habitats and the fines that transgressing the bans will effect. A yellow stack of paper forms which he has to fill in by ticking boxes and noting down counts is also brought out for my assistant and me to look at. In discussing these documents, Ramachandran comments that few of the species on the poster are actually found around here where we are, and that the boxes on the form are often not so relevant to his work, which is why he sometimes adds more boxes or other categories to the existing forms. Even though the documents that his employers have equipped him with form the official charts for Ramachandran's work, they are probably made, he and my assistant agree, for other places with other wildlife. As such they display a kind of total policy of wildlife protection, from among which the local implementers then pick and choose according to the actual locality and situation, testifying to the fact that wildlife is configured in a performative network rather than in a pristine exterior (cf. Whatmore 2002: 34). The fact that the official documents allegedly encompassing his assignment somehow miss out on his actual work does not appear to be a problem for Ramachandran;

it was perhaps never his concern to have his project transparently described in prior designs. For him to go on, he does not need the project plan to be co-extensive with his practices of implementation.

In addition to his work of protecting the sea turtles and possibly other species should they turn up near him in other ways than in the official documents, Ramachandran has a second responsibility. He is also appointed as the caretaker of a newly established state-run bio-shield plantation consisting of straight rows of casuarinas nearby the turtle sand pit, planted to shield the coastal populations from the sea and to prevent erosion of the coastline. Here his job is to monitor the plantation, shoo away nibbling stray goats, as well as people coming to collect firewood or otherwise misuse the plantation. As he explains, his work generally consists in maintaining a tidy plantation by keeping trespassers out, so that the plantation can work as best it can as a shield against the sea. In fulfilling this assignment it is up to Ramachandran to decide what kinds of uses the plantation can shoulder; accordingly, people are allowed to pick up twigs and branches from the ground, but not to cut them off of the trees; fishermen are allowed to seek out the shade of the trees during daytime, but not to stay overnight, just as, obviously, he can only keep out hungry goats from the plantation during the hours he is on duty. In Ramachandran's view the plantation work is necessarily performed on an ad hoc basis; no official job description can foresee the potential visitors, abusers, or beneficiaries of the plantation. In the most general terms, pointing out the link between this task and the wildlife protection work, Ramachandran sees himself as entrusted with the task of protecting the community by monitoring and preserving a piece of coastal nature as he encounters—and sanctions—its elements in the course of his work.

In both of his assignments, one might say that Ramachandran is officially employed by the state to help nature be nature by protecting it from other nature. Seen as a process of qualification, Ramachandran's project work sorts coastal nature into permissible elements, say, turtles in the sea, casuarinas on the beach, added boxes on paper forms accommodating local wildlife conditions on the one hand, and threatening elements comprising stray goats, predators, cyclones, and (some) firewood collectors among others on the other hand. All while relying on the charts, terms of reference, and documents that stipulate the policy of wildlife and coastal protection, he does not just adhere to the letter of the project plans—note only how he adds features to the written forms and doubts the causal link between cyclones and turtles conveyed to him by his government employer. Indeed, the experience of his work not being exhaustively described in advance in his terms of reference leaves open a gap, in which Ramachandran can qualify nature on an improvisational basis.

During more conversation with Ramachandran it turns out that he is not the only participant involved in the bio-conservation project work who is improvising. For the time being, it has been three months since he has

been paid any wages. Shaking his head and referring to unspecified corruption as the reason for his currently irregular salary, he does not really seem surprised or even angry, although he expresses some concern for other government employees less fortunate than himself who do not have any other sources of income to fall back on. Luckily, Ramachandran can make ends meet by salvaging and then selling random goods washed ashore that he comes across patrolling the beach. Storms and cyclones in the bay, he explains, cause these goods to fall overboard en route, and to compensate for his government's dawdling he is now making the most of the winds that blow his way. Driftwood and wreckage of all kinds appear on the beach, along with scattered fishing gear, all of which Ramachandran collects, repairs, and sells on. He is pleased with the small business he has made out of the driftwood, and sees it as all the more welcome now that his formal salary is on hold. Bamboo sticks, widely used for building scaffolds, palm leaf roofs, and in other construction work, fallen off freight ships in transit from Burma on the other side of the Bay of Bengal to the big ports such as those of Chennai and Kolkata further north are currently Ramachandran's most lucrative catch on his egg hunting and plantation guarding duty. In this light, he jokes, he hopes that his turtle rescuing does not succeed entirely in preventing cyclones—at least not until the government gets its act together and pays him what he is due.

Within the cluster of practices spurred more or less directly by the nature conservation work that officially provides Ramachandran with a livelihood, turtle eggs, nightly beach walks, boxes on printed forms, casuarinas, stormy weather, goats, state wildlife protection, Burmese bamboo, a curious anthropologist, among many other things, all play a part in qualifying the coastal nature of Ramachandran's project. The qualifications of nature that are enfolded in Ramachandran's work sanction it all at once as a diversity of species in natural need of protection, as a government responsibility, as a threat to other elements of nature, as export goods, as countable, as accidental and sellable wreckage, and as a field of anthropological inquiry to name a few. The point here is that these qualities of the elements that jointly make up the coastal world in Ramachandran's project work are generated in a series of encounters along the beach, the nature of which could not have been prescribed, whereby the project work becomes a site of an intense analysis, positing ad hoc what is natural and conservable—at least for a little while.

PRODUCTION OF NATURE: BIO-CONSERVATION AS PLANS AND IMPLEMENTATION

My point is that this way of making a project out of nature by way of a series of sorting qualifications that produce the object of bio-conservation requires analytical work and continued creation, in response to

unanticipated occurrences as well as to preservation project plans. Tim Ingold has suggested a notion of production that, for it to be true to life, sees it as an 'intransitive' endeavour, that is, a creative and logically endless activity undertaken without targeting an already given object as its end goal (Ingold 2011: 6). Production, in Ingold's terms, continuously creates its inherently mutable object in the productive process itself. The notion of intransitive production is interesting here, not least because it challenges a commonsense notion that bio-conservation is implicitly and by definition a conservative project that attempts at freezing a process midstream and preserving a given state of affairs; in such a view the project work would be an external layer added to an existing nature. Contrary to this commonsense idea, then, thinking about production intransitively will entail that the object, a particularly sanctioned coastal nature in the case at hand, is located and identifiable only within the actual activities that generate it along the way. The drafted plans that may have designed it in advance are extremely relevant, but only insofar as they give rise to enactments of objectives which they both prescribe and fall short of. This leaves room for seeing the project plans as part of the project practices, whereby the bio-conservation efforts, through a continued process of qualifying nature, accomplish both more and less than what they are designed to, as we saw in the case of Ramachandran's adjusting, doubting, and elaborating his formal assignments.

Invoking Ingold's concept of intransitive production here is not a call for analysts to do away with all prior project designs and write them off as mere 'theory' easily trumped by 'practice', as ideals corrected by experience. To the contrary, seeing these domains as organically connected—as Ramachandran does—and thus to not even operate with a distinction between theory and practice, I suggest, is one way of exploring the full potential of the notion of intransitive production of nature. Indeed, for Ramachandran his official employment, both his formal terms of reference and the fact that his salary is on hold, plays a huge role in the specific way that he qualifies nature along the coast. In light of this, the prescribed bio-conservation work is as significant as the improvisation that also becomes a part of Ramachandran's work life. In a sense, the transitive and intransitive productions of nature, to stay with Ingold's terms, come together in Ramachandran's ongoing project work so as to render them indistinguishable. Accordingly, I am not engaging in consultancy work here. That would require too much of a distinction between design or objective on the one hand, and reality or object on the other. I do not refer to local knowledge as evidence with which I can point out where project designs were perhaps naïve, unrealistic, or badly implemented, nor do I want to ignore a generative potential of project designs as ideas that set things in motion. The point here is to privilege neither domain—design nor implementation—from the outset, and I am in no way out to ridicule or deconstruct the projects I focus on. Conversely, a way of playing with intransitivity here is to try to pay

equal attention to the drafted project plans and underlying ideals and to the concrete bio-conservation activities, seeing these two spheres as equally practical, and importantly as both located squarely in the ethnographic material that I mobilize. The notion of qualification of nature is in fact suggested to capture just such complexity of nature making from within the project work as practiced in a composite of design and implementation.

A virtue of seeing nature production intransitively, then, could be that it enables us to propose that there is no (societal, academic, theoretical, or what have you) 'outside' from where to engage with a nature making programme—all of its feats take place in the wild, that is, in the nature which is sanctioned and thus becomes a particular object in the process of the project work (see also F. Hastrup 2011b). This is to say that the inherently uncontrollable and unfinished element of nature making that posits process over product, its intransitive character in Ingold's words, must be seen as present in both the designs for conservation and the concrete implementation of it—and, accordingly, in anthropological studies of these processes—even if perhaps in different ways.

Perhaps curiously, I venture that this conflation of theory and empirical matter, plan and implementation, outside and inside, is in fact the reason why we can engage anthropologically in processes of qualification of nature on the basis of the bio-conservation programmes that I focus on here. What makes them sites of continuous analytical activity is not, I think, that a distinct project design exists in advance, against the supposedly definite yardstick of which success and/or failure can then be measured consultant-style by the anthropologist or by project workers, but that plan and practice of bio-conservation both and to an equal extent reside in the shared ethnographic domain where they surface ad hoc and as particular experiences, as in my conversations with Ramachandran.

Here, the plans and practices, and indeed the perceived and practically manoeuvred distance between them, materialize exactly as articulations of the local analytical and creative effort that goes into qualifying nature along the coast by way of tentatively sorting its elements according to local conditions and necessities. To put it differently, the ideas of what might make a coastal nature and to what extent it may be conservable, threatening or other, reside in the ethnographic space in which what is even natural is continuously theorized and which is mobilized as an analytical field, constituted by preconceived designs as well as by ongoing performance. What emerges is a thoroughly performative nature (cf. Abram & Lien 2011).

This intransitive approach—that, notably, acknowledges both transitive and intransitive features of bio-conservation project work as ethnographically real—embeds any modelling of nature squarely within the nature modelled (cf. K. Hastrup 2013), and makes it worthwhile to ask what kinds of performances are at play here. The state-organized plantation and the wildlife protection scheme, which, as Ramachandran explains, are implemented to protect both turtles and people threatened by cyclones and

an encroaching sea, are meant to expand the state's care for its citizens, one might say. However, for the time being, the state cannot smoothly extend itself; corruption has entered the picture uninvited and become an unforeseen project participant. But even disregarding this irregularity, Ramachandran is already adapting the official policy to his particular area by addressing whatever is locally relevant from a kind of overall policy of wildlife and coastal management. Sorting branches from trees into permissible and non-permissible firewood, distinguishing between shade and night-time darkness, and adding extra boxes on printed forms among many other activities come to comprise the project work and to generate a coastal nature, whereby the policy of wildlife protection and plantation management is both implemented and corrected.

What is apparent here is that the plans for protecting wildlife and humans do not determine the nature that the projects produce. In his work Ramachandran accommodates what seems to him a questionable link made by government officials between cyclones and species, just as he practices the government policy by transforming it to respond to the encounters with wildlife that are relevant to him. Further, material leftovers washed ashore occasion a making of valuable nature on the basis of driftwood, the income from which enables him to not despair even though the state cannot extend itself to his bank account.

My overall point here is that in the process of implementing government bio-conservation policy, Ramachandran continuously rises to the opportunity of driftwood business in a comprehensive sense, incorporating the disorderly and accidental wreckage into the work, and along the way qualifying elements of nature as conservable, out of place, threatening, mysterious, or irrelevant among other things. The plans for conserving a coastal nature, whether conceived by government policy makers, Ramachandran, or, I would guess, the captains of freight ships loosing goods in the bay, are not co-extensive with the actual activities that make and indeed conserve nature. But what is important is that this gorge and the local analyses that identify it are exactly the reason why the plans appear as realizable combinations of design and adjustment, theory and practice.

WILD-GROWING PROJECTS: WASHED ASHORE IN THARANGAMBADI

What we are faced with, as I see it, is an empirical—and, following the remarks above, an analytical—paradox, namely that the bio-conservation practitioners that feature in this chapter actively work both with ideas about smooth implementation of plans *and* with the improvisational ability, unpredictability, and free initiative of the people, plants, and others that are thought to constitute or interfere with conservable nature. In this sense, it becomes part of the very bio-conservation projects' designs that

their participants, whether human or other, take nature into their own hands, so to speak, to explore and inhabit the dark uncharted terrain in the shade made by the drafted plans.

If, in other words, the local qualifications of nature outgrow any already conceived designs, this happens in the very process of enacting them and becomes clear only if we take the drafted plans and the underpinning ideas seriously as ethnographic phenomena located within encounters in the field where the projects unfold. In focusing on this paradoxical interplay between charts and contingency, I respond to a recent proposal from Anna Tsing (2012) to engage in what she refers to as 'non-scalability theory' in order to better understand the nature—whether good or bad, wonderful or harmful—of a living world. The notion of non-scalability is purposely defined as the negation of scalability, which, as Tsing explains, is originally a term from the business world, which describes a way of designing world building projects as if these consisted of uniform blocks of non-social elements that can remain ever separated, and the system and distribution of which can be extended without the discrete parts being qualitatively transformed in the process. As Tsing points out, this view of the world as consisting of such identical but separate pixels, the zooming in on or out from which alters neither their content nor their internal relation, but only their combined extension, is a feature of a particular expansionist design, according to which the world is believed to be under control and to comply with projects invented to manage and conquer it. However, for all the self-confidence, such fantasies of smooth and unlimited extension do not, as Tsing has it, accommodate the "historical contingency, unexpected conjuncture, and the ways contact across difference can produce new agendas" (Tsing 2012: 510). For these features to appear, Tsing suggests, we need non-scalability theory—to show us scalability projects in action.

For my present purpose of engaging with the local qualification of coastal nature through conservation project work this idea of extension as a design feature of a particular kind of project is crucial. The insight that "If the world is still diverse and dynamic, it is because scalability never fulfills its own promises" (ibid.: 510) seems, perhaps in a roundabout way, to correspond to the idea expressed above that success and failure, design and deviation, are somehow co-existing functions of each other, located within the same ethnographic-cum-analytical domain where encounters take place and where connections are forged and projects realized, rather than externally related to one another as idea and representation, plan and implementation. A brief look back to an early attempt at expanding Denmark to rule in other places on the globe by way of colonial trade in Tharangambadi gives us further opportunity to think about this.

Early on, the village of Tharangambadi was a site of attraction for expansionist dreams. Long before the nature makers featured in this chapter set to work on Tharangambadi, the village and its immediate upland allured Danish traders, eager to join the European race of

mercantile colonialism in South Asia and Southeast Asia then dominated by the Portuguese and the Dutch. Located some 250 kilometres south of the state capital Chennai, formerly Madras, on the Tamil coast, Tranquebar—the past colonial administrators' approximation of the local Tamil name Tharangambadi—served as a Danish trading colony from 1620–1845, after which it was sold to the British. Although a period in the late 18th century saw a brief and profitable blossoming of the trade, the main imported goods being products of the tropical nature such as pepper, cloves, cinnamon and other spices, as well as textiles such as silks and cottons, exchanged mainly for metals of different types from mines in Scandinavia, Tranquebar was not a very good business for the Danes (Feldbæk 1969; Olsen 1967). Not infrequently, the expansionist scheme literally shipwrecked en route, and at times dangerously large parts of the ruling Danish King's personal funds were invested in equipping ships on the expectation of plentiful returns that as often as not never materialized. In addition to strife with other European nations, storms, failed crops, droughts that threatened the harvests of spices, and other such vagaries of nature challenged the success of the colonial trade. In response, the merchants and officers had to repeatedly change their course and adjust to new or blocked opportunities. Indeed, the Danes landed in Tharangambadi more or less by chance. The Danish traders, organized in the so-called East India Company, of which the King was a prime share holder, had originally set out for Ceylon, but setting up a trading station there proved to be impossible, even in spite of royal Danish sanction and careful planning in Copenhagen. It turned out that the treaty, which allegedly granted the Danes a monopoly on the trade from ports of Ceylon, had been signed by a false king, who proved in fact not to rule the territory he had signed off to the representatives of the Danish court and East India Company. What might have looked like a square and settled deal from afar did not exactly match the situation when the traders came closer. In consequence, the project of ensuring a share of the international trade in tropical goods was adjusted as it was realized; the colonial merchants gave up on Ceylon and set up a trading port on the South Indian mainland instead, where some of the off-course Danish sailors and diplomats had already gone ashore after an incident with Portuguese battleships (Feldbæk 1969: 10; Fihl 1988; Olsen 1967). By virtue of necessity, and in consequence of the waywardness of nature, of colonial competition and of ruling elites across the globe, Tharangambadi became a centre of gravity for Danish commercial interests in the tropical nature. Circumstance, then, rather than or in addition to careful design, was what eventually located the Danes on the Tamil coast, whereby the expansionist dream was both realized and negated. Within the expansionist colonial project non-scalable elements, such as tropical storms, Portuguese battleships, or lack of rainfall, became decisive—and made the particular colonial project happen while interfering with it.

COASTAL PRESERVATION: EXTENDING THE MODEL

Even if the national ancestors did not exactly set out to settle in Tharangambadi , centuries later their prior presence there, in conjunction with new tragic circumstance, helped bring yet other international actors to Tharangambadi, including again Danish private companies with plans to extend and enact in response to the Asian tsunami in December 2004, which struck the village. A particular heritage of the village of Tharangambadi in its capacity of historic trade station brought more project work to the place.

During my fieldworks in Tharangambadi I have seen how international development initiatives, tsunami relief work, and cultural heritage preservation have come together to make the village a place of sometimes buzzing entrepreneurship. Signboards, calls for meetings, and posters around the village tell stories of participatory approaches, local empowerment, holistic development, sustainable progress, and so forth. Such international development agendas are widespread in all of South India where they testify to an often very vocal state-induced or -supported project of modernization and sometimes even to a kind of civilizing mission (Pandian 2009). In Tharangambadi this development campaign is combined with equally visible and conspicuous cultural and environmental heritage work that aims to preserve historic buildings, areas, and landscapes of both ancient Tamil and European colonial origin.

What we see is a mix of calls for modernization and preservation, and interestingly these agendas often go hand in hand. Among people involved in the development and heritage community of the village there seems to be a general sense both that Tharangambadi is in need of upgrading in order to improve the villagers' general standards of living as well as beautify the place, and that the tsunami has been and continues to be an occasion to accelerate a progress already envisioned. According to the development and cultural heritage practitioners I have engaged with, a modern lifestyle sustained by basic amenities and infrastructure, as well as by a vision of order founded on straight tarmac roads, street lighting, trash bins, and cement houses of equal size, must be extended to the marginal village of Tharangambadi and the people there, the majority of whom identify themselves as belonging to the fishing community, and most of whom have been resettled in newly built housing clusters in consequence of the tsunami. In addition to providing disaster-resistant housing, the relocation is often talked about in more general terms—by development workers and fishing people alike—as an opportunity to clear the wilderness otherwise seen to encroach on the fishing settlements, with the potential of hosting improper practices and a 'backward lifestyle' in the words of one development official. Life in a marginal area like the pre-tsunami fishing village was seen to be too weedy for its own good (cf. Tsing 2005: 174). The village must, it seemed, be assisted in the process of becoming contemporary to itself by way of interventions that can combat unruly nature of whatever kind.

However, this process of modernization by clearing the shrub and lighting the way is in quite a few instances directly coupled with work targeting the restoration of historic parts of the village, both landscape areas and antique buildings. Sometimes the same organizations or actors undertake projects that have both kinds of objectives—modernization and preservation—surprisingly not contradicting each other, but the one serving as somehow legitimizing the other. What interests me here is that the development-cum-heritage work is to a large extent implemented with the explicit ambition of keeping intact 'the essence of Tranquebar', as the village is usually dubbed in the work of actors involved in these efforts, and of preserving the village as a 'model heritage town'. If we go back to Tsing's terminology that I referred to above, what we see is a peculiar and paradoxical expansionist project along a complex temporal scale that aims both to extend elements of modernization to Tharangambadi without qualitatively changing the original and antique nature of the place, and further to extend the model Tranquebar to other historic places. In any event, the goal of the project work is defined from the outset as that of creating a modern yet authentic heritage town. What we see is a paradox of wanting to combine ancient and long-gone peace and quiet by reverting to a past with modernization and development by bringing Tharangambadi up to date. The heritage work can be seen to entail a peculiar kind of time travel along a seemingly smooth line of translation of standards (Brichet 2011). This gives way to a kind of natural aesthetic—paradoxical in nature—in which Tharangambadi is both a magical pocket in time and space to be visited by means of a kind of journey in time and a contemporary hub of modern local life, nurtured and groomed by heritage and development work.

In a book from 2010 describing the joint efforts of development and heritage actors, published by a consortium of these with funding from the Danish clothing company Bestseller's humanitarian fund, which is very active and well-liked in the area, we learn that in Tranquebar "one can feel the strong sea breeze as the night lazily settles in and soak up the magic while watching the stars overhead and the sea below" (*Tranquebar: Land of the Singing Waves* 2010: 29). Inherent in much of the work and in quotes such as the above seems to be a kind of still-life imagery of the village; a place at rest within its nature and at peace with its surroundings and in its seclusion from the grind of the modern. There seems to be an idea that the village of Tharangambadi enfolds a particular and unique calm that should not be disturbed by the homogenizing trends of classic development work. Referred to, in the same publication, as a living museum, where "one can experience a rich past, as well as a relaxing and rejuvenating nostalgic atmosphere" (ibid.: 9), the village has the potential of serving as an exemplary. Indeed, the opening vision statement and the closing appeal of the book mentioned above highlights the potential of Tranquebar becoming a "socially and environmentally sustainable model heritage town" (ibid.: 117) if the project workers succeed in their endeavours.

The idea of a model is interesting here and gives further nourishment to think about the ways in which plans relate to implementation in projects that qualify coastal nature. For one thing, the idea of a model somehow implies that in the future other towns and villages that are seen as sites of conservable heritage can copy Tranquebar; as a particular project site the village can serve as a template for others, exactly because, curiously, Tranquebar is a unique and natural place, somehow out of time and protected from the pace of modern life, but in need of active conservation for it to remain true to itself. In that sense, the village becomes a pilot project to be expanded into other places—if only the coastal village world were constituted exclusively by scalable elements. What is particularly interesting here, however, is that Tharangambadi's own coastal nature can also become a non-scalable threat to the true and natural self of the village and make the place equally prone to untimely transformation. While the stars, sea, and wind of the living museum can combine into a soothing, viable, and timeless magic, sanctioned as Tranquebar proper, other elements of nature, be it wilderness thought to host improper practices or flooding from the sea, are seen to potentially threaten both people and places if they are not kept at bay by nature conservation initiatives. Consider the following excerpt from the book on the ongoing development and heritage efforts, which describes the plans for a designed coastal restoration and the current activities. I need to quote at length:

> The coastline of Tamil Nadu has lost most of its tree and bush cover. This is one of the reasons why the tsunami had such a devastating effect. In order to change this, a programme for coastal plantation for the Tranquebar coastline has been started. Instead of traditional monoculture of eucalyptus or casuarinas, we decided to restore the area by re-establishing the plants that grew here before. More than 20 species were selected and local seeds collected . . . The area is very difficult to cultivate, because it is sandy and very close to the sea. Many replantings have been necessary and women have worked hard, watering the plants for long periods in the dry season. The plantations are now well established and will soon change the coastline into a green forest belt. More plantations are planned: one in the fragile former fishermen's village, which is in a low-lying area, exposing Tranquebar to the sea, and another in the water-logged area in the river which is also a fragile area, as a storm can easily change the coastline here. In the latter, a mangrove plantation is planned, as this would be a good way to secure this area and at the same time give Tranquebar a unique natural asset. (*Tranquebar: Land of the Singing Waves* 2010: 85)

What we see here, I think, is a paradoxical qualification of nature that, again, works by sorting its elements out and sanctioning them as proper or out of place, timely or mistimed. So-called traditional monoculture crops

are replaced with what are seen as even more traditional local plants—that eventually need many replantings; sandy soil and salty winds are curiously designated as somehow external challenges to the coastal nature; and the mangrove that is to shield low-lying areas in the event of storms is a thing of the future. On the one hand the village and its singing waves are rejuvenating and a site of authenticity with an intact essence. On the other hand much work is directed at stopping an aggressive nature from encroaching on the coastal land and at synchronizing the village with itself.

A conflation of then, now, and future processes, as well as of strengths and fragilities, is one of the peculiar messages of this complex aesthetic of nature making that we see in the heritage work. The ongoing project work is both restorative and aims at rewinding an ecosystem under pressure, and futuristic in its optimistic expectation of success—almost against nature's odds. What is suggested in the project work is a modelling of the future by going back in time and vice versa.

If modernization in the guise of extending basic amenities was part of the scalable project of development, here this is coupled with an ambition of extending a supposed past—of Danish trade and of indigenous species and original flora—into the present by freezing a process of dilapidation and erosion of landscapes. What is interesting here is that the tensions between scalable and non-scalable elements are apparent in the very description of the project work. Here, too, the wild-growing non-scalable elements make their way through; the quote above shows us as much in its hopeful assertion that the place will soon become a green forest belt and that the village will be getting a unique natural asset. All at the same time we can see the quote above as an ambition to be realized in the future, as a past effort of hard-working women to be commended, and as an evaluative comment on how the work has fared. Coastal nature, then, is generated within the particular project work, from within which elements of it are assigned to either a proper and conservable natural realm—even if against equally natural local appearances of sand, salt, and winds—or to a threatening and dispensable domain—even if this includes hard-lived traditional casuarinas that may not need replanting to survive.

In the process of hoping, working, and evaluating, nature is qualified, and the concurrent reflection of failure, accomplishment, and optimism articulates a theory-cum-practice of what is even natural along the coast. Again, design and implementation merge to make an analytical-empirical object in the process; conservable coastal nature is produced in the qualifying activities of writing, planting, watering, looking back, and hoping. As these activities intersect the bio-conservation project and its object come to life in the same movement.

What these paradoxes in the descriptions and activities of the heritage conservation work show is that the expansionist ideas implied in the plans that portray Tranquebar as a model heritage town are continuously challenged and analyzed from within the practices that are designed to

accomplish just that expansion. Here it appears as an ongoing qualification of nature from inside the project work itself; internal and external views conflate whereby coastal nature emerges as a more than natural object, its existence hinging on the particular practices that produce it. A poster on the wall in one of the newly restored traditional Tamil houses that have been designated cultural heritage and thus renovated brings home this point. The poster, graphically showing the planned phases of the bio-conservation work also described above and how it will gradually expand to different designated areas of the village, reads: "The proposed bio-shield uses an indigenous variety (tropical dry evergreen forest) of plants that can withstand the salt spray, scorching sun, poor soil conditions and the periodical inundation by sea water."

To me this quote is as clear and simple as it is enigmatic and paradoxical: Why, one might ask, would the sun appear scorching to a withstanding indigenous plant? The co-presence of scalable and non-scalable elements, welcome and uninvited participants, in the conservation project could not have been stated clearer, and what is particularly interesting here is that the same elements of nature can work in both capacities; note only how proximity to the sea is both a source of magic and rejuvenation and an obstacle to nature preservation.

The tension between seeing Tharangambadi as both a model-like and unique place, authentic and in need of modernization—in short, as a living museum—is supplemented with an uncertainty as to whether indigenous plants can in fact live in their own habitat.

CONCLUSION: EXPANDING THE NATURES OF ANTHROPOLOGY

What we have seen in the projects of nature making discussed above is a curious mixture of controlled, charted, and planned occurrences, and interferences, threats, and unnatural nature—all of which, I have argued, combine into an unending analytical process of qualifying coastal nature by sorting its elements into different categories. The projects, it would seem, are being made up in a conjuncture of scalable and nonscalable elements, to refer to Tsing's terminology. My purpose in saying this, however, is not to point to flaws in the projects' conceptualization, as if surprises only enter the picture in projects that are badly planned. To the contrary, my concern is explicitly generous, if, for nothing else, then because this is what the project makers are when the incompleteness inhering in the charts for the bio-conservation projects is made into a source of improvisation and creativity. The foregrounding—the project makers' and mine—of the paradoxes implied in local processes of qualifying nature, then, allows us to see the flexibility and creativity that go into manufacturing coastal nature and makes it possible to practice critique not as deconstruction, but as an offering. To put it shortly, the project makers practice nonscalabilty theory

from within the projects, and it is only right for those who make nature in anthropology to endorse the same kind of creativity.

In focusing on the ways in which the two clusters of bio-conservation programmes explored here purposely resist or complicate a clear distinction between underlying plans and concrete implementation, because both of these are inescapably located within the ethnographic domain mobilized in the projects and in this text, we are thus given the opportunity to bring anthropology of nature (and nature in anthropology) into the field in a radical way. Insofar as we define the field as an analytical object mobilized in a contingent and flexible combination of our project designs and unforeseen occurrences, it follows that both wildlife and coastal protection and heritage work, too, engage a field, namely the ethnographic-analytical nature that emerges through a sanctioning of particular elements of the coastal world in the course of the project work.

The shifting and multiple nature of nature articulated in the conservation projects, say, the fact that a stray goat must be shooed away, while a newly hatched turtle must be saved, or that local fauna cannot really grow locally, brings home what I see as an overall anthropological point, namely that paradoxes may make livable worlds, that things can always be other, and that all possibilities have not already been charted and commissioned by prior design. In this sense, the project makers provide an exemplary anthropology of nature, and their ideas and practices cannot just be seen as ethnographic cases or illustrations for me to take home and work through anthropologically elsewhere and a posteriori. Recently, Ingold has suggested that anthropology and ethnography are two entirely different things (2011: 229ff). Whereas anthropology is the discipline that tries to understand the opportunities for and histories of a shared social world, ethnography is the careful description of the empirical realities of those others under study. In the above, I have made a point of locating the object of inquiry—the qualifications of coastal nature—squarely in the ethnographic domain. This, however, does not restrict it to being on one side of Ingold's distinction, as it would perhaps seem. Rather, this move can in fact be seen as a supremely anthropological move in Ingold's sense, to the extent of rendering his notion of ethnography impossible, because I imply that there can be no mere description of the life and nature of others that is not also an analysis of and indeed a discussion about the possibilities of a shared life.

One might say that Ingold's notion of ethnography understood as description would correspond to nature understood as, say, a given order of cells, as a biologist might show us. My point is that such pure natural objects are not available to anthropologists, nor it would seem to nature makers like Ramachandran, to whom nature is more than natural. To trained anthropologists and bio-conservation project makers alike, the categories are blurred in the analytical work of sanctioning nature; the newly hatched turtle is not discrete from what people might make of it (soup, for starters), just as the sun scorches local fauna supposedly accustomed to the heat.

In a way my stance implies that in this kind of writing there is only a here-and-now (Verran 2002), only one integrated and composite domain of analysis for anthropologists and bio-conservationists alike, who can then engage laterally in the interminable qualification of nature. This is to say that a here-and-now is ever the locus of analysis, because it is complexly made of theres and thens and thus of empirical material, the full range of meanings of which can never be disclosed nor mapped in advance (Strathern 1999). This is also why I have drawn in the history of Danish trade; it is not to make a kind of ironic comment saying that even in colonial times nature was not under control, however much the supreme reigning King wanted it to be, nor is it merely as a contextualizing device setting the scene for, say, the later heritage work. The point is in fact to historicize and thus localize the qualification of coastal nature by staying in the here-and-now, because this is the composite ethnographic site from where temporal and historical connections can be unraveled. In this kind of anthropology history does not lead to a particular now, although obviously the present and the here are imbued with all kinds of past occurrences and ideas and future dreams from elsewhere.

The crucial point here is the partiality of connections, to paraphrase Strathern (2004). In the case at hand, this shows as the paradoxical simultaneous entanglement *and* separation of domains, such as project plans and implementation, conservable nature and threatening nature, scalable and nonscalable features; these elements are figured on the grounds of each other whereby connections are forged in the process of separation (Brichet & Hastrup 2011). While it would be foolish to suggest that no connection can be made between the Danish colonial traders and the present day heritage workers, or between the government policy of bio-shielding and Ramachandran's present work, I also cannot suggest that the heritage workers are only in Tharangambadi because of Denmark's national history, as if the later conservation work was already inscribed in the colonial history, nor can I argue that Ramachandran makes a living simply because his government wants to protect people and animals. These connections are indeed produced and established analytically in a here-and-now by the project makers and by me through a recognition precisely of the fact that they are not given, stable, or exhaustive.

What we see, then, are a host of elements that are connected but that do not fully co-extend with one another and that this gives rise to creative nature making efforts across the board. Nonscalability theory it would seem is an open resource to anthropologists, policy makers, and other analysts like Ramachandran, all of whom qualify nature in ways that do not comply with an impossibly pixilated worldview.

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4 Engaged World-Making
Movements of Sand, Sea, and People at Two Pacific Islands

Maria Louise Bønnelykke Robertson and Cecilie Rubow

THE BATHTUB SCENARIO

Innumerable scientific findings, footages, and press releases from the South Pacific seek to testify that a rising sea level due to global warming is of imminent concern. Atoll islands submerging and whole nations vanishing is often pictured as the disastrous future already unfolding: When the temperature curve moves higher and the ice caps are melting, the sea water is expanding, causing rising sea levels and inundation of the shores of low-lying islands. We may call this the world-as-a-bathtub scenario, in which the rising water is the primary agent and topographical particularities have been averaged in order to convey the interconnected processes of global warming.[1]

Our aim is not to dispute sea level rise as a real threat to islands and islanders in the South Pacific. A vast specialized literature is presenting geomorphological sets of data concluding that if the present sea level rise continues, then the point where Pacific islands are "exposed to potentially devastating fair-weather wave attack" may fall within a few decades or within the next century (see Dickinson 2009: 8–9). However, in this chapter we do aim at offering an alternative to the world-as-a-bathtub scenario, drawing on ethnographic fieldwork carried out on Tarawa atoll in Kiribati and the volcanic island Rarotonga in the southern group of the Cook Islands.[2] We suggest that the focus on sea level rise representing the motion in a changing climate is merely one of many ongoing and potentially threatening changes, which makes many other changes fade into the background to the detriment of an understanding of the highly dynamic island environment. During fieldwork among villagers and scientists, residents, and expatriates, we have met various kinds of dynamics, movements, and engagements with the islands and the sea, involving many ways of world-making. At the shores of Tarawa and Rarotonga sea walls, causeways, wrecks, rubbish, coral rubble, fish traps, invertebrates, tourists, sand, and tides often appeared much more present than the *rising* sea. These elements are all engaged in "controversies about *what* the universe is made of" (Latour 2005: 21). Instead of imposing some order *a priori* of how the world is made, for example through the imaginings about the bathtub-

scenario, we have "let the actors deploy the full range of controversies in which they are immersed" (ibid.: 23). We have traced connections between different controversies and let the agents themselves make and define their worlds regardless whether it is climate change, ancestors, or water quality which is of imminent concern. This does not mean that we have abandoned the search for order or patterns, but that we have allowed the actors to craft and unfold their own worlds, no matter how counter-intuitive they may appear. Therefore, we want to slide from a focus on the critical moment framing the existence of the islands to the present critical movements in which the inhabitants of these islands are engaged.

To substantiate the movement of this ethnographic concern, we place ourselves at the shore, a site that is both topographically and analytically dynamic, to highlight some of the ways the islands and islanders are engaged in world-making. The shore is an in-between place connecting water and land. It is also a zone where things are mixed, a dynamic place, which is constantly shifting and reshaping. We place ourselves at this in-between place to understand how interactions take place and how distinctions momentarily distil. At the shore we pay attention to the interactions between people and the environment they inhabit, change, and move through, and we dwell on the ways worlds are made and remade, and how landscapes continue to conjure strong notions of connection. New things, ideas, or people also emerge in landscapes demanding some sort of reconfiguration. Following Mol (2003) and Goodman (1978), we do not search for an ambivalent or neutral something beneath these versions, but for the ways in which different versions are composite socio-natural worlds in different configurations. Taking the shore as an example, we will dwell on their fragility, malleability, and durability: how they are made and reshaped by social and natural forces, and how shifting situations create both friction and coordination.

ATOLL ISLANDS AND CORAL BEACHES: MOVEMENTS

Kiribati and the Cook Islands are neighbouring nations, each covering millions of square metres of ocean with a total land area less than 850 km^2 and 250 km^2 respectively. Kiribati consists of 32 low-lying atolls and one raised reef island. High population growth and a demographic concentration on the main island, Tarawa, have characterized recent development. South Tarawa holds more than half of the around 100,000 people living in Kiribati all concentrated on less than 16 km^2 characterised by poverty, squatter settlements, and waste management problems (Locke 2009: 174).[3] The Cook Islands consist of 15 islands, including atolls and volcanic islands with the majority (95%) of the population (14,000) living on Rarotonga, the main island. Tourism is the main industry with about 100,000 tourists travelling to the islands every year. It is commonly estimated that more

than 50,000 Cook Islanders live abroad in New Zealand and Australia, closely linking the economy and governance of this small island nation to the large nations in the region.

For people living in continental areas of the world the atoll may appear as a somewhat peculiar structure. An isolated atoll may seem timeless, but the geomorphic history of atolls shows that they have not been habitable until 1,000–2,000 years ago (Dickinson 2009: 8–9; Moriwaki et al. 2006). The formation of atolls is based on dead volcanoes. As the volcano sinks into the ocean fringing coral reefs respond to this subsidence by building its surface upwards in order to remain in the photic zone.[4] In other words, the foundation is subsiding, while the coral is growing. As the coral grows it will eventually form into a barrier reef, which completely or partly separates the ocean from an internal shallow lagoon. These movements have to be in a coordinated rhythm for the atoll to appear; if the subsidence happens too rapidly the island will simply sink below the surface of the ocean (Nunn 2009: 29). Coral beaches and lagoons fringed by reefs share some of the properties of the atoll as large flat coastal zones, yet as in the case of the volcanic islands of Rarotonga the geomorphology also includes higher ground packed with narrow valleys and uninhabitable steep mountain ridges.

When we talk about *movements* of islanders and islands, sand, and sea, we are in search for ways of bridging social and natural agency, or in the words of Phillippe Descola, how the *collectivities* of humans, non-humans, and inanimate things are enacted in certain ontologies (Descola 2006; Descola quoted in Kohn 2009). The lagoon and the beach are zones of moving materials and materialized movement. Sand is produced by the reef, by algae, certain fish species, and the rest of the working biosphere of water, temperatures, sun light, and so forth. Tons of it is distributed by the waves, and huge deposits of gravel and coral are created and rearranged by storms. Sand and coral have been transported onto land too in large amounts by inhabitants and other entrepreneurs, mined in bags, burned in kilns, compressed, and cemented in roads and buildings.

Through centuries these islands have been continually shaped and reshaped by the sea, sand, and the people crossing and changing the shores. This has been highly visible during the past 30 years of modernization in extended land reclamation projects, construction of harbours, sea walls, jetties, causeways, tourist resorts, airports, and so forth, making the coastal zone economically ever more vulnerable or resilient, as the case may be, to natural hazards (anthropogenic or not). Yet, the interactions between the ocean, the people, and the land extends far back in time, to the early modifications of the islands' ecosystems induced by the migrating Pacific peoples (Kirch 1996) and by the 19th century's history with Europeans turning up at the shores at each and every island, making the shore a meeting place, market place, and a battle zone (Maude 1968; Denning 2004). Today, the travelling and migrating ancestors are still voices heard,

and their memories are cast in landscapes (Campbell 2006; Turbott 1949), myths, politics, and dances (Sissons 1999; Autio 2010). A long history of the Pacific islands culminates once again, when Carol Farbotko cuttingly suggests that the growing tourist industry in the Pacific islands may gloomingly merge with climate change: "The global warming clock is ticking so see these places while you can" (Farbotko 2010: 224). Even so, we aim less at a description of the tourist gaze than exploring the movements of islands and islanders in multiple environments.

FROM 'THE PLACE OF THE KING' TO 'SAND THAT MOVES'; TARAWA, KIRIBATI

In scientific reports, policy papers, and in the world press Kiribati is often mentioned as one of the countries most vulnerable to the current climate change. Tarawa, the main island, is less than 3 m above sea level, and hosts the majority of the country's total population. Coastal erosion, saltwater intrusion in freshwater resources, storm surges, and drought are considered some of the greatest threats to the country (Storey & Hunter 2010: 171). Research has shown that rising sea levels could mean that up to half of South Tarawa will be inundated by 2050 (Campbell 2000). Anote Tong, the president of Kiribati, has taken a noticeable stand on this issue in the international debate about the future of his country. He wants to combine current attempts at dealing with climatic challenges, such as securing public assets by constructing sea walls with a long-term ambition of relocating the population of Kiribati to other countries. He coined the phrase 'relocating with dignity', that is, not as 'climate refugees', but through training and education as skilled workers in neighbouring nations.[5] Climate change has become so politically potent that during the conference "The National Climate Change Summit" held in 2011 President Tong underlined that climate change should be considered in every political decision in the future. However, the everyday life in Kiribati is composed of many other concerns and actions.

In the centre of the Tarawa lagoon there is a small island, some would even say a sand bank. This island has been brought up numerous times in discussions about climate change as the surrounding lagoon waters increasingly submerge the island. The documentary *Rising Waters—Global Warming and the Fate of Pacific Islands* is introduced with a scene of a Kiribati fisherman in his motorboat peering across the turquoise lagoon water. Then, stretching his arm out, pointing at a small bank of sand in the water, he says: "*That is* Bikeman . . . that sandbank there is where the island was."[6] Coconut trees and other vegetation covered the island in the past. Back then, the island served as a shrine where locals made offerings to the ancestors. Now, it is just a speck of sand barely above the sea level. Historically, this island has been known for shifting shape according to wave and wind directions (Nunn 2009: 170; Donner 2012: 169–70). However, not only the

physical features of the island have changed, its name also changed. It was Tabouea, an I-Kiribati navigator, who explained this change of shape and change of name one Sunday afternoon while we were crossing the lagoon on a small outrigger boat. Tabouea had a reputation among many of the islanders on Tarawa as a skilled navigator with the rare ability of finding people lost at sea; she, herself, was shy, and only a handful of people knew of her identity. Crossing the lagoon that afternoon we were sheltering ourselves from the blazing sun in what little shade the boat offered. Tabouea initiated our journey by making offerings to the ocean, she threw little pieces of biscuits into the water and recited a brief spell in her characteristic hoarse tobacco voice; this would ensure our safe travels. As we sailed past the island, Tabouea, with her local Pandanus smoke between her fingers, solemnly said: "Today we know this place as Bikeman, but when I was a child no one could call this place Bikeman. Everybody would call this place Teabaniuea [literally: the place of the King]. Now, people just call it Bikeman, which means 'the sand that moves'." "Which King owned the island?" we asked. Tabouea answered: "It was Beiamatekaai," an ancestor and spirit character who ruled over the village Buariki in North Tarawa. We asked again: "Is the island disappearing because of climate change?" "No," she shook her head and frowned at our question, "it is because of the causeways.[7] The causeways have really changed the land."

In 1987 the Dai Nippon causeway was constructed linking the two islets of Betio, the business centre of Tarawa, and Bairiki, the first village to the east where the public administration is located. This is the longest causeway in Kiribati, and the construction altered the process of sedimentation in the surrounding waters and coastline. According to geoscientific research, Teabaniuea was entirely dependent on the flow of sediments travelling from the ocean to the lagoon through the gap between Betio and Bairiki. When the gap closed it spelled the end of the island, which quickly eroded from the wave energy (Nunn 2009: 170–71).

This island's change of name, from Teabaniuea to Bikeman, suggests that something more happened to the sand than simply altering the way it travels. It seems as if we cannot discuss this sand as a single island; there is "more than one ethnographic object" to take into account (cf. Law & Mol 2002: 10–11). The change the island underwent no longer conveyed the story of Teabaniuea; as the island started submerging the sand was socio-naturally reconfigured. The sand now appeared in a landscape that was undergoing drastic changes from anthropogenic constructions along the coast. Teabaniuea was ephemeral and failed to persist over time. The collectivity, that is, the socio-material pattern of distributed beings (Descola 2006: 147) that made up Teabaniuea allowed forces beyond it to pull it in new directions. Bikeman, sand that moves, emerges when sand, sea, and shores enter a new rhythm, disappearing from familiar trajectories and appearing in new ones. What happens to the island is a relational achievement spun between people and sand, ocean and land, in a "fluid

ecology" (cf. Whatmore 2006: 14). Both Teabaniuea and Bikeman are in some sense man-made, which does not imply that they are unnatural (cf. Haila 2000: 158, 169). In the case of Teabaniuea it was man-made through the actions of offerings, gods, and ancestors; and in the case of Bikeman it was man-made through the engineering machines, boulders, corals, and sandbags. In both collectivities did certain wave energies and geomorphological patterns, people, and social forces take part in making two islands. Hence, the coastlines of Kiribati are not finite, the worlds that emerge make no promises to persist over time, and they can be coordinated with yet other collectivities.

Following this, when 'climate change' appears on the horizon of the local politics new worlds may emerge in its wake. Here, the interaction among people, ocean, and shore conveys a story about rising and expanding oceans and vulnerable shorelines. As many people, animals, and things form part of this collectivity it is interesting to observe how different collectivities co-exist in practice, sometimes coordinated with each other, sometimes disturbing each other, and sometimes merely existing with no interference. Tabouea, the navigator from the story above, did not operate with any notion of climate change, and when making weather forecasts she did not include e.g. recent changes in patterns of precipitation that especially politicians were concerned about. Instead, she used star constellations and their position relative to the moon to forecast weather events. Accepting climate change, volatile and unpredictable weather patterns, would challenge Tabouea's knowledge regime, which systematically followed the rhythmic journey of the stars across the sky connecting them with specific events in the weather and the ocean.

While the navigational skills seem to belong to an exclusive group of people on Tarawa, geoengineering plays a growing role in efforts to understand the making of the coastal zone. The so-called 'coastal calculator' is one such example, which is a computer programme funded by the *Kiribati Adaptation Project*. According to NIWA, the consultancy responsible for developing the programme, it can undertake "hydrodynamic modelling of waves and water levels to assess the variability in extreme waves and water levels around both the lagoon and ocean shoreline on Tarawa; also how climate change and sea level rise will affect these conditions."[8] The coastal calculator consists of an altogether different collectivity where topographical data, wave models, and IPCC climate change scenarios are calibrated in a way so as to forecast future climatic variations. It is a potent tool as its projections are meant to inform national political decisions about the protection of public assets. Nevertheless, the creator of the coastal calculator points out himself how the world that the coastal calculator makes is limited by factors unknown and processes that are too complex to be included as variables. In an interview, he points out that the coastal calculator is unable to take into account nature's capability to adapt to climate change, for example the ability of the outer reefs to grow faster as a response to sea level rise or the complexity of

water levels crossing different reef systems and approaching the coastline; such information is simply too difficult to calculate in a spreadsheet. On an intermittent Skype connection from Kiribati to New Zealand, he explained: "I am sure you can appreciate the complexity . . . [The coastal calculator] is fairly simplistic in some of the assumptions it makes." As he suggests, this does not make it an unreliable programme that should not be used, even if it does not take important agents in account.

When telling our story about the shores of Tarawa, the making of Bikeman, sea level rise, and the coastal calculator we obviously perceive them as interrelated phenomena, with each their way of putting worlds together. These are stories we highlight from a myriad of activities carried out by different agents on the shore. Reclaimed land projects, droughts, the planting of mangroves, storms, and sand mining are other prominent ways of making up the coastal zone, sometimes coordinated in a shared effort, sometimes dissolving in insurmountable controversies. We are now turning to a different set of examples in a slightly different location, but the intention is the same: to convey ethnographic examples of how the diverse forms of world-making engage islanders. With climate change discourse running wild in the world, we will argue that the seemingly neutral identity-markers offered in the wake of the bathtub scenario such as 'victims of climate change' or 'deniers of climate change' are ill-chosen distortions in many island worlds like Tarawa and Rarotonga. Sea level rise cannot explain all the movements of the waters, sand, and shores, and it bypasses the multitude of concrete and intimate engagements with the environment where people observe and act upon a series of changes. Ethnographically speaking, there are environments in which climate-change-related sea level rise is not a part of the pertinent collectivities—for quite good reasons.

MEASURING MEAN SEA LEVEL RISE AND TRAPPING FISH AND SAND; MURI, RAROTONGA

In 2007, in the wake of a series of awareness-raising workshops held by the Cook Islands National Environment Service, Muri Environmental Care Group (MECG) was formed. Since then a group consisting of six to nine women and men with close links to other local environmental organizations, local politics, and businesses (mainly tourism) has worked on fund raising, surveys, and local out-reach programmes such as an annual Lagoon Day. With these projects MECG expresses great concern over the health of the lagoon, an icon of a Pacific beach with white sand, palms, small islets, turquoise water, and a coral reef, their home and the destination for hundred of tourists every week of the year. A sense of fragile beauty and mounting economic value has inclined the members to focus on the present degradation of the lagoon, most visible in cases of beach erosion, events of algae bloom, murky sand, and declining sea life and water quality.

Based on local workshops and knowledge gathered from reports, news releases, and TV-documentaries, this group (and presumably the majority of Rarotongans) is well informed, or at least informed, about global warming as a theory with substantial, yet also contested, empirical foundation. They also demonstrate a general knowledge about projected sea level rise as a future risk to atolls and low-lying coastal areas. Furthermore, they often refer to the atolls in the Northern Cook Islands group as already experiencing sea level related hazards comparable to the more media-exposed examples of Vanuatu, Tuvalu, and Kiribati. In accordance with the global trend, the relative mean sea level rise in these waters is presently close to half a centimetre a year as measured by SEAFRAME, a sea level and climate monitoring network consisting of 12 stations across the Southwest Pacific. Or to be more precise, according to SEAFRAME's Summary Report (2011): Since 1993, at the Cook Islands Rarotongan station the net relative sea level rise is 4.4 mm/yr through to June 2011, after subtracting the vertical movements in the observing platform (0.7 mm/yr), and after the inverted barometric effect (-0.3 mm/yr) is taken into account.[9] Our study in Muri village on Rarotonga disclosed that this was not common knowledge, in fact nobody, except visiting environmental officers, seemed to be aware about the exact figures, documented in scientific papers and occasionally noted at awareness-raising workshops, in booklets, and on posters about climate change. In concert with this, when presented with the numbers in interviews and talks (with us), it seemed to be rather irrelevant, limited, or even rather exotic data for villagers to relate to. What did 4.4 mm absolute mean sea level rise actually suggest about the lagoon they knew so well from swimming, building, fishing, and sailing activities? Not much. You cannot actually see it, we were told, and if it is not going to affect us seriously the next 20 years or so—should we not wait and see *how* it will affect us? In other words, the rising sea level was not a movement that counted for much—or anything at all—in the observations people did, and the actions they undertook.

Tellingly, the past few years, with examples dating back more than 25 years, people in Muri have been concerned about what seems to be quite the opposite of the bathtub scenario: namely that the lagoon appears to get shallower. In times of a rising sea it may seem puzzling that villagers on a small island in the South Pacific are more concerned about a lagoon getting shallower; at least it did so to us. Geomorphologically, however, this observation is not exceptional. In contrast to the bulk of world media's footages of falling coconut trees and inundated shorelines, from a geoscientific point of view, Dickenson relates that the sea level rise of the 20th century at 1–2 mm/yr is not readily discernible in these soft beach environments—firstly, because of seasonal fluctuations as large as 100–200 mm, and secondly, because of multi-annual fluctuations of as much as 500 mm in regional sea level between El Niño and La Niña phases blowing seawater back and forth across the ocean basin (2009: 8). In the case of the Majuro coast in

Marshall Islands, Ford likewise suggests that the present accelerated sea level rise is "likely masked by widespread anthropogenic impact to the coastal system" (2012: 11). As such the shallowness of the lagoon and the rising sea appear to us as cases of incommensurable collectivities existing alongside each other, seemingly contradictory, but not necessarily so.

MECG's engagement with the lagoon comprises mainly a large-scale upgrading of the sewage system among 204 households and 38 businesses, farms, and community houses in the village, funded by the EU and NZaid. The aim of this project is to decrease the flow of nutrients into the lagoon from insufficient and unmaintained septic tanks. Along the same line, the members of MECG are also concerned about inappropriate outlet of waste from piggeries and phosphate detergents from washing machines seeping into the ground water and flowing further into the lagoon. Other problems on their agenda are the beach erosion and the negative effects of badly constructed sea walls, the removal of shrubs from the beach, and the filling of taro swamps, thus hampering the filtering of nutrients flowing from the cultivated interior to the shore. Some of the actions taken are collective clean-ups of the beach, campaigns against soap powders containing phosphate, and the planning of the conservation of certain fish species and invertebrates. "*We are the problem. We are the solution*" was printed on t-shirts during the Lagoon Day in June 2011, where hundreds of school children gathered at workshops on wetlands and waste management.

That Muri beach is eroding is quite visible and the concern of the members of MECG, many of whom live and work close to the beach and/or own pieces of land stretching from the upper highlands into the coastal plain. Large boulders are put at the foreshore, sand bags are put in neat lines, and gabions (cages filled with rocks) are dug into the sand, sometimes visible when large amounts of sand have been washed away by high waves. Coral rocks and the roots of iron trees are exposed and one dead tree at the centre of the beach seems to be on a walk directly into the water. Conducting interviews with a group of people with long-term engagement with the beach and the lagoon from sailing activities, picnicking, swimming, and fishing more than indicated that the beach and lagoon undergo a constant change. Having a small sample of photographs from the 1930s, the 1960s, and onwards to support (or contradict) their memories, our interlocutors identified places used for barbecue and horse races that were diminished or vanished. They pointed to certain parts of the lagoon suffering from silting and no longer allowing for passage by certain boats with certain sizes of keels. Walking through passages that had become shallower because you could now cross over in high tide, digging in sand pits building up as a new habitat for invertebrates, and balancing on the bleached parts of the coral reef, villagers spotted innumerable changes. Certain flows of sand through the lagoon seemed to be blocked, some currents enforced, and some of the islets appeared to erode on the ocean side while growing on the beach side. On top of it, to most of the villagers, the water quality appeared to be dramatically decreasing. Highly visible splodges of algae were seen in the hot

season, some people experienced itching skin after swimming whereas others avoided swimming altogether because they were convinced the water was polluted, meanwhile other locals and tourists were happily splashing, snorkelling, and kite surfing. However, the widespread experience of degrading water quality was not unsupported by more exact measuring. A published survey in July 2011 by the Cook Islands Ministry of Marine Resources confirmed that 13 out of 14 Rarotongan lagoon sites failed the quality tests: "The nutrient level were consistently high at all sites resulting in poor water quality and were above those recommended."[10]

Among the many and complex movements of sand, water, and people intensely compared and discussed by the islanders, one feature in the lagoon was a returning centre of concern in the conversations and during our excursions into the lagoon with some of the villagers. Hardly visible to outsiders (like us), some old fish traps (*pa*), constructed of coral rock in a V-shape, placed in the lagoon by the village community by ancestors for the seasonal catching of schools of a type of mackerel had become the centre of dispute several times during the past decades in consultancy reports written by outside experts, in the local daily newspaper, at workshops, and in innumerable talks among villagers. The theory forwarded again and again runs like this: One of the *pas*, an unusually large one between one of the islets, Oneroa, and the mainland of Rarotonga is impeding the flushing of the lagoon which increases the sedimentation, whereby the lagoon is getting shallower, and the water is not renewed fast enough causing decreased water quality. "Why don't we remove the *pa*," was one of the suggestions, "so that we can benefit fully from the waves constantly overtopping the reef, providing the lagoon with fresh water?" This question has repeatedly stirred the waters, not only because people make different inferences about the functionality of the *pa*, the effect of currents, trenches, waves, sand, and shellfish on the overall health of the lagoon, but also because authoritative voices (not least some traditional leaders) in the village argue that the *pa* is a *cultural* and *natural* heritage. Therefore, it should certainly not be dismantled! It would be cultural vandalism.

The *pa* is as such a significant member of many collectivities, simultaneously linked with several fish species and sea weeds, with the ancestors who wanted to provide the community with food, with fishermen, and people walking through the water using all sorts of measuring devices—keels, knees, canoes, crabs, and coconut palms—when they try to understand what is actually happening to the lagoon. As we shall see, eventually, the *pa* ended up trapping not only sand and fish, but also people.

SAND, HUMANS, AND OTHER BEINGS

Sand, including coral sand, is an extremely flexible material of different sizes and colours, beginning as a living resource in reefs and organisms that live off the reef environment. As an ever-present element in the

Pacific, sand enters into world-making in multiple ways. In the case of Muri lagoon, sand is part of multiple collectivities, which clash and give rise to a conflict between two main positions. In one collectivity the fish traps are a man-made obstacle, inconveniently incorporated by currents and sand, but still easy to dismantle. In the other, the effect of the fish trap as a sand trap is questioned, whereas its cultural significance is spelled out as a monument of the honourable ancestors. With two different main collectivities of concern to the villagers, the community found itself spun into an insoluble conflict with no obvious compromises or any third way ahead. Participants who wanted to remove the *pa* reported to us that they would now leave the issue for some time, until new possibilities would show up. Maybe a new technical report from an outside expert, they suggested, would clear a path by contributing to a new collectivity and offering new flows of action.

The case of the *pa*, man-made and yet also incorporated in the geomorphology of the lagoon, resembles the transformation of Teabaniuea into Bikeman. Both structures are easily identified as in between nature and culture, and therefore also suitable objects for diverse ways of world-making. Fish traps and causeways are lines of sand and stone making up new collectivities of islands, animals, and islanders. The causeways constructed in Kiribati is a logistical attempt of connecting the otherwise fragmented islets that make up the atoll. However, it is not only Teabaniuea that disappeared as a consequence of the construction of the causeways. Bonriki is one of the most eastern villages of South Tarawa and when Tarawa was connected with an international airport, this was the only village that had the capacity to hold a landing strip—other places were simply too narrow. Once the airport was constructed so was a causeway linking Bonriki to South Tarawa, allowing arrivals easy access to the urban area. Thus, another channel between ocean and lagoon was closed off, and the atoll was one step closer at becoming a coherent strip of land. One afternoon, an old woman, Mwaria, told us the following story of how this causeway also made a collectivity dissolve by blocking a specific movement in the lagoon: Before the causeway was constructed sperm whales would, on their migration route every year, pass through the channel, swim along the inside of the lagoon, and exit again on the western side of the lagoon. It was said that the whales owned the *Ngea* trees (the ironwood trees), and every year they returned to smell the *Ngea* tree. When the whales passed through the channel they would stop to rest and play in a shallow place in the lagoon known as 'The Whales' Pillow'. Here, the locals would hunt the whales. However, there were strict taboos connected with this hunt. "You are only allowed to kill the whales that you are related to," Mwaria explained. "But how can you be related to whales?" Mwaria elaborated: "If you look like it, if you have a big forehead and the whale has a big forehead. If you have a scar on the body and the whale has a scar in the same place." Although the whales had not visited the island for years, Mwaria could still recall the

smell when slaughtering the whales, the celebrations when eating them, and the diarrhoea caused by the consumption of the fatty flesh.

Disputes are ripe all along the shore concerning everything from coastal protection devices (and their often doubtful effects), disposal of waste (some beaches are neatly swept every morning, some are littered with diapers, broken glass, and plastic) to questions about the planting and conservation of mangroves and other forms of coastal vegetation. Moreover, debates on observed changes are of course not only shared by islanders meticulously noting new pools of water, the shifting tides, and the waxing and waning of coral heads and schools of fish. An army of experts swarm the waters. Before and increasingly in the wake of the global focus on the vulnerability of the Pacific islands, scientific studies on the prehistoric and present changes have been carried out, but not necessarily pointing toward uniform conclusions. While many of these conclude that the Holocene changes at the seashores profoundly affected Pacific islanders, and some point to sea level fluctuations as the most important single factor (Allen 1997), complexity flourishes when specific coastlines are scrutinized (Ford 2012: 11–20). Concerning the Pacific, most significantly a controversy evolved in 2010, taking its point of departure in research conducted at 27 atolls, and soon hitting the headlines in the world media with surprising news: "Coral Atolls Hold On Despite Sea-Level Rise" (Lilley in *USA Today*), "Coral Islands Left High and Dry" (Callick in the *Australian*), "Isles Not Sinking" (Callick in *Fiji Times*), "Islands in Pacific Are Growing, Study Says" (Gibson in *NZHerald*), and "Not So Much Trouble in Paradise. Are Coral Islands Really Doomed?" (Traufetter in *Spiegel Online*) from which this quote may render the gist of the matter:

> Only last month, [Paul] Kench and Arthur Webb of the Fiji-based Pacific Island Applied Geoscience Commission [SOPAC] published a study whose results were completely unexpected. The geomorphologists compared old aerial photographs taken in World War II with current satellite images. To their surprise, they found that most of the atolls they were studying had either grown or remained unchanged in the last few decades, even though the sea level has already risen by 12 centimetres (about 5 inches). As soon as it was published, the study became ammunition in the political battle over global warming. Climate activists questioned its conclusions, which would normally be welcomed as good news. Sceptics of anthropogenic climate change, on the other hand, seized upon the study as evidence that all the excitement over global warming is completely unnecessary.

The study by Webb and Kench examined among others three islands from South Tarawa, exhibiting an increase in island area by 12.5%, 16.3%, and 30%, thus questioning that increased sea level presently destabilises atoll islands. In these densely populated islands, the study states that the

expansion has "occurred over a time period in which the shoreline has undergone significant modifications and change in coastal processes: The shoreline has numerous coastal structures including seawalls, groynes and minor reclamations that all promote disruptions to coastal processes" (Webb & Kench 2010: 244). So, in this case the anthropogenically modified shoreline contributes to accretion, not erosion! On the one hand, the so-called climate sceptics had a great time on their web-pages when the study was published; on the other hand, other islanders and outsiders making diverse observations at the shores criticized the Webb and Kench study for omitting crucial factors in the islands' ability to cope with accelerated sea level rise (Schaeffer & Hare 2010). The study did indeed stir the waters and quickly prompted the director of SOPAC,[11] R. Howorth, to release a press statement scorning the media for sensationalism and ensuring the stakeholders, the island states in the Pacific, that the study of Webb and Kench is only a small piece in a large "jigsaw" of island vulnerability. Even though the study indicates elements of resilience, he pointed out, this resilience can be "'knocked out' often by single events" (2010: 2). Quite clearly the jigsaw metaphor here serves as a way to calm down heated conclusions about the cancellation of a sea level rise catastrophe, and to address the only slow progress in scientific knowledge about geomorphological processes correlated with sea level changes and local anthropogenic changes. While we agree with some more recent commentators, who find it convincing to include both the effects of global warming and the local modifications in the understanding of the moving shores (see Donner 2012), we may also question whether this is a case where only *one* jigsaw is assembled.

MOVEMENTS IN THE ENVIRONMENT

As demonstrated throughout this chapter, the making of worlds is implying the nature of knowledge (Goodman 1978: 21) and the wider socio-natural practice (Mol 2003; Descola 2006). As people, sand, and animals move, multiple worlds are in the making. This transformation sometimes entails frictions and divisions, as in the debate about the significance of the *pa*, and the present effects of sea level rise. Other examples of tension surround the many hand-made and small-scale entrepreneurial sea walls that dot the island shores. Coast-morphological studies clearly show that although a simple sea wall made of corals, sand bags, or concrete may protect the stretch of land on which it is constructed it can in fact also increase the wave energy in surrounding areas and thereby worsen any nearby erosion.[12] The question asked by people who know this effect from the literature or by careful observation is: Why do people not act according to this existing knowledge? Why do they carry on rebuilding straight hard structures, which continuously break down and potentially increase surrounding erosion? According to our perspective this is not necessarily a result from lack

of sound judgement; sea walls may after all hold on for a while, even in environments where no elements are fixed. People certainly do not continue the hard work due to "their lack of knowledge," a suggestion which may work well among the educated (cf. Nunn 2010: 233) looking at the worlds of ignorance, but which does not explain anything about the motivation of the builders.

Through fish traps, sand, whales, and causeways we have tried to demonstrate how collectivities of people and things, of knowledge, space, and time, are open for changes. As Clark suggests, systems always have the potential for radical transformation, which may or may not depend on input from their exterior (Clark 2005: 176). SEAFRAME, the network measuring sea level rise in the Pacific region, is another example of world-making activities based upon a certain order of measurement purposefully cleaned of any local perceptions of change, and recorded by neutral tools in order to reach an exact average. However, the measurements of SEAFRAME feed into global connections of present and future sea level rise, and thereby co-create the bathtub scenario, which nevertheless does not necessarily apply directly to the environments from where the data is drawn.

In the words of Goodman, these versions "are not 'found in the world' but built into a world" (1978: 14). The people who live on the beaches do so not through ideas of average, but rather through ideas of seasonality, change, and constancy. Accepting incommensurability of such differing worlds means embracing tension and diversity inherent in the multiplicity of experience and knowledge, yet also accepting that incommensurability cannot be guaranteed as something certain over time. While the sea is rising it may not, in a straight-forward manner, appear so at many shores. As mentioned, this is recently confirmed by geomorphological studies (Webb & Kench 2010; Ford 2012). But suddenly, of course, this situation may change when the socio-natural environment changes and new collectivities are created.

In conclusion, on the islands of Kiribati and the Cook Islands and many other shores across the globe, sea level rise is a measurable, ongoing process making it possible with considerable evidence to project severe inundations in the far future. Concurrently, within the horizon of the present and the near future, the malleable island environments are entangled in other competing collectivities, and so different versions of a fascinating dynamic world emerges. The natural sciences are aiming at getting a deeper understanding of how both natural and anthropogenic forces physically shape island shorelines; the social sciences, as we see it, are undertaking a similar project. However, while natural sciences are concerned with quantifying and projecting change, social sciences are concerned with how people living in changing environments are engaged with understanding and positioning themselves in relation to the change they are experiencing by envisioning and crafting new worlds. Either way, the social and natural sciences are preoccupied with unravelling the same mystery of how social and natural

processes are deeply implicated in each other. As such, society and nature do not describe domains of reality, they are rather collectivities invented by ourselves (Latour 2005: 110). If society and nature may thus be considered products of assembly work, then 'Teabaniuea' and 'Bikeman', and the different versions of the *pa*, can be seen as materials and movements that actors use to make specific worlds.

There lie in wait many more worlds than merely the bathtub version and the geomorphological version of local shoreline change, no matter how detailed and insightful they may be. The lagoons and the beaches of atoll islands are populated with too many agents constantly engaged with establishing connections to make up a single version or 'jigsaw'. Guided by our interlocutors' different engagements with the waters, the sand, the fish traps, boats, sand bags, algae, and stars, we have chosen to put forward some of the important, engaged, and complex versions that tend to drown in the bathtub scenario.

NOTES

1. While IPCC in 2007 projected a global sea level rise relative to 1990 of 18–59 cm by 2100, many other projections cluster around 1 m (Hansen & Sato 2011).
2. We would like to take this opportunity to sincerely thank the interlocutors who participated in our respective fieldworks. Their endless patience in answering our questions and simply inviting us into their lives has been indispensable for our understanding of Pacific perceptions of the environment.
3. See also The World Bank, 'Cities, Seas and Storms: Managing Change in Pacific Island Economies'. Volume IV of Adapting to Climate Change. 2000. Papua New Guinea and Pacific Island Country Unit.
4. The photic zone is the upper layer of a body of water, which is exposed to enough sunlight to allow for photosynthesis.
5. See Alvin Powell, 'Island Nation President Plans for Extinction', *Harvard University Gazette*, 25 September 2008; and Loughry & McAdam 2008. 'Kiribati: Relocation and Adaptation'. *Forced Migration Review* 31, 51–52.
6. See also *Time Magazine's* article: 'There's Debate about the Causes, but Rising Seas Are Lapping away the Edges of Tiny Island Nations—and Could Eventually Drown Them' by Daniel Williams, 20 August 2001.
7. A causeway is a raised roadway across water or marshland. The causeways have been fundamental in allowing mobility on the atolls of Kiribati as they often consist of smaller disconnected islets, however, according to the local residents these constructions have drastically changed the formation of the islets by blocking the travelling sediments.
8. http://www.niwa.co.nz/pacific-rim/update/pacific-update-01-december-2009/kiribati-%E2%80%93-adapting-to-climate-change.
9. The net relative sea level rise at the Kiribati station is measured to 2.6 mm/yr. The monitoring stations are fixed structures capable of multiple types of measuring, securing data on the absolute sea level change (SEAFRAME 2011).
10. Ministry of Marine Resources, Government of the Cook Islands. 2011. Water Quality Report Card. Rarotonga.
11. SOPAC is the Applied Geoscience and Technology Division of the Secretariat of the Pacific Community.

12. See for example 'Pacific Island Mangroves in a Changing Climate and Rising Sea', *UNEP Regional Seas Reports and Studies* 179.

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5 Political Ecology in a More-than-Human World

Rethinking 'Natural' Hazards

Sarah J. Whatmore

> *It is not enough to decide to include nonhumans in collectives or to acknowledge that societies live in a physical and biological world as useful as these steps may be. The crucial point is to learn how new types of encounter (and conviviality) with nonhumans, which emerge in the practice of the sciences over the course of their history, can give rise to new modes of relation with humans, ie to new political practices.* (Paulson 2001: 112)

In his book *The End of Nature* the American environmentalist Bill McKibben argues that "an idea, a relationship can go extinct just like an animal or a plant" (1990: 48). At the close of the 20th century, the idea in question "is nature, the separate and wild province, the world apart from man" (ibid.). "By changing the weather," he goes on, "we make every spot on earth man-made and artificial. We have deprived nature of its independence and that is fatal to its meaning" (ibid.: 58). Contrast this with the observations of the leading English political commentator John Locke 300 years earlier, as the European settlement of North America got underway. "In the first ages of the world," he wrote, "men were more in danger to be lost, wandering from their company, in the then vast wilderness of the earth than to be straitened for want of room to plant in. And the same measure may be allowed still without prejudice to anybody, as full as the world seems" (1988 [1690]: 24). As both these accounts suggest, there is a powerful geographical imaginary at work in Anglo-Western attitudes to nature. This imaginary translates a categorical opposition between that which is attributable to humankind (culture) and everything else (nature) into a spatial purification in which nature is understood as a space-time outside/before the presence (or taint) of human settlement or activity. It is an imaginary with very real consequences as it has been exercised through scientific, political, and legal practices (see Whatmore 2002).

It is also an imaginary writ large in the disciplinary fabric of geography that, for all its talk of integrating social and natural science perspectives on the environment, practices a 'human'/'physical' division of labour. As human geographers have set about trafficking between nature and culture, so a fundamental asymmetry in the treatment of things assigned to these

categories has been smuggled into the project. For the most part, human geographies, like histories, have become stories of exclusively human achievement played out over and through a seemingly indifferent medium of matter and objects made up of everything else. Whether their emphasis has been on material transformations or the changing meanings of 'nature', these are geographies whose only subjects or agents are people, while everything else consigned to nature becomes so much putty in our hands. To this extent, they are quite compatible with McKibben's 'end of nature' narrative but, as the environmental historian Bill Cronon has observed, this is a narrative that returns us to "the wrong nature" (1995: 85). It is premised on two problematic *humanist* assumptions. The first is that the collective 'us' of humankind is somehow always already removed from the rest of the world, for only by placing 'us' *a priori* at a distance can human society be imagined to be (re)connected to everything else on such asymmetrical terms. The second is that the generative energies of earth-life—rivers, soils, weather, and oceans and in the living plants and creatures assigned to 'nature'—are effectively evacuated from the company of what matters, or makes a difference, in the composition of social worlds. Such assumptions do not square with the growing insistence of collective existential anxieties and infrastructure of anticipatory risk management that characterize modern societies. In ubiquitous and unforeseen ways the forcefulness of all manner of things—from melting ice caps to 'mad cows'—makes itself felt in our social lives and political agendas ever more intensely. In consequence a major thrust of geographical work, particularly that of cultural geographers, has been to challenge the analytical and political logic of the 'end of nature' narrative by rethinking the 'human' in human geography and, thereby, the status of the 'non-human' in the fabrications of social life (e.g. Whatmore 2002; Clark 2011).

In this endeavour geographers find themselves in the company of many intellectual and cultural cross-currents mustering in the name of posthuman/ism (e.g. Badmington 2004; Wolfe 2010). From the off, this gathering articulates a generative tension between two imperatives. The first is fuelled by the promiscuous inventiveness of the life sciences and its implications for repopulating the body politic in mundane and monstrous ways. The second is the latest in a line of contrapuntal intellectual energies associated with the prefix 'post-' that ostensibly work against the philosophical legacy of the Enlightenment, but which surpass and sustain in the same breath whatever went 'before'. In this chapter I want to explore the political promise of this adhesive but problematic '-ism' and its implications for redistributing what comes to matter without recourse to the magnetic coordinates of nature/culture. Drawing insights from recent conversations between political theory and science and technology studies, particularly the work of the Belgian philosopher of science Isabelle Stengers, I argue that posthuman/ist enquiry requires another, more experimental tack if it is to make what Paulson (in the quotation above) calls the crucial step in articulating how

new types of encounter with non-humans emergent in the practice of the sciences might give rise to new ways of doing politics.

In a preliminary mapping of the political implications of these imperatives, the geographer Bruce Braun (2004) traces the posthumanist impulse to a series of essays by Jacques Derrida (2002) and Giorgio Agamben (2004) that query the 'human' by exploring how humanism produces this figure through that of another: the animal. Without this distinction humanism has no foundation, an insight that for Braun is captured most succinctly in Derrida's neologism—*animot*. The word phonetically singularizes the plural for animal (*animaux*) and combines it with the word for 'word' (*mot*), thereby calling attention to the habit of rolling all animal species into one, producing an undifferentiated 'other' against which the 'human' can be juxtaposed and defined (Braun 2004). Derrida goes on to explain that this "fundamental anthropology" deconstructs itself, as the differentiation of the human from the animal always requires a supplement to fix the difference (language, reasoning, tool making, etc.), yet each and every supplement is inadequate to the task. It is an argument closely paralleled by Agamben's 'anthropological machine' (2004). Braun characterizes the political implications of this current in posthuman/ism in terms of its "deconstructive responsibility," keeping vigil over the figure of the human as it is continuously deployed and defined in cultural, political, and philosophical practices.

The second current which Braun identifies is associated with "certain ontological stances" that emphasize the "open-ended becoming" of the world and provide a sort of "groundless ground" from which the "fixing" of the human comes into view as a problem' (2004: 1353). Using Donna Haraway's (2004) 'ontological choreography' as his exemplar, he argues that rather than focus on how the figure of the human is established as an identity differentiated from other classes of being, those writing in this vein have taken the making of human being, and its corporeal constitution in particular, as their central concern. This focus on the *bios* of the posthuman brings a science fiction familiar, and now celebrated theoretical touchstone—the cyborg—into play as a necessarily ambivalent creature combining human, animal, and machinic qualities and disturbing the exclusively and self-evidently human terms in which the political subject has been framed (see Haraway 1991). Like Braun, I find this cyborg ontology provocative but also problematic in its tendency to temporalize posthuman/ism as an era or condition ushered in by unprecedented techno-scientific capabilities, in which the human and non-human are being 'stitched together' in new ways. Implicit in such terminology is a particular kind of historicity that holds onto the idea that things have not always been this way; that in times past the human was more self-evidently and reliably itself. This raises the question of whether posthuman/ism(s) have themselves become 'anthropological machines', unintentionally transfixed by the 'human itself' even as they herald its passing.

In *Hybrid Geographies* (2002) I set out to explore the suspect coupling of the 'after' of posthuman/ism with/as a technological accomplishment of the life sciences, as unqualified by precedent or memory as all the other brave new worlds that have gone before time out of mind. I sought to argue that it is what exceeds rather than what comes after the human, however configured in particular times and places, which is the more promising and pressing project. It is for this reason that I advocated then, and continue to work with, a different signature preferring the 'more-than-human' (Whatmore 2002: 4) to the 'posthuman'—a signature that conjures a different kind of historicity and, by implication, politics. Using various analytic and narrative devices to push hybridity back in time, I sought to demonstrate that whether one works through the long practiced intimacies between human and plant communities or the skills configured between bodies and tools, one never arrives at a time/place when the human was not a work in progress. Then and now, it seems to me that what gives the 'posthuman' moment bite is that its purchase is evidenced as much in everyday negotiations and political events around, say, foodstuffs, environmental hazards, or healthcare as in the deconstructive vigilance of the humanities or reconstructive potency of the life sciences. It is a moment, in other words, which testifies to a Deleuzian sense of philosophy as a 'mechanics' for living (see Murphy 1998: 213), a means of going on rather than an intellectual pastime. Such negotiations and events have witnessed all manner of suppressed entities and/or materials—bodies, codes, devices, models, documents, and proteins among them—resituating the question of 'nature' in the heterogeneous assemblages emergent in and as the politics of techno-science (see Callon et al. 2001).

The dominant currents in the posthuman/ist project mapped out by Braun raise important questions about biopolitical 'redistributions of difference' (see Esposito 2008) that complicate the composition and conduct of bodies politic, not least by highlighting the significance of corporeality to what/who counts as a political subject. However, where work in this vein explores the distinction between *zoe* and *bios* to good effect, too rarely does it take into account a third term—*techne*, without which the 'becoming political' of our biological existence can hardly be conceived. To this extent, posthuman/ism's preoccupation with the 'life' of the life sciences, bedazzled by the hyperbolic inventiveness of bioengineering and bioinformatics (Doyle 2003), focuses its political charge too narrowly on the body-subject relation and removes 'life' from the situatedness, or ecologies, of living. As a geographer, I gravitate towards the rich conjunction of the *bio* (life) and the *geo* (earth)—or what the writer Jeanette Winterson calls the 'livingness' of the world (1997: 85). Living/ness is a relational condition that reconnects the intimate fabric of corporeality, including that of human becoming, to the seemingly indifferent stuff of the world that makes living possible. In this, it conjures an ecological imagination that foregrounds the conditional openness or immanence of life such that ecology is less the

interaction between prefigured life forms / material entities than their emergence and transformation in a "wider field of forces, intensities and durations that give rise to [them]" (Ansell Pearson 1999: 154). What it invites is a shift in focus from a biopolitics fascinated by the 'new', to an ontopolitics in which, as the political theorist Jane Bennett puts it, "humans are always in composition with nonhumanity, never outside of a sticky web of connections or an ecology" (2004: 365). These are the points of departure for that 'experimental' tack in working through the political implications of posthuman/ism for redistributing the question of 'nature' to which I referred earlier and turn next.

THE MATTER OF POLITICS

The potency of technological objects and more-than-human agents in the fabric of political association and social conduct is more or less evident in different contexts, registering most forcibly in those moments of ontological disturbance in which the things on which people rely as unexamined parts of the material fabric of their everyday lives fail, 'act up', or otherwise perturb our expectations. This materialization of the political brings into view an ontological alliance between interests in the propensities, affordances, and affectivities of more-than-human phenomena, and amplifications of the produced-ness and contingency of human embodiment. As the matter of politics and the politics of matter have become more systematically entwined with the proliferation of techno-scientific practices and artefacts mediating social life, so these moments of ontological disturbance now find such practices and artefacts a familiar subject of political (dis)ordering, governance, and dissent (Barry 2002; Latour & Weibel 2005). This co-implication of techno-science and politics has spawned a growing body of work at the interface of science and technology studies (STS) and political theory under various flags, including Annemarie Mol's 'ontological politics' (1999), Bruno Latour's 'dingpolitik' (2005), and Isabelle Stengers' 'cosmopolitiques' (2005). Leading scholars in these two fields are brought into conversation in *Political Matter* (Braun & Whatmore 2010) to interrogate the nature of the relationship between politics and techno-science. Perhaps the most significant argument developed in the volume is that technicity—whether understood in terms of language, equipment, or machine—is not merely a supplement to human life; rather, as Adrian Mackenzie puts it, it is 'originary' (Mackenzie 2002). In these terms, it is a mistake to posit humanity (culture) as somehow existing apart from the world of things (nature); rather, the human comes into being *with* this world.[1] Such a view necessarily challenges how we think about the 'stuff' that we consider technological and the bodies that such materials are thought to supplement. Drawing upon the work of Simondon and Merleau-Ponty, for example, Mark Hansen (2006) argues that the operational capacities of the embodied

organism (what he calls 'body schemas') unavoidably involve the body's coupling with an external environment, a coupling that has always been accomplished through technical operations.

The history of the human animal and, indeed, of 'culture' is thus necessarily a history too of the stuff that is from the beginning part and parcel of human becoming. It is this coupling of embodiment and technics in human and non-human becomings (technicity) and their co-evolution (technogenesis) that challenges our conception of 'the political' as a category, notwithstanding the humanist assumptions that prevail in political theory (see Bennett 2009). The philosopher Michel Serres, for example, has sought to address the consequences of the "exclusively social contracts" through which "we have abandoned the bonds that connect us to the world" and to rework the contractual polity towards an understanding of "the things of the world" in terms of the "forces, bonds and interactions" in which they "speak" to us (Serres 1995: 39). This work returns us to the political potency of techno-science but one recharged not by a biopolitical focus on the inventiveness of the life sciences and its implications for 'cyborg' political subjects, but rather by an onto-political focus on the inventiveness of politics itself. Here, the political is refigured as an eventful technogenesis that amplifies the *res* of the *res publica* such that "the matters that come to matter in the *res*. . . . create a public around them," triggering "new political occasions and associations" (Latour 2005: 16). Such matters include the machinations of the life sciences (witness GMO controversies) but, crucially, they are not restricted to them and are as likely to be geophysical forces (witness environmental controversies triggered by earthquakes, hurricanes, or floods), or computer-mediated technologies (witness mobile phone mast controversies), in which livingness (human and otherwise) is in composition.

This onto-political tack puts the onus of a political ecology 'after' humanism on a political inventiveness that, in turn, demands experimentation in the research practices of the social sciences and humanities too in terms of their involvement in the staging and conduct of new knowledge polities, media, and devices in and through which technoscientific objects and the environments they assemble can be rendered politically affective and amenable. Some such experiments are underway, in the guise of collective efforts to develop what Bruno Latour calls 'learning to be affected' (2004) and Donna Haraway (2008) speaks of as 'response-ability', the kind of political and ethical thinking that is called forth by the capacity of all manner of things, human and non-human, organic and non-organic, to move and be moved by others. To do so means understanding stuff of all sorts as *forceful* and to experiment with what it means to incorporate this forcefulness into ethico-political conduct. In the remainder of this chapter, I want to work these arguments through the demanding experimental ethos of the Belgian philosopher Isabelle Stengers for whom scientific practices produce reliable knowledge claims only insofar as the questions they address are at

risk of being redefined by the phenomena mobilized in them (1997). More radically, Stengers extends this ethos of experimentation to elaborate an understanding of, even a test for, an adequate political theory and practice (2005). I do so with reference to a recent research experiment in which I collaborated with social and natural scientists and people affected by flooding in the UK and in which the forces at work in the event of flooding neither began nor ended with nature.

EXPERIMENTING POLITICAL PRACTICE

> If we take seriously those nonhumans that are best characterized as forcing thought. . . . what we need to think about and address is not the empty generality of humans as thinking beings, but something we usually reserve for expertise, the correlate of the classical definition of political agency: humans as spokespersons claiming that it is not their free opinions that matter, but what causes them to think and to object. Humans who affirm that their freedom lies in their refusal to break this attachment. (Stengers 2010: 5)

The association between knowledge controversies and the emergence of new publics has been elaborated in the work of STS scholars. Michel Callon's 'hot situations' (1998), Bruno Latour's 'matters of concern' (2005), and Isabelle Stengers' 'things that force thought' (2005), for example, all provide vocabularies for addressing those moments of ontological disturbance in which the things on which we rely as unexamined parts of the material fabric of our everyday lives become molten. Such situations, matters, or forces render expert knowledge claims, and the technologies through which these become hardwired into the working practices of commerce and government, the subject of intense political interrogation. In this, controversies act as force-fields in which expertise becomes enmeshed with, and redistributed through, "an ever-growing, ever-more-varied cast of characters" (Callon 1998: 260) sufficiently affected by what is at issue to want to participate in collectively mapping it into knowledge and, thereby, in its social ordering. For Callon, Latour, and Stengers such knowledge controversies are generative events in their potential to foster the dis-ordering conditions in which expert reasoning is forced to 'slow down', creating opportunities to arouse "a different awareness of the problems and situations that mobilize us" (Stengers 2005: 994).

Their account of the political potency of knowledge controversies relies on two departures from the conventions of democratic political theory. The first is to avoid equating democratic politics with the institutions of representative government and the machinery of policy making, and to be more attentive to the multiple and emergent constitution of publics and their political capabilities. Here, one can point to a variety of efforts to

articulate an associative politics concerned with the capacity of citizens to band together and act in concert but in the manner of a 'swarm', rather than in consequence of some prefigured category of political interest (e.g. stakeholders) or class.[2] For Stengers, these new kinds of publics are allied to Deleuze and Guattari's notion of 'minoritarian' politics in which they can produce "not as their aim but in the very process of their emergence, the power to object and to intervene in matters which they discover concern them" (Stengers 2005: 161). The second departure is to redress the endemic humanism of political theory by recognizing that such emergent publics are not exclusively human achievements. Jane Bennett, for example, draws an instructive contrast between the *demos* (polity) of contemporary political theorists like Ranciere and that of Latour to argue that democratic political theory has to grasp that politics exercise more than the disruptive power of people to disagree indifferent to *what* is at stake in the disagreement (Bennett 2005). Thus, for Stengers emergent publics are induced by generative events like knowledge controversies in which the phenomena or problems that 'slow down reasoning' make a difference or, as Latour might put it, *matter* to the assemblage of political attachments and capabilities (2005).

The energetic business of 'arousing', 'triggering', 'sparking' connections between knowledge controversies and emergent publics is sometimes glossed over by their being treated as always already implicated. In a recent paper (Whatmore & Landstr□m 2011), their connection is examined in-the-making through a research intervention in the science and politics of flooding in Pickering, Yorkshire in the north of England. This project sought to put Stengers' experimental,[3] or inventive, ethos into research practice by exercising the conditions and possibilities of subjecting scientific propositions and artefacts to public trial. Stengers' approach calls for experiments in which the knowledge claims and practices of those researching knowledge controversies are somehow put at risk/stake in the controversy alongside those of people affected by it with whom they collaborate. Thus, our first working principle was to "treat all kinds of knowledge and skill that we study consistently, in terms of the effects that they produce" (http://ww.ulb.ac.be/rech/inventaire/unites/ULB640.html [author translation]), including our own into the bargain. This is important in the context of flooding in which controversies often centre on discrepancies between the firsthand experience of flood events and the vernacular knowledge accumulated in affected localities, and the flood science that informs 'evidence-based' flood risk management.

A second feature of Stengers' experimental ethos that we sought to put to work was her emphasis on articulating those 'things which force thought' in/as minoritarian political practices. Where the dominant logic of public participation methodologies is the claimed empowerment of local people, the logic here is what Annemarie Mol would call 'ontological' (1999). For Stengers (2010) this means empowering 'the situation' to 'force thought' in those affected by it and, thereby, intensify public scrutiny sufficiently

to 'slow down' the reasoning of established experts and open up the possibility of reasoning differently. The primary knowledge practice on which the technical arrangements and institutional procedures of flood risk management rely is mathematical modelling, a computer-mediated exercise in predicting future (unknown) events from projections of observed (known) events and estimating the return period of a flood event of a specified magnitude. As modellers would be the first to acknowledge, the knowledge claims advanced through predictive modelling are necessarily provisional and uncertain. However, such scientific circumspection commonly becomes dulled in the translation of such models into the 'evidence-base' on which the government agencies responsible for flood risk management rely, thereby rendering them immune to public interrogation.

Translating these two features of Stengers' experimental ethos into research practice, we trialled an experimental research apparatus—the Competency Group (CG)[4] as part of a research project interrogating the knowledge controversies associated with flood risk science and management in the UK funded by the Rural Economy and Land Use Programme (www.relu.ac.uk).[5] It involved the natural and social scientists in the RELU project team collaborating with residents affected by flooding in two localities in which flood risk management was already a matter of concern and public contestation. In the Pickering case, Group membership comprised two hydraulic modellers and three social scientists ('university' members, of which I was one) and eight volunteer residents ('local' members) from the town and upstream catchment, supported by a dedicated facilitator and a camcorder operator from the project team.

Our collaboration centred on bi-monthly meetings, supplemented by a variety of other activities that emerged in the course of the Group's work including field visits, archival research, and video recording. These activities were further supported by a password-restricted web-site hosting a resource depository for materials generated by Group members (e.g. maps, transcripts, photos, newspaper cuttings, policy documents, etc.) and a Group blog. The working practice of Competency Groups centres on 'slowing down' reasoning. In the case of the CG in Pickering, this slowing down applied to each others' reasoning among members of the Group as well as to that of the local EA in order to collectively interrogate explanations for, and solutions to, flooding in the locality that were circulating in the controversy and/or brought to the table. One of the primary means of achieving this slowing down of reasoning was to work with various materials and artefacts that served to mediate or objectify the knowledge claims and practices of different members of the Group and those informing local flood management—from photos and video footage to computer models and policy documents brought and/or produced by Group members. This emphasis on the objectification of knowledge claims and practices served two other purposes also. Firstly, as a means of 'putting at risk', in Stengers' terms, the knowledge practices of university as well as local members of the

Group, perhaps most obviously those of the hydrological modellers. Secondly, as a means of enabling the collective knowledge claims and practices of the CG to travel beyond the time and place of Group activity, notably in visualization devices such as maps and computer models of local flooding.

As one of the five university members of the Group I experienced firsthand working with various objectifications of knowledge about flooding, artefacts which mediated the collaborative interrogation of expert knowledge and experimentation with alternatives, that became pivotal to the emergent practices and identity of the CG. Most striking from the off was its effect on reconfiguring flooding expertise among Group members. Working with brought objects (such as maps, photos, satellite images, and even a remnant piece of mouldy carpet) served to situate each member's attachments to the event of flooding. A common thread in these attachments among local members was their visceral character, such that the sensory affects of flooding stayed with them whether in terms of the alarming noise "of the roaring waters" (MP), the lingering smell "when you go in someone's house after it has gone" (BG), or the frightening impression of floodwaters at night "just moving . . . , moving really quietly, but threateningly" (BG) (9 November 2007). This activity also helped to dissociate the university members from the normal networks constitutive of their authority and highlighted the ways in which all knowledge claims rely on the witness of objects. What became evident through this 'brought object' exercise was an appreciation of living in a landscape in which flooding has always been a feature. As one of the oldest local members of the Group, recalling her girlhood in the town, observed, "I remember flooding, or the threat of flooding being an annual occurrence in winter times, it was expected and you just lived with it" (BG, 9 November 2007).

One such object was a photograph of the 1932 floods in Pickering. It sparked a conversation among 'local' Group members about the dilemmas of living with the inevitability of flooding in a town built at the bottom of a valley with the 'beck' (river) flowing through it. The question with which local residents wrestled, then, was "that [if] it has always happened. . . . why do we have so much problem with it, when we know it is going to happen?" (MP, 9 November 2007). What became equally clear during the course of this first CG meeting was that both this landscape and the town's susceptibility to flooding were apprehended as co-fabrications of weather, geology, and human land-use time out of mind. On the one hand, "water is so pervasive. It gets in everywhere, it flows in, and you sort of treat it as something that does flow, that sometimes people don't appreciate that that flow can have such force [except] when you see one of the major floods . . . when it literally tears down a bridge" (ibid.). On the other, "in the past, people had houses with solid floors and if it flooded you swept it out, but now of course we have got your electrics and carpets, and you put your wooden floors in. Why do you do it when you know you are going to be flooded?" (ibid.). Neither the event of flooding nor the 'problem with it', it seemed, were attributable to a force of nature.

At the second meeting we began by working with printouts of the EA's indicative flood maps of the 2007 event as a means of translating individual experiences into composite knowledge of the pace and pattern of flooding. Such maps, as one of the 'university' members noted, "have been generated by the Environment Agency using models. They are not actual measurements of where the water actually goes. They are where they think the water goes, using models" (SNL, 11 June 2007). Local members shared their recollections of flooding in the town back to the 1940s and set about modifying the official map of the most recent floods from their experiences and observations on the ground. The point of the exercise, as one of the local member's put it afterwards, was to get a feel for the "difference between. . . . the character of this knowledge [the EA map] [which] is computer generated and is a kind of abstract amalgamation of things . . . [and] the documentary data that we have been pooling, that is kind of anecdotal and some of that is accurate . . . but, there is a different kind of error . . . that is human error as opposed to mathematical error . . . So, maybe, if we are looking at trying to get truth or reality or something like that about flooding [we have to] acknowledge that there are going to be those sources of errors whichever system we use" (DQ, 11 June 2007). In either case, it became clear that the extent, duration, and severity of a flood event was mediated by the situatedness of those affected and/or by the modelling assumptions and computations that informed the authorities responsible for flood management.

On this imperfect basis, these amended mappings informed our collective efforts to interrogate the expert models that held sway, and the proposed flood wall which they had authorized, and engage in modelling for ourselves as a means of trying out different forms of intervention suggested by individual Group members. By the second meeting in Pickering the visceral experiences of local members of the recent flood event and frustrated dealings with flood risk experts had already charged our collective thinking with an urgent sense of wanting to 'make a difference' to the impasse on flood defences. The ensuing discussion gelled into a decision to give our research collaboration a public face—the Ryedale Flood Research Group (RFRG) that, from this point on, began to overtake the methodological principles that had guided its initiation. To produce something that would have an impact on the controversy in Pickering, the RFRG discussed the need for some means of making the collective knowledge claims of the Group travel—an envoy that the EA (and other institutional actors) would have to take seriously or, at least, "could not dismiss easily."

Over subsequent months our efforts became focused on producing a bespoke model of flooding in Pickering Beck which would enable others to follow our working practice of 'trying out' different flood mitigation ideas—dredging; removing in-stream vegetation and debris; reversing the 19th century drainage 'grips' in the upper catchment; reclaiming the flood plain from farming, to name a few—and seeing what difference they made

to the movement of water over the catchment landscape. This process or trial and error allied a form of vernacular physics with an experimental way of doing flood modelling informed by local knowledge (Odoni & Lane 2010). Here, plumbing came to provide a practical vocabulary that enabled the Group to build and test a bespoke model of flooding in Ryedale. As one local member put it, "You think about a gutter and how much can go through it and if it fills up it comes over the top. So if you have got half the size of gutter, it comes over the top more quickly. . . . and if you put things in the way, and you make smaller bore pipes, it can't flow" (MP, 9 November 2007). The Group's collective modelling work led us to identify and propose an intervention not considered by the EA and dismissed by its consultants as 'unviable', namely upstream storage by means of a series of small obstructive structures or bunds. So it was that our envoy/proposition also acquired a shorthand name in the Group—the 'bund-model'.

Going public took the form of a public exhibition in Pickering Civic Centre. The event was advertised in the local press and held on a Tuesday in October 2008, a few months after the Group had ceased to meet regularly. Occupying a large ground floor space overlooking a flood-prone stretch of the river in question, the exhibition attracted some 200 visitors, including EA staff, local politicians, and journalists. It was organized around a series of posters arranged to 'walk' visitors through the RFRG's knowledge claims about the nature of flooding in Pickering, and culminating in our proposition of upstream storage by means of a series of small bunds. This was supplemented by a range of visual materials and visualization devices worked with and/or constructed by the RFRG to enable visitors to get some sense of the working practices that had produced the knowledge claims and propositions being presented, including the bund-model running on a computer so that visitors could try it out for themselves (with the assistance of Group members). The event garnered extensive local press and radio coverage both of the proposition of 'multiple small bunds upstream', and the modelling work that had produced it, of the Group's 'experimental' redistribution of expertise (see Whatmore & Landström 2011 for more details).

CONCLUSIONS

Environmental knowledge controversies refer to those events in which an environmental disturbance of some kind forces people to notice the unexamined stuff on which they rely as the material fabric of their everyday lives, and attend to its powers and effects. In such moments the ontological settlement that divides the social from the natural, and which expert environmental management practices assume and perpetuate, loses its grip. In these conditions, such expertise and its various socio-technical intermediaries come under intensified scrutiny by those sufficiently affected by the

matter at issue to want to participate in mapping it into knowledge and, thus, in its social ordering. What was striking to me rereading the transcripts of our six Competency Group meetings in Pickering, for the purposes of writing a contribution to this volume, is that 'nature' is not once invoked by any group member in all our discussions of that most biblical of earthly forces—flooding. I can only speculate as to why this might be so. One of the tell-tale characteristics of Western spatial imaginaries through which a dichotomy between nature/culture has been most energetically exercised is that the place of nature is always at a distance from the 'us' of the cultured observer. So, for example, the European colonization of 'foreign' lands glibly allied the perceived lack of cultivation (or improvement) of the land with that of its inhabitants through the quasi-legal concept of the 'state of nature' (see Whatmore 2002). Closer to home, in places in which learning to 'live with' environmental disturbances like flooding is a force of habit informed by individual experiences and communal memories, this imaginary has no purchase. Neither explanation nor comfort is to be found in a purified nature when the 'us' is situated in a long-settled landscape in which both the past and prospective legacy of more-than-human inhabitation is unavoidable.

The experimental research collaboration outlined here suggests that for techno-scientific controversies to be generative of new political and technical possibilities particular kinds of experimental practice capable of achieving a redistribution of expertise are required. In the case of the Pickering flood controversy it was the CG experiment which engendered a shift in the terms of the controversy, first through the knowledge practices of the Group itself and, subsequently, through the public mediations of the bund-model in which its knowledge claims and practices became objectified. The process of 'going public' which saw the Competency Group metamorphose into the Ryedale Flood Research Group and exhibit its work in the Civic Centre was a critical component in this rearticulation of the problem at issue, amplified by the local media. Only as a *knowledge* controversy did flooding become a generative event in which expert reasoning was forced to 'slow down' and a space for reasoning differently opened up, involving those affected in new political opportunities and associations. Not until this point could something resembling a hybrid forum be said to emerge in Pickering, with the qualities of an "open space . . . where groups can come together to discuss technical options involving the collective, hybrid because the groups involved and the spokespersons claiming to represent them are heterogeneous" (Callon et al. 2009: 18). The bund-model has continued to travel long after the CG ceased to meet, exercising new knowledge polities through the RFRG's proposition of 'upstream storage' (see Whatmore & Landström 2011). The series of small bunds made out of vernacular materials that the RFRG proposed are even now being constructed in the upper catchment of Pickering Beck and Ryedale. How ironic, then, to find that as our proposition has gathered momentum and even national

attention as an innovative approach to flood management, so too has it come to be characterized by the UK government department responsible for flood management policy—Defra (the Department for Environment, Food and Rural affairs) as a "natural approach to flood protection" (http://www.defra.gov.uk/news/2011/05/19/natural-flood-protection-funding).

I have argued here that working against the humanist grain in political theory returns us to the political potency of techno-science but one recharged and redistributed through an onto-political focus on the inventiveness of the political. Refigured as an eventful technogenesis, politics amplifies the matters that come to matter politically and triggers new political occasions and associations. Crucially, if originary technicity makes sense in these terms, it also makes sense to insist that non-human and technical objects are an irreducible part of all stories of the 'becoming-being' of the human, both individually and collectively, and that this could not be otherwise. I have tried to give some sense of the diversity of scholarship exploring this onto-political tack—in STS, political theory, anthropology, and geography, among others. What they share in common is a commitment to an ontological or more-than-human conception of knowledge practices and knowledge polities; an interest in knowledge controversies as generative events in the socialization of scientific knowledge claims and technologies; and a demonstrable investment in research practices that redistribute expertise, including that of social scientists. In this, they put the onus of a more-than-human political ecology on inventive practices of conviviality, of living with or co-fabricating, in which all those (humans and non-humans) enjoined in them can, and do, affect each other. 'Learning to be affected', or to 'think response-ability' pose important challenges for scholarly practice too, demanding experimentation in the research practices of the social sciences and humanities in terms of their involvement in the staging and conduct of new knowledge polities, media, and devices in and through which technoscientific objects can be rendered affective and amenable to effective interrogation.

While the proliferation and potency of non-human objects in social life today may indeed render questions concerning the 'stuff' of politics more intelligible than previously, it is also important to underline that asking these questions at the present juncture is not impelled solely by the kinds of techno-scientific or political inventiveness that I have described. Rather, it is also one that we might wish still to call ideological. The difficulties confronted in rising to this challenge should not be underestimated. Humanism retains an extraordinarily powerful hold on the imaginative resources and analytical practices with which human life is / can be thought and, consequently, continues to trip up attempts to write against the grain. Most obvious, perhaps, is the stubborn attachment of scholarship—liberal and radical alike—to a humanism that finds ever new ways of positing the non-human as 'out there' rather than 'in here', at the very heart of human becoming, and to a liberalism that continues to posit intention and action as attributes of autonomous individuals, rather than locating individuals

and their capacities in relation to political ecologies that condition the individuation of singular things. This reinforces the onus on inventiveness that I have associated with the onto-political charge of posthuman/ist styles of research and scholarship. Bruno Latour's tough yardstick for such work is to evaluate the "contents of the world before and after the enquiry" (Latour 2004: 219). "The question we have to ask ourselves [he argues] is not whether we have accurately represented some pre-existing phenomena or entity but whether there is now a distance between the new repertoire of actions and the repertoire with which we started" (ibid.). However, as our Competency Group experiment demonstrates, the character of such experimentation is likely to be very different from that associated with scientific interventions undertaken to test hypotheses under controlled conditions. Staging the CG amounted to conducting an experiment in a complex, 'live' situation to see what, if any, new political and scientific possibilities it might generate. That it resulted in movement in the Pickering flood controversy is less a measure of the success of the Competency Group apparatus *qua* methodology as of its political and scientific repercussions, which could not possibly have been anticipated, let alone designed, in advance. It is these repercussions through the political agency of the RFRG and its public envoy—the bund-model—to which any inventiveness should be attributed in terms of 'a new repertoire of actions' in the wake of our collaboration. We may not want to take Latour at his word, but if the 'more-than-human' project is to make a difference, those of us who pay it allegiance cannot but engage in the kinds of experimental practices envisaged by William Paulson in the quotation with which I began this chapter.

NOTES

1. See too, for example, Graham Harman's critique of the phenomenological legacy of Heidegger's notion of dasein in *Heidegger: Tool-being* (2002).
2. A common reference point here is Dewey's (1927) notion of the public as a set of actors jointly affected by a problem who organize into a public to ensure that the problem is addressed.
3. In French there is no clear distinction between the terms 'experiment' and 'experience' and Stengers' use of the term 'experi-ment' (without a preposition) is designed to signal an open, active practice, attentive to the experience as we experience it (Stengers 2008: 109, footnote 1).
4. To the best of our knowledge, the term 'competency group' was coined in a small office in the centre of Brussels in 2001 by Pierre Stassart and Sarah Whatmore in the process of trying to derive a research practice for a collaborative project on 'novel foods' from the notion of 'competent publics' in a web-essay by Stengers on 'sustainable development' (see Whatmore 2009). In this, it differs from the usage we later came across in medical and legal circles in which competency groups refer to gatherings of professional practitioners of specialist branches of medicine or law.
5. Details of the *Understanding Knowledge Controversies* project can be found at http://knowledge-controversies.ouce.ox.ac.uk/.

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6 Islands of Nature

Insular Objects and Frozen Spirits in Northern Mongolia

Morten Axel Pedersen

During the early summer of 1999, I spent some weeks travelling on horseback in the northwestern corner of Mongolia's Hövsgöl province accompanied by a good local friend, Amraa, who also served as a research assistant. Apart from enjoying the stunning mountain-steppe scenery and visiting some of Amraa's maternal relatives, the objective of the trip was to collect as many tales (*domog*) as possible about mountain owners (*gazryn ezed*) and other spirits of the land from the area's small population of Urig Urianhai people. As descendants of Turkic-speaking cattle-, horse-, and reindeer-breeders who inhabited the Ar Shirhten Banner situated in the obscure no-man's land sandwiched between the Russian and the Qing Chinese empires, the Urianhai were never subject to Christian or Buddhist mission activities like most other Southern Siberian and Mongolian peoples. For the same reason, their homeland (*nutag*) has since been considered a shamanic stronghold by their Darhad neighbours, whose Mongolian language and pastoral economy they have otherwise adapted, and who, as the larger group of the two, are widely considered to be Mongolia's primary shamanic tribe (*yastan*) by other Mongolians (Badamhatan 1986; Pedersen 2011).

The trip was a great success. In total, Amraa and I collected more than 12 hours of narratives about wrathful game spirits and revengeful shamans, some of which are recounted in my recent monograph, *Not Quite Shamans* (2011), where they represent the backbone in my attempt to offer a comprehensive exegesis of contemporary Darhad shamanism. Put extremely briefly, the crux of my argument in the book is that the Darhad shamanic cosmos may best be conceived of as an emergent assemblage of relations, in which a given entity—human or non-human, animate or inanimate—can potentially change its form into another form as a result of occult intervention by shamans, spirits, and other agents of metamorphosis. Much like in the Amerindian ethnography described from the Amazon, there thus seems to be an ontological "continuity between humans and non-humans" (Descola 1996: 89) in Northern Mongolian shamanism, for "the space between nature and society is itself social" (Viveiros de Castro 1998: 473). Indeed, as I have shown elsewhere (Pedersen 2001), this logic of substitutions or 'analogical identifications' is characteristic of North Asian shamanic or animist cosmologies more generally: Among Siberian hunters as much as

among Darhad shamans, any perspective within 'the space between nature and society' may, in principle, be interchanged with another. Still, not every human (or animal) is imbued with capacities for metamorphoses, at least not in a controlled and reversible way that does not forever alter their bodies (*biye*) and minds (*uhaan*). Only shamans (and some hunters) can do this, for they alone "are capable of assuming the point of view of [different] beings and, in particular, are capable of returning to tell the tale" (Viveiros de Castro 1998: 472; see also Willerslev 2007). Indeed, moving in and out of different human and non-human bodies by taking on their perspectives seems to be what Darhad—and more generally, Mongolian shamanism—is all about. Shamans go beyond the visible world; not however by renouncing it as many so-called world religions do, but by plunging ever deeper into its multiple and hidden dimensions (see Pedersen 2011: 148-182).

But there is a snake in the relational paradise. As closer inspection of the ethnography shows, not every single position in the Darhad cosmos is imbued with equal intensity of occult agency, and nor is this invisible potential for metamorphoses present in a given being at all times. Unlike the Amerindian cases discussed by Descola, Viveiros de Castro, and others, which all seem to be characterized by an over-abundance of human and nonhuman life forms, Darhad hunters and pastoralists thus conceive of most of their landscape as an inanimate void, which is intersected by a multitude of paths (*sam*) and trajectories (*güüdel*) along which human and non-human lives unfold in space and time (Pedersen 2007, 2009). This 'nomadic void', which may be imagined as comprised by all the holes that together 'is' the hollowness of a Swiss cheese, serves as an inanimate ground against which a multitude of animate worlds are made to appear, not unlike the uneven mass of residue left over when a portion of dough is cut by a cookie cutter. In this landscape, then, the shamanic cosmos is no longer a seamless whole comprising all that exists, but a multitude of parallel worlds, which, to borrow a term from the cognitive scientists (Sperber 1996), are mutually encapsulated.

When anthropologists are faced with an ethnographic reality like the Darhad shamanic cosmos, we are reminded that we are not done with rethinking the concepts of nature and culture, far from it. For it is clear that the 'hollow' ontology of the Darhad nomadic landscape cannot adequately be conceptualized by familiar versions of this binary, such as the universalist dichotomy between one nature and one culture (as discussed by Strathern & MacCormack 1980), let alone the cultural relativist dichotomy between one nature and many cultures (as criticized by Ingold 1992). Yet, it seems to me, neither can the Darhad cosmos fully be described as 'natural relativist' or 'multinaturalist' in the sense invented by Viveiros de Castro in order to conceptualize the 'spiritual (or phenomenological) unity' and the corporal (or objective) diversity, which is characteristic of many Amerindian and indeed Siberian animist cosmologies (1998: 470, 478). After all, as we saw above, it makes only limited sense to speak of an overarching 'concept of spiritual unity' in the Darhad cosmos. Surprisingly as it may be

to the Amazonianist, Darhads do not entertain ideas of an original state of undifferentiation from whence everything was (and is still constantly) created—a hyper-real virtual 'chaosmos' which people, especially shamans, aspire to actualize and become part of via the recitation of secret myths and the performance of esoteric rites (Pedersen 2007).

All this means that, if we are to reach a better anthropological understanding of the Darhad cosmos, we need a concept of nature that is capable of conveying the 'hollowed-out' character of the nomadic landscape and its mutually encapsulated manifold of shamanic worlds. This is precisely what I aim to do in this chapter.[1] In doing so, I not only hope to engage with ongoing debates about the relevance of the nature/culture distinction in the social sciences and the humanities, but also to contribute to an emerging 'postrelational anthropology' (Pedersen 2012a, 2012b; see also Stasch 2009; Candea 2010), which explores the ethnographic and theoretical limits of relational anthropology and the so-called ontological turn.[2] Thus, my intention in this chapter is not to make a full-blown attack on the kind of analytics to which I have myself been, and remain, committed. Rather, the intention is to perform a postrelational theoretical experiment by asking what might 'come after the relation' (Pedersen 2012a) with a view to radicalize relational theory by pushing and twisting its ethnographic and conceptual limits.

SNUFF BOTTLE MYTHOLOGIES

Consider the following *domog* (tale, legend), relayed to Amraa and myself by an elderly Urianhai nomad and his wife over a serving of salty milk tea in their yurt near the great Ulaan Taiga:

> Every day, the rattling noise of wood being cut emanates from the Barlan hill. Böövön Zairan [title for male shaman] used to master that hill. Once, a thief stole a reindeer from Böövön. Soon, seven wolves appeared from Barlan in the footsteps of the reindeer and killed the stolen livestock as well as all of the thief's own reindeer. Seven wolves. It is so powerful, it has a wolf master [ezen]. For this reason, we don't hunt around Barlan. If you kill something [there], then the wolves will kill our livestock and eat it.
>
> Once, the shaman called Böövön went to Bayanzürh [a district located approximately 150 km to the south of the Darhad Urianhai homeland] where he ended up drinking at a camp [*ail*] with seven households [*örh*]. His hosts made him drunk and stole a nice snuff bottle made of the most beautiful and expensive agate. 'Give me my snuff bottle, I brought it here,' he said [the next morning]. 'We did not take it, perhaps you lost it,' they said. To which old Böövön replied, 'So be

> it, but in one week I shall return here in the shape of my light body [*höngön biye*]!' And then he left. Exactly one week after, all seven of them became gravely ill. A wise person was summoned, who told them: 'You have done something very dangerous. You have taken Böövön *zairan's* snuff bottle. You must bring it back to him. If not, you shall all die!' So, they wrapped the snuff bottle in a *hadag* [ceremonial silk scarf] and brought it back to him. At which point the *zairan* exclaimed, 'From this point on, never steal peoples' things!'

'That was a nice story, wasn't it!,' giggled the old nomad, as he paused in his story-telling while cleaning his glasses in the lap of his *deel* (gown). "By the way," he then continued,

> There was also a man called Shüülen, who lost a snuff bottle when he was hunting up behind here [in the Ulaan Taiga]. Upon his return from the hunt, he came to see my father because he wanted to seek help from a diviner. 'Please find my snuff bottle,' he asked my father. My father shamanized and said, 'I have found your snuff bottle. It is there. But you cannot get it back. The snuff bottle is now a treasure thing [*erdeniin züil*]. It is too heavy, I cannot lift it. I tried to. When you go back [to where you were hunting], you will find it hanging in the willow branches.' So Shüülen went and, behold, the snuff bottle was there. Even shamans and spirits cannot lift such treasure things.

Several observations could be made on the basis of this *domog*, which is quite illustrative of the narratives circulating in Northern Mongolia in the 1990s, when the Darhads and neighbouring groups experienced a shamanic revival following 50 years of state socialist religious purges (Pedersen 2011: 81–114).[3] For present purposes, however, I want to focus exclusively on the snuff bottles in the story, for it seems to me that and these other 'treasure things' offer a significant ethnographic challenge to established wisdom concerning Inner Asian shamanic cosmologies in particular and relational ontologies more generally. For how do we as anthropologists go about theorizing the presence in the nomadic landscape of entities, which are deemed so 'heavy' that they seem to be outside the scope of shamans and their spirits? How to analyze the fact that certain objects, like lost snuff bottles, are beyond reach of the supposedly omnipotent shamanic forces? And more generally, given that the shamanic spirits are known to be the relational agents *par excellence* in Northern Asia and many other animist contexts, what happens with the concept of the relation itself when the cosmos contains so-called treasure things—here, snuff bottles—that defy the core animist principle of unlimited metamorphosis?

To address these questions, let us take a closer look at the role of so-called treasure things in Mongolian cultural traditions. The ethnographic record is full of references to 'heavenly stones' (*buumal*) and other 'treasures'

(*erdene*) which suddenly make their appearance into the world, either due to contingent circumstances (like the lost snuff bottle), or, more typically, because they (in some cases quite literally) 'fall down from the sky,' as with the many meteorite stones and other extra-terrestrial objects worshipped in Mongolian folk traditions. Thus, as historian of Mongolian religion Walter Heissig explains, "Alongside the Ongghot and the tngri (heavenly powers), the shamans also worship a middle level of spirits which are called Buumal . . . , 'those who have descended'" (1996: 15). "Originally," Heissig goes on to explain, "the name buumal referred to prehistoric objects found in the soil, particularly meteorites. In Buriat-Mongolia, these have been worshipped as the founding fathers of new shaman line . . . For the Eastern Mongols, Buumal are the souls of deceased relatives as well as spirits with particular abilities and powers" (Heissig 1996: 15, 253). A similar observation is made by another famous Mongolian scholar of shamanism, the late Otgony Pürev (who was, incidentally, himself of Darhad Mongolian origin). Pürev writes, "There was one kind of amulets—'Heaven's Buumal' *buumal* was a kind of labor tools . . . , which were manufactured and utilized by the people of bronze age's period and found. . . . So . . . believers . . . considered it a thing, which was sent down by Heaven . . . They . . . considered it as . . . of the 99 Shaman Heavens" (2002: 200). Furthermore, according to a home-page devoted to Mongolian shamanism, "Objects struck by lightning, meteorites or ancient artifacts are called *Tengeriin us* (Heaven's hair). They contain a spirit (*utha*) which is a concentrated package of Heaven's power. Objects struck by lightning (*nerjer uthatai*) and meteorites (*buumal uthatai*) can be placed in milk or liquor to energize the liquid with the spirit of the object. Shamans drink this liquid to incorporate the power of the *utha* spirit (Heaven's power). Another form of *Tengeriin us* is the *bezoar* stone, which is used for rainmaking magic" (http://www.face-music.ch/bi_bid/historyoftengerism.html, accessed 30 January 2012).

What this and other scattered pieces of ethnographic evidence seem to suggest, then, is that *buumal* and cognate terms denote stones or other objects, whose origin is perceived as extra-ordinary in the sense that they originate either from 'heaven' or from the deep past, and which shamans may incorporate into their pantheon of spirit helpers and spirit metamorphoses. Yet, and crucially, it also seems to be precisely the fact that such objects are not dormant members of the shamans' network of spirits, but are somehow located fundamentally outside these and any other occult relational orders and logics, which renders them so powerful, important, and unique. Thus, despite the fragmented nature of Mongolia's 'treasure things' mythology, if there is one common message in the different samples of shamanic folklore cited above, then it is that such treasure objects are understood to be resistant to shamanic intervention. *Buumal* may be used by shamans, yes, but they cannot be transformed by shamans. For example, in the Darhad Urianhai *domog* about the lost snuff bottle that I recounted above, the narrator's father, the diviner, was able to locate the

whereabouts of the lost object in his visions; but that was also as far as his shamanic capacities reached. The bottle could only be seen, not touched or transformed by either shamans or their spirits.

INSULAR OBJECTS AND FROZEN SPIRITS

On the above background, it seems to me that we have little other option than to conceive of these *buumal* as non-relational entities—or in the above Urianhai Darhad case at least, postrelational entities (given that the snuff bottle, before it was lost in the forest, used to be embedded within a network of social and material connections). In that sense, as I shall now argue, we may think of the lost snuff bottle and other treasure things as examples of 'insular objects', that is to say, as ontologically discrete or encapsulated entities that have accidentally 'fallen out' of the relational shamanic order. Indeed, one may thus more generally ask, might this also be what other treasure things in Mongolian and Inner Asian traditions also are: insular objects, which, like a wedding ring dropped in a lake during a honey moon, have departed irreversibly from the bustle of social relations and cultural forms to find rest at the bottom of the world?

To explore this possibility, I want to draw on a new school of continental philosophical thought, namely the so-called speculative realists associated with philosophers such as Quentin Meillassoux, Graham Harman, and Ian Hamilton-Grant. What unites this heterogeneous constellation of scholars is a common dissatisfaction with the anti-metaphysical state of philosophy since Kant's 'Copernican revolution', and a shared ambition to pose traditional ontological questions about 'nature', 'essence', and the 'absolute', without for that reason reverting to the classic antinomies and impasses of pre-Kantian dogmatic metaphysics. As Quentin Meillassoux puts it,

> Contemporary philosophers have lost the *great outdoors*, the *absolute* outside of pre-critical thinkers . . . ; that outside which was not relative to us, and which was given as indifferent to its own givenness to be what it is, existing in itself regardless of whether we are thinking of it or not; that outside which thought could explore with the legitimate feeling of being on foreign territory—of being entirely elsewhere . . . It is therefore incumbent upon us to break with the ontological requisite of the moderns, according to which to be is to be a correlate. Our task, by way of contrast, consists in trying to understand how thought is able to access the uncorrelated . . . But to say this is just to say that we must grasp how thought is able to access *an absolute*; i.e. a being whose severance . . . and whose separateness from thought is such that it presents itself to us as a non-relative to us, and hence as capable of existing whether we exist or not. (2008: 7, 29; emphasis original)

What Meillassoux wants to do among other things, then, is to ask what comes after 'the relation' as a concept. For if there is one thing that all dominant schools of philosophical thought ranging from Nietzsche over Wittgenstein and Heidegger to Deleuze have been wedged to ever since Kant, then it is precisely the notion that no legitimate philosophical (or for that matter anthropological) questions can be posed about the *an sich* dimension outside the 'transcendental' (understood in Kant's a-priorial sense) relationship or correlation between human consciousness and the world. But how to break free of the post-Kantian 'correlationalist circle' (Meillassoux 2008: 53)? How to "extract ourselves from [its] . . . intersubjective solipsism" or 'species solipsism', which "ratifies the impossibility of thinking any reality that would be anterior or posterior to the community of thinking beings . . . [which] only has dealings with itself, and the world with it is contemporaneous" (2008: 51)?

This is not the place to engage in detail with Meillassoux's sophisticated but technical answer to this question. Suffice to say that, for him and other speculative realists, any attempt to un- or *redo* Kant's revolution involves renewed attention to nature. Nature, however, not just in the sense that we know it from the natural sciences (although people like Meillassoux do take the natural sciences much more seriously than, say, Deleuze), but nature as a metaphysical concept denoting a 'great outdoors' existing independent of any relational (and thus human) activity. As Ian Hamilton-Grant notes in his book on Schelling's philosophy of nature, such a

> location of activity to nature itself . . . opposes the Aristotelian and Kantian accounts of physics as the 'physics of all *things*' or 'bodies' (somatism), since it proposes that 'things', beings or entities, are consequent upon nature's activity, rather than this latter being inexplicably grounded in the properties of accidents or bodies. The philosophy of nature itself, in other words, is no longer grounded in somatism, but in the dynamics from which all ground, and all bodies, issue. (Hamilton-Grant 2008: 8)

I suggest that this approach allows us to theorize the non-relational, insular residue of the Northern Mongolian cosmos. For is it not precisely what the snuff bottle *domog* was about—the existence of a realm in the animist cosmos outside human and more generally spiritual and/or non-human intervention? On this interpretation, the world of lost snuff bottles and other treasure things is a natural world, but only as long as 'nature' is here understood as denoting, on the one hand, an irreducible manifold of encapsulated insular objects, and, on the other hand, a contingent and yet absolute essence from whence all inanimate things and animate life forms inhere. To further substantiate this interpretation of the Northern Mongolian animist cosmos, let me now present a second shamanic narrative collected during Amraa's and my travels in the Urig Urianhai homeland.

The following is an extract from a long conservation with another old Urianhai Darhad couple, whose nomadic *ger* was located in the Hög river valley, an infamous shamanic heartland:

> Have you heard about the big *ongon* at Buurav River? A square platform with a [shamanic] drum. It is called Tsaatuuls after the shaman whose soul it once was. It is really big. Once, my son Tümenbayar and I went hunting close to it. Suddenly, I heard Tümenbayar calling me, saying, 'Look here, father!' I saw the big tree with drum and all. He was holding the drum. 'Stop, stop,' I shouted. 'It is dangerous [*osoltoi*]. It brings misfortune [*gaitai*]!' Later that day we killed one musk deer there. We chased it down from the tree, around the drum on the platform, and to the slope of a small hill, where it sat down and we killed it. We did not make anything from this until the night of our arrival back to the camp two days later, when one of our cattle died. And three days after that a nice red horse died. I had paid one female yak and one young yak for that horse. And then we had to make a sacrifice [to the master] of one young yak. Since the horse was bought for two or three *bod*, it cost us four or five *bod* in total. Oh, that was dangerous! That place has masters for sure; there is clearly a *lus* [land spirit]. If it is treated badly [*evgüi handsan*], it will respond accordingly.
>
> Tümenbayar was also having dreams. He dreamt that his horse sled down the rocky ridge near the *ongon* and that he landed on the frozen ground underneath. Next to him there was a shiny green *toshin* ["Water emerging from gaps in the ice and flowing over it, freezing lumpily," Bawden 1997: 350]. His horse had died, so he had to pull it over the *toshin*, while sobbing. What a terrible dream! And two days later his horse died. Since that, my son has never hunted in that direction. That Tsaatuuls is a really dangerous master!

Again, numerous observations about Darhad Urianhai shamanism could be made on the basis of this narrative, but let me here focus exclusively on the key role played by the *toshin* in Tümenbayar's dream. For it is not, I believe, any coincidence that the vehicle of spiritual agency took the form of half-frozen ice in his shamanic nightmare, as if the water on top of the flush-ice somehow served to release the spirit master from his slumber. Many people in Northern Mongolia have expressed very similar ideas to me over the years. As a Darhad truck-driver once said while fixing a punctured tire en route to the regional capital, "Spring is approaching, Morten, so beware. Every year, the masters [*ezed*] wake up with the thaw. They begin moving as the first flowers break through the earth's icy crust." The following week I told a local hunter what the truck-driver had said, to which he replied, "Yes, did you not know that? In the winter there are no *lus savdag* [land spirits] around. When it begins to freeze, they

become unable to move and leave us alone. They get stuck to the ground, temporarily frozen. Then, as spring approaches, they slowly start getting powerful again. And by late September, just before it begins to freeze, spirits are everywhere in the land and in the water" (see also Pedersen 2011: 47–53). A nearly identical version of this idea was presented to Amraa and me as we visited yet another Urianhai Darhad nomadic family: "The land masters are called *savdag*. Actually *savdag* are masters of water. As spring approaches, a flower called *jinjüüliin* started blossoming. After that, the *savdag* become very powerful. When it becomes winter there are no water masters. They are sticking [to the ice], frozen. But in the autumn, before it freezes, they are everywhere. When the land and water freezes, they become unable to go far and disappear."

These ideas about spiritual agency being seasonally regulated by the fluctuating ontological status of water offers a quite vivid illustration of the point that I made above. In Northern Mongolian landscape, there is something that lies beyond the reach of the spirits and which resists their ongoing attempts to intrude upon and change the appearance of beings and things, and this source of resistance is nothing other than nature itself, if by this term we understand a separate—but not necessarily stable—essence existing independently of any relational configuration. And very much like the snuff bottles in the earlier discussed narrative, the *savdag* in the present narrative are subject to two qualitatively different ontological orders or registers. On the one hand, both the snuff bottle that was stolen from and subsequently retrieved by the shaman Böövön and the ultra-labile water spirits roaming everywhere during the summer season are clearly spun up in a relational shamanic universe of perpetual relational transformation, where anything contains the potential to become everything else, following what I have called the animist principle of endless analogical identification (Pedersen 2001). But on the other hand, neither the snuff bottle that was lost by the hunter Shüülen but not retrieved by the diviner, nor the *savdag* in their frozen and immobilized state during the winter season are part of this relational order; instead, they belong to an altogether different universe, namely the particular 'great outdoors', which may be called the great Mongolian nomadic void.

CONCLUSION

In this chapter, I have tried to explore what at first glance constitutes a selection of exotic tales from a remote corner of Northern Mongolia, but which, on closer inspection, presents a major theoretical challenge to the increasingly influential relational analytics associated with philosophers like Gilles Deleuze and Bruno Latour, and anthropologists like Marilyn Strathern and Viveiros de Castro. In the Swiss-cheese-like Mongolian cosmos, 'nature' could, at first glance, be seen to constitute the passive backdrop against which the active front stage of 'cultural' or 'social' human and non-human

lives unfold. Yet, as I have tried to show, 'nature' (if this concept is to have analytical purchase here) rather must be understood as bits and pieces of culture accidentally unmade, that is, as the fragmented residue of 'insular objects' that through events of more or less happenstance divine intervention have fallen out of the otherwise totalizing shamanic network.

In trying to make sense of the Darhad ethnography, then, we can only agree with Graham Harman that "relationality [is] a major philosophical problem. It no longer seems evident how one thing is able to interact with another, since each thing in the universe seems to withdraw into a private bubble, with no possible link between one and the next" (2010: 157). While there is no basis for assuming that all entities in the Darhad cosmos are 'insular' in this way, to understand the cases I have here presented we need to look outside the 'usual suspects' of theorists to whom many anthropologists (including myself) have recently turned in search for analytical inspiration. For the Darhad case makes it very clear that the existing forms of relational analytics cannot provide us with the conceptual vocabulary we need to fully understand what I have called the nomadic void. After all, if there is one thing that a radically relational perspective does *not* allow for, almost by definition, then it is to stipulate the existence of an *endpoint* to a given process of relational transformation (or 'reterritorialization', 'translation', 'obviation', or 'substitution', in the technical parlance of the aforementioned anthropologists and philosophers) (Holbraad 2012; Pedersen 2012a, 2012b). For Deleuze as much as for Latour, as well as for Wagner and Strathern, there is nothing that is not (potentially) relational, for relations are what the world is fundamentally comprised of, they are its basic, indeed its only, ontological component. Yet, as I have tried to show, it is just this relational monism that some of my Darhad ethnography contradicts, for in the nomadic landscape, there are insular objects or (as I call them) 'islands of nature' that are characterized precisely by their capacity *not to be relational*, at least not anymore.

We seem, then, to be left with two distinct ontological orders, which may indeed fruitfully be called 'nature' and 'culture' (or 'society') respectively, but only as long as it is remembered that either dimension constitutes an irreducible multiplicity that cannot be reduced to any kind of oneness or singularity, and, equally importantly, that, unlike in the conventional version of this binary, it is not so much culture that is the product of nature, but rather the other way around: Nature as a non-holistic assemblage comprising each and every entity—from lost snuff bottles over heavenly stones to frozen rivers—which define the islands of inanimate residue beyond animate reach. We are, in other words, back to an idea of the cultural construction of nature, but not in its tainted culturalist sense (which has been so forcefully criticized by Ingold among others). Rather, from the data I have presented, nature may be defined as the totality of accidentally generated social and cultural residue: Nature is what is *rendered unconditioned* or *made non-relational* by social practice. Nature, that is to say, as

everything that is left over from conditioned human actions, like, say, the remains from a physical experiment (tubes, pieces of wires, nuclear waste) or a medical operation (body parts). Nature as second culture.

NOTES

1. The original version of this chapter was presented at the *Waterworlds* conference "Nature/Society: A Critical Exploration of a Formative Distinction in the Social Sciences" held at the Royal Danish Academy of Sciences and Letters and the Carlsberg Academy in Copenhagen 12–14 September 2011. I thank the participants in this event, and the editor of this volume, Kirsten Hastrup, for challenging questions and helpful comments.
2. By these two terms I refer to the more or less vaguely defined body of anthropological literature, which draws on the pioneering work of Roy Wagner, Marilyn Strathern, and Eduardo Viveiros de Castro, among others. Individual idiosyncrasies and differences notwithstanding, this "radically relational" (Pedersen 2012b) or "ontographic" (Holbraad 2012) perspective may be described as a sustained theoretical experiment, which involves a deliberate attempt to treat all ethnographic objects and realities as if they were "relationally" composed, while, in keeping with its "recursive" ambitions, also attempting to conduct this experiment in a way that is itself equally relational.
3. As pointed out by one of the anonymous reviewers of this volume, the present chapter completely ignores the wider historical, political, and economic context surrounding the very specific shamanic narratives and nomadic forms of livelihood with which my argument is concerned. While this may reasonably be considered a problematic omission, I would like to stress that it represents an entirely deliberate decision on my side. Rather than providing the reader with what would in all likelihood only amount to a very limited outline of the very intricate and therefore very interesting imbrication between shamanism and political-economic issues in Northern Mongolia before, during, and after the socialist age (as people call it) from 1921 to 1989, I have strategically ignored this link in the present context in order to be able to focus fully on exploring what seems to be a gap in the existing theories of Darhad and more generally Mongolian shamanism. For a substantial treatment of the relationship between politics, economy, and religion in Northern Mongolia and beyond, please see Humphrey 1996 and Pedersen 2011.

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7 Establishing a 'Third Space'?
Anthropology and the Potentials of Transcending a Great Divide

Andre Gingrich

Throughout the early years of the present century several intellectual, but also institutional academic as well as practical developments have produced a combined range of effects that has led to the current juncture of reasoning in what may be called the 'nature/culture' or the 'nature/society' debates. From various academic perspectives, these debates examine the contents and the dichotomous arrangement of the conceptual opposition between nature and society, and/or nature and culture. Established binary ways of reasoning by means of these conceptual oppositions are persisting in influential forms and modalities, providing good reasons to explore how and why this is so. Simultaneously, new and productive alternatives for reconceptualizing socio-cultural life in this world are emerging, which stimulates the search for providing an enduring impact for these alternatives. My premise holds that a main thrust of this search is conceptual and epistemological rather than ethnographic, although a comparative ethnography of epistemologies might become important in the course of these endeavours (Gingrich 2011). The enduring impact to which this search is committed refers to movements toward a paradigmatic change as discussed in the next paragraphs, i.e. related to the ways and modalities by which socio-cultural lives in this world are conceptualized. It seems to me that three currents of recent developments were decisive in informing the present juncture of reasoning on this topic.

In the intellectual realm, first, it was indeed advanced radical thought in various fields that led to the current situation in which nature and the socio-cultural are "increasingly seen in terms of a confluence, thus undermining any notion of distinction and duality," (as Kirsten Hastrup phrased it in her invitation to the conference that preceded this volume). I shall return to the notion of advanced radical thought in my conclusions. Here it will suffice to indicate that the spectrum of relevant input in this realm ranges from main elements in Donna Haraway's work (1991) in cultural studies to that of Philip Descola (1994, 2005) and Marilyn Strathern (1992) in anthropology and from Peter Singer (2004) and others in philosophy to Maurice Bloch (1998) and related efforts in the cognitive sciences. By consequence, we are certainly not dealing with some sort of intellectual

fashion, but rather with a broad epistemological and conceptual current that is cutting across all kinds of academic fields among the humanities as much as among the hard sciences.

At the same time, secondly, major institutional academic experiences in our mediatized everyday lives also have been strongly promoting and advancing (if not provoking and causing) this shift—from gradual changes until recently, towards what now might soon be emerging as a major paradigmatic change, in Thomas Kuhn's (1962) original sense of the term. Many in the natural sciences, in biology and the life sciences, have approached the limits of any tidy and clean conceptual distinction between the sociocultural and the natural, and within the natural realm, even between the organic and the inorganic (Downey & Dumit 1997; Haraway 1991). While in general, this has favoured conditions for corresponding dialogues among and between the various academic fields, some thinkers within the natural and life sciences continue to refrain from that. Instead, they persist in reconceptualizing the dichotomies between nature and culture or society as if any input from the social sciences and the humanities were superfluous from the outset, or as if by definition or by necessity such dialogues would have to exclude the cultural. Some representatives of the natural and life sciences indeed operate in this regard as if philosophy were their only legitimate partner—thereby revitalizing an old-fashioned hegemony of philosophy over academia that had lost its substance and intellectual legitimacy long ago (Gingrich 2010).

In the humanities and the social sciences, the first decades of the 21st century have provided ample evidence that continuing any practices of "splendid isolation" with regard to major developments in the natural and life sciences could be fatal (Ingold 2004). This is further aggravated by current elements of economic and public budget crises. Under existing global financial and power relations in academia, one major criterion of achievement is bound to be whether the social sciences and humanities manage to establish themselves as important contributors to those transdisciplinary puzzles and problems that also preoccupy the natural and life sciences—and the 'nature/culture' debate certainly relates in direct ways to several among them. These pragmatic academic constellations therefore provide strong transdisciplinary incentives for anthropology's increasing engagement in this field, and at the present juncture of reasoning.

Thirdly and finally, the world outside academia is confronting all of us with its own priorities as defined by two sets of crises. If one of them is economic and financial the other is environmental and climatic, presenting itself to the lay observer as a series of disasters and threats. These include Hurricane Katrina (2005) and the 2011 Icelandic volcano eruptions as much as the 2004 and 2011 tsunamis in Southeast Asia, the Indian Ocean, and Japan. In a certain way, it is as if the various realms of what once was known as 'nature' have been telling us themselves that it is high time to reconsider the ways in which we have been thinking about them (Hastrup

2009). Climate change and global warming as underlying factors behind some of these pragmatic experiences add to the insight that at the centre of these environmental events, and the related processes of thought, lie reconsiderations of not only some of our main concepts, but also of our missions as intellectuals and as responsible academics who mostly live from public funding for what we are doing, and how (Hastrup 2009: 13–16).

Against these backgrounds, the subsequent text explores why and how the nature/culture dichotomy has come to be so deeply rooted in many global contexts of the present, and it examines ways and potentials for moving beyond that dichotomy into a 'Third Space'. Elsewhere, I have joined arguments with those who see continuing relevance in certain academic concepts of culture (Gingrich 1999), especially so in the sense of cultural diversity, which is why I use 'nature/culture' as a shorthand formula for the prevailing binary opposition in the present text. Culture here is understood to subsume society, and is used in its comparative sense following the more recent writing of Marshall Sahlins (2004, 2011), and in the sense of a "weak" universalism that also is informing the work of Ulrich Beck (2008).

This chapter will address options and possibilities for opening up a cognitive and conceptual Third Space beyond the nature/culture dichotomy. At first, such an exploration of a Third Space requires a critical re-examination of the nature/culture dichotomy, and of some of the main underlying factors supporting it. Introducing the notion of a Third Space into this discussion of a prevailing discursive and conceptual opposition is not a self-understood step. In fact, the notion already implies a certain choice as how to best cope intellectually with that opposition. Others might prefer to think of a mere 'transition', which would imply a certain bias towards a relatively smooth 'movement beyond' the limits it is imposing. For my part, I prefer to envision both, i.e. a relatively long co-existence of the smooth and the less smooth forms of engagement in this intellectual arena. As for the not-so-smooth forms of engagement, the explicit analogy to some postcolonial debates (from where I have borrowed the term 'Third Space') are relevant precisely because in language and thought, the nature/culture dichotomy also represents one of those paradigmatic oppositions that tend to encompass everything else within their own range. In that sense, we are referring to a powerful 'language ideology' (Woolard and Schieffelin 1994). By applying the dichotomous formula in practice, by using it in explicit speech behaviour as an uncontested and self-understood reference, a broader set of ideological connotations also is activated and communicated. To actually transcend such paradigmatic oppositions in enduring ways therefore requires contests, debates, and arguments that also imply disagreement and dissent on a basic and, sic, paradigmatic level. This is why I envision not only the potentially smooth transitional side of transcending, but also the more conflict-ridden dissent of a Third Space as an unavoidable, essential pathway for moving beyond the dichotomy. The

potentially all-encompassing character of the nature/culture dichotomy, as I will show in the first section, is related to its profound rootedness in specific layers of history and faith.

My first section will discuss this specific modernist dichotomy as a secularized monotheist legacy. My particular angle is developed out of the comparative anthropology of religions. This will lead to a critical assessment of shared ontological assumptions in several main monotheist legacies. The second section will then proceed to considering the potentials of moving beyond the 'Great Divides' (Goody 1977) that are being conceptually maintained by the presently prevailing, secularized and non-secularized versions of these dichotomies. Moving beyond these great divides includes a direction and an orientation. As I have just indicated, 'Third Space' as the term I use for this direction and orientation is borrowed from postcolonial theory without necessarily accepting all of the theory's other key ingredients. The final section will suggest some among that Third Space's possible main components, and how we may envision the co-existence of established great divides and an emerging Third Space.

A SECULARIZED LEGACY OF 'CREATION'

Maurice and Jean Bloch (1980) once argued along with several other authors that the concept of 'nature' is a historical legacy of Euro-American modernity, primarily as an outcome of the age of Enlightenment. In this sense it represented a concept that was seen as being very specific to the globalizing 'West'. In the debates since then, many have followed the Blochs' point without questioning it. Along this line of reasoning it appeared as if current concepts of nature were logically and historically connected to secularization. Concepts of nature and religious ideologies are, however, quite compatible with each other. For instance, some of al-Qa'ida's key militant activists had academic degrees in the natural and life sciences. These and other experiences and insights have provided ample opportunities to question the Blochs' thesis from the 1980s. It turned out that this line of thought went somewhat too far in its assumptions, as Gregory Bateson (1973, 1980) already had warned during the 1970s. Concepts of 'nature' are only to a certain extent the product of the last, say, 250 years of Euro-American mainstream thought. During these 25 decades they became most influential for the kind of modernities we are living in now. Yet reducing our understanding to that fact alone could lead to a serious underestimation of how deeply rooted and engrained in our ways of thinking the concept of 'nature' really is. If we use the comparative anthropology of religion, and perhaps also the history and sociology of religion as initiated by Max Weber (Schluchter 1991), we find out that concepts of nature in most cases represent merely secularized, recent sub-versions of a much older, and much more widespread notion, namely that of 'Creation'.

Any form of monotheism, be it of the Christian, Muslim, or Jewish variants, presupposes one main form of sanctity that is represented and to an extent monopolized by the one accepted God. Whether there are certain other realms of sanctity such as angels or saints who may or may not be closer to God is less important here: basically, God in monotheism is the primary and to an extent the exclusive source of sanctity. God thus is seen as the Creator and as fundamentally sacred, while the world with all its living or non-living forms of existence are created and therefore, basically, are not sacred (and thus to an extent at least, are seen as being profane). It is true that the boundaries between God (as well as between the devil as God's antipode) and humans are thought of in ways that differ between Christianity, Islam, and Judaism—but they do share this common, cognitive tripartite hierarchy: God holds the uppermost level of that hierarchy, humans represent the middle level as the so-called 'crown of Creation', and everything else comes out as the 'rest of Creation' at the lowest level, i.e. underneath the human crown. In what perhaps became the most popular formula for this vision in the Judaeo-Christian worlds (similar references are available in Islam), the Old Testament proclaimed:

> "God blessed them and said to them, 'Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds'" (Genesis 1: 28; NIV).

Numerous debates among believers and non-believers have addressed the question in how far this message, and others in comparable Biblical contexts, could be regarded as sources of inspiration for precisely those human activities that in the long run have contributed to the present environmental crisis of the globe. I do not wish to participate in those debates here. What I do want to point out, however, is the very sharp and explicitly hierarchical distinction that a monotheist mainstream perspective by necessity has to draw between God, humans, and 'the rest of Creation' in its organic and non-organic forms. In the Latin language of Imperial Roman times, that 'rest of Creation' (or "earth," "sea," and "birds" in Gen 1:28) was subsumed under the novel concept of 'nature'. Shortly before Christianity emerged at the peripheries of the Roman world, elements of this new concept already were fairly popular. For instance, they became widely conspicuous in Epicurean thought in the form of the didactic epic poem by Lucretius, "De Rerum Natura," literally "On the nature of things" with its focus on nature as primarily manifest in material 'things' (atoms) of the universe, operated by fortune (Alioto 1987; Bargatzky 1986).

Today's globalized concept of nature thus has a specific cultural prehistory. That cultural prehistory allows the identification of two main temporal thresholds of conceptual transformations. The more obvious and more recent one was part of the northwest European age of Enlightenment with its emphasis on secularization and human pragmatism. The less obvious,

previous, and yet fundamental first temporal threshold of conceptual transformations was part of the Middle Eastern and Mediterranean emergence of monotheism with its emphasis on Creation and on envisioning a desanctified, subordinate 'rest of Creation' that became conceived within a new encompassing Latin concept of nature.

The Latin term *natura* had already been a translation and together with that, also a semantic transformation of the older Greek term *physis*. Contrary to *natura* which primarily was seen as visible matter of given objects and processes, *physis* had been seen as the volatile totality of experienced being—embedding itself in the wider world that was termed *cosmos* as moving and open forms of existence. 'Cosmos' as a concept was rooted in ancient polytheist Greek worldviews (Cancik & Schneider 2003). It is indeed one key term from antiquity that is still free from the monotheist claim that humans are on top of the world, and that the 'rest' is inferior to us and at our service. 'Cosmos' therefore implies more conceptual freedom to think of humans as humble co-inhabitants, and as interactive partners. In turn, as a much clearer non-monotheist legacy, cosmos has many correlates in Asian philosophies. In the history of Tibetan Buddhist ontology and epistemology, for instance, one set of counterparts to Ancient Greek concepts would revolve around *'khor ba* in Tibetan, or *Samsara* in Sanskrit—the volatile and moving worlds into which living beings are born into (Jäschke 1981; Lopez 2008). The comparative study of non-monotheist cosmologies, including a wide range of epistemologies in anthropology's records, thus may provide an important source of inspiration and reflections for what I shall outline in the following sections as a Third Space in current and future debates on the nature/culture dichotomy.

Other sources of inspiration and reflection about alternative concepts for nature may be found in subaltern and deviant traditions inside, or at the margins of the main monotheist legacies. In the histories of monotheism, there were indeed fascinating attempts before 1500 AD to overcome those dominant theological and conceptual orientations that rigidly situated humans between the distinct boundaries of God and the rest of Creation. These subaltern and deviant tendencies occurred most notably among the various strands of rationalism, and sometimes also of mysticism and of theophany, i.e. belief in humans' possible unity with God in this or in another world. A main example for such a deviant philosophical tendency in the history of Islam would be the Mu'tazila (8th–10th century AD) in main cities of present day Iraq and Yemen, with that school's emphasis on the Qur'an as having been created and thus being accessible to rational thought (Martin et al. 1997). The ensuing priority for human dialogue and debate represented a potential alternative of human interactions among humans, and among humans and non-humans. That potential, however, was marginalized and persecuted. In the history of Jewish philosophy, on the other hand, several main aspects in the work of Moses Maimonides (1135–1204) seem to have been unduly neglected by orthodox theologians

for the sake of this philosopher's legal, ethical, and medical work. There are, however, important aspects in his writing that emphasize intellectual mysticism as well as human humility while criticizing anthropocentrism—aspects which only recently have been brought to the foreground again in contemporary debates of philosophers and activists (Davidson 2005).

Yet as relevant, pioneering, and brilliant such directions of Islamic, Jewish, or Christian thought were, it can hardly be denied that they remained marginalized discourses in relation to the main hegemonic traditions and lines of orthodox interpretations within the histories of monotheism (Fakhry 2004; Frank 1997). Within those mainstream traditions, the main relations are very clear and distinctly hierarchical: The 'rest of Creation' is subordinate matter, alive or not, inferior to humans, and in its desanctified existence at the more or less respectful service of humans who are the crown of Creation.

A conceptual and, it is worth noting, also a linguistic framework thus already was available and well established long before the European age of Enlightenment set in. Arabic as the language of the Qur'an has and had very clear terms for 'nature', and so does ancient Hebrew. Those conceptual and linguistic frameworks as derived from Roman—and to an extent from Greek—antiquity through Jewish, Muslim, and Christian traditions provided the conceptual stuff that then became secularized. Concepts of 'nature' represent the secularized subvariants of 'Creation', and if we want to overcome one we have to sooner or later critically depart from the other as well, or at least from some among its main hegemonic dimensions.

Behind the duality of 'nature versus the socio-cultural' looms the dualism between the created and the creator. For orthodox believers in one or the other monotheist mainstream cosmology, 'nature' is God's gift to humans that is at our service, and that we have the right to rule, to use and control, and to subdue. This is believed to be part of the human mission in this world. Questioning, criticizing, or contesting this basic element in a belief system easily can be perceived as a rejection of the entire belief system per se.

This not only is relevant in retrospective or historical terms, but also is significant for contemporary perspectives and debates. If we misunderstand the nature/culture dichotomy as an exclusive by-product of secularism, we may be tempted to also misjudge its relevance and its impact in today's globalizing world. In fact, many have been arguing that secularization already has reached its global limits or at least has reached a long-lasting global impasse (Asad 2003). From this, one might arrive at the erroneous conclusion that in the global world we inhabit, the nature/culture dichotomy also has come to its limits, is stagnating in an impasse, or even is already entering a phase of demise. If, however, we grasp the basic fact that the nature/culture dichotomy not only is easily compatible with mainstream monotheist traditions, but in fact originates from them and is supported by them in the present, then our whole perspective on the problem in its contemporary dimension is changing, too. Then several aspects come to the foreground

that would otherwise remain concealed. One, this is not a debate that primarily has to take place between secular and religious persons and groups: Instead, the debate is open to all sides inside and outside academia. Two, the currently more powerful and influential forces in the debate—if they care to participate in it all—are represented by conventional secular as well as monotheist constellations on a global scale. These constellations and their intellectual representatives keep holding on to a distinct concept of nature which they believe is essential for their worldview, their respective hegemonies, and for the maintenance of the status quo. Three, debates about these hegemonies and about transcending them will take time, and will require inspiration from secular as well as from religious conceptual sources.

These points also are important because they help us to get away from any unjustified Euro-American self-accusations. The dichotomy in question originally emerged neither as a specifically Western hegemonic product, nor is it a universal given of the human mind. Instead, this dichotomy today has become a globalizing conceptual fact, originating from a non-particular cognitive cluster that had historically emerged along the eastern Mediterranean shores. It is therefore merely to a limited extent valid that encompassing, overall concepts of nature are products of a secularized modernity today representing an integral part of our globalized world. Concepts of nature as distinct living and non-living created matter also form intrinsic cognitive and emotional elements wherever Christianity, Judaism, and/or Islam have had more or less enduring effects upon everyday practices and upon intellectual lives. Acknowledging these deeper historical roots and their relevance for the global present has a number of consequences, as we have seen. One among them implies that the task of moving beyond nature/culture dichotomies is not an easy one, because it touches upon some important values among large parts of humanity. By consequence, any elaboration, implementation, and popular dissemination of substantial alternatives will require patience, resilience, and creativity.

THE USES AND ABUSES OF A 'GREAT DIVIDE'

In the postcolonial and poststructuralist intellectual and academic contexts which most researchers and students in the social sciences and the humanities inhabit today, it has become almost common sense in scholarly reasoning that binary oppositions cannot represent the *ultima ratio* in any kind of research. We know that binary oppositions provide potentials for stereotyping, and that they often tend to orientate us towards simplifications that may not be helpful. Still, sometimes and not too seldom so it will remain important to continue working with binary distinctions. For instance, being able to clearly distinguish in binary terms perpetrators from victims remains an unavoidable necessity—without denying the task of also considering bystanders, witnesses, and so forth. As another example,

'fuzzy logic' has achieved a number of breakthroughs, but major parts of our digital world continue to operate on the basis of digitalized binary codes (0/1). Finally, languages in general frequently tend to provide few alternatives to binary concepts (e.g. dead/alive; night/day; fertile/infertile; male/female; etc.), without denying the existence of intermediate positions. In short, binary oppositions will continue to serve many useful purposes and functions.

Binary oppositions thus are bound to stay with us, as part of academic as well as of public and personal reasoning, in local as well as in global contexts. Any missionary zeal is out of place in this regard. There is no reason whatsoever to become moralist about binary oppositions, as if per se they were a contagious disease. Sometimes they are just more appropriate than on other occasions. Pragmatic attitudes instead of moralist judgements therefore are good indications of valid approaches to binary oppositions. Yet as a general principle of the human mind, as the *ultima ratio*, binary oppositions are not useful, in spite of the fact that they continue to inform modernity—as was demonstrated by a whole series of insights and discussions in anthropology and the social sciences, ranging from some of the work by Jack Goody (1977) to Bruno Latour's "We Have Never Been Modern" (1993).

The dichotomy between 'nature' and 'culture' represents one such basic binary element among several 'Great Divides' that inform our incomplete modernity, or an obsolete first modernity as Ulrich Beck (2008) calls it. This dominant conceptual and ideological dichotomous frame constantly suggests the subordination of one, nature, to the other, culture, and represents the latter as the separate anthropocentric actor upon the passive former. This is the crucial and prevailing form of abuse that persists in this connection.

Whether non-hierarchical versions of conceptualizing a binary relationship between nature and culture are possible and useful may still be open to research and reflection. In view of the advances made by cognitive anthropology and the cognitive sciences, however, it seems at least fair to acknowledge that conceptualizing a fundamental binary opposition between nature and culture is not a self-understood universal quality of the human mind. In that specific yet significant aspect of his overall oeuvre, one of Lévi-Strauss's main hypotheses no longer is relevant. Still, the dominant conceptual and ideological dichotomous frame I have outlined above continues to globally operate in pervasive and influential ways, permeating humans' thoughts about politics, kinship, and gender.

I would argue that in crucial ways, this conceptual frame has pervaded not only various secular and religious cosmologies, but also very different socio-political contexts of a late first modernity. It thus turned out to be stronger than these diverse socio-political contexts. In the 20th century at least, the competing and respectively dominant modalities of communist and capitalist systems alike followed in this regard different but parallel

logics of instrumentalizing those realms formerly known as 'nature', also *because* they were conceived of as nature, to the alleged benefit of socio-cultural humans.

Again, this highlights the hegemonic and all-encompassing quality of the great conceptual divide between nature as opposed to culture. As several authors showed during the past decades, this quality is linked to a number of basic cognitive and semantic relations in 19th and 20th century reasoning. In these recent historical and contemporary ideological contexts, as Brigitta Hauser-Schäublin (2001) convincingly demonstrated, the social and the cultural usually designate phenomena with qualities that can and should be changed more or less easily. By contrast, 'natural' stands for the self-evident—i.e. it justifies that which is or should be seen as socially immutable (unless intentionally redesigned by humans). The range of relevant meanings extends from the so-called 'natural' longing of parents for children of their own to all kinds of so-called 'naturalization' processes, including the complex procedures of allocating domestic citizenship to foreigners. In general, the metaphor of naturalization implies socio-cultural processes by which a phenomenon is transformed into a new status in which it appears as if having attained qualities that come close to biological facts. In 19th and 20th century thought, biology therefore has become a primary metonym for nature.

In her analysis of 20th century English culture, Marilyn Strathern has demonstrated how metonymic conceptualizations of nature have shaped basic assumptions of human kinship relations and such elementary notions of human identity as being father, mother, brother, sister, son, or daughter (Strathern 1992). At a time when new reproductive technologies were emerging to the extent that these basic assumptions had to be seriously questioned in public discourses, the profound limitations of prevailing concepts of 'nature' became publicly visible. There can be no doubt, however, that powerful emotional and cognitive forces continue to link the notion of 'nature' to widespread forms of understanding kinship relations in everyday lives everywhere.

It is no exaggeration to say that the feminist debates in the humanities and the social sciences represented one of the earliest and most profound contributions to questioning the all-encompassing qualities of the nature/culture dichotomy. Paradoxically enough, a somewhat essentialist feminist stand argued by Sherry Ortner triggered off the discussion, when she raised the question, "Is female to male as nature is to culture?" (Ortner 1972). The question implied that women in fact are universally closer to, because they are to a larger extent engaged with and part of, 'nature'. A few years later, Marilyn Strathern (1980) and Carol MacCormack (1980) were able to close that part of the debate by pointing out that Ortner had simply rephrased in different terms an old argument of male hegemony. Moreover, her universalist claim had been without substance in view of the global diversity of women's status, but also in view of the non-universality of concepts of

'nature'. Marilyn Strathern's point made through her Mt. Hagen case that 'nature' is not the universal concept that Sherry Ortner had claimed it was already was very well taken during an early precursor phase to the present debate. Among other authors, including several arguments proposed by Elke Mader and myself (Gingrich & Mader 2002), Gisli Palsson has pointed out that the worldwide distribution of concepts of nature still has its very distinct ethnographic limits (Palsson 2011). As will be discussed in the next section, Philippe Descola's 2005 volume in fact can be read as an attempt to systematize precisely those ethnographic alternatives that have come to be known as being situated outside the nature/culture realm. Both of these intersecting discussions, one about the global diversity of female statuses and the other about the non-universality of concepts of nature, thus have deconstructed Ortner's claim and the underlying proclamation of male socio-cultural superiority.

Still, it cannot be denied that in one version or the other, the hierarchical conceptual construction 'female:male :: nature:culture' remains a global ideological tool with a powerful presence in this world—a presence that is part and parcel of the potentially all-encompassing qualities of the Great Divide in question. Engaging with that Great Divide therefore requires not merely the sober kind of pragmatism I have emphasized in the first section. Where necessary and unavoidable, that sober pragmatism has to be combined with persistent and acute ideological critique. Persistent ideological criticism cannot take place nor can it win any ground without conceptualizing alternatives. It is therefore crucial to learn how to think in entirely different ways about what is addressed by that 'Great Divide' in our minds and thoughts.

Above, I have outlined how deeply rooted the divide actually is in many parts of humanity's past and present. In all likelihood we shall therefore continue to live, for quite some time to come, in discursive contexts in which both co-exist and compete with each other inside and outside of academia: more or less established or, if the term is preferred, hegemonic 'Great Divide' discourses based on nature/culture dichotomies, and alternative (or anti-hegemonic) discourses that orientate towards valid new reasoning. During this lengthy period of discursive co-existence, it might actually be useful to simultaneously pursue two apparently contradictory strategies at the same time. While we work towards establishing non-binary alternatives by thinking about the 'confluence' of these polar conceptual arrangements, we may continue to also move inside that hegemonic binary dichotomy by changing it.

We may sometimes prefer to continue speaking of 'nature' while simultaneously demonstrating that in its many diverse manifestations inside and outside humans, nature is no passive recipient of human agency but acts and re-acts upon us through networks and processes, sometimes as if 'it' had agency. Whether or not it has subjectivity, it certainly is acting into networks of processes in ways that do remind of Latour's Actor Network

Theory (ANT). Such a useful engagement with existing Great Divide discourses has a potential to change them—up to a point where more and more participants will have to question their very existence as a hegemonic dichotomous discursive arrangement. Perhaps many of them will be ready to integrate one into the other—that is, by integrating transformed nature/culture conceptualizations into wider arrangements such as those proposed out of a 'Third Space'.

Simultaneously it is equally important already now to also move on towards the elaboration of non-binary conceptual alternatives. By logical necessity, these non-binary alternatives are situated beyond zero and one, or beyond one and two, which is why I call them 'Third Space'—thus paraphrasing Homi Bhabha and some of his thoughts on the dichotomy between colonizers and colonized (Bhabha 1994). In our contexts, Third Space outlines clusters of intellectual and academic discourses—some of them interconnected while others are not or not yet—that contribute to a paradigmatic shift beyond the Great Divide of nature/culture dichotomies.

TOWARDS A THIRD SPACE OUTSIDE THE GREAT DIVIDE

In this chapter's first section, I have shown that the main genealogical roots of thinking in terms of Great Divide dichotomies about nature and culture lie inside monotheist history and its enlightened secular aftermath. Some inspiration for a Third Space outside that Great Divide may be derived, as I have argued in that first section, from certain subaltern and deviant tendencies of critique within those hegemonic mainstream traditions. Other sources of inspiration may be developed out of non-monotheist philosophical legacies such as certain Buddhist epistemological approaches—a point that in fact is being pursued by a small but growing number of influential natural scientists. A third source of building blocks originates from those elements in anthropological records and current debates in this field that explicitly address alternatives. We thus are able to identify at least three rich sources for inspiring and building the Third Space in question here: the critical history of philosophy and religion in the monotheist realm, the comparative analysis of non-monotheist philosophical legacies, and thirdly, specific elements in anthropological debates of past and present. The remainder of this section is addressing some points in the third among these three groups of sources.

It seems evident that large chunks of recent anthropological theorizing towards non-binary ways of reconceptualizing the nature/culture 'confluence' actually offer building stones towards establishing a 'Third Space'. It is certainly not accidental and is interesting to note that major anthropological discussions in this realm so far have been emerging out of regional specializations. My own argument in this chapter about monotheism certainly is directly related to my ethnographic Middle Eastern experience. Marilyn

Strathern and Maurice Godelier, to whose exchanges and contributions from the 1980s and 1990s I repeatedly am referring in this text, developed much though not all of their respective insights on the basis of their mutual commitment to the ethnography of Melanesia. The more recent debates between Viveiros de Castro and Philippe Descola in the nature/culture realm have evolved out of their ethnographic work in different parts of the Amazon regions. We may expect that more 'region-inspired' contributions will be offered by socio-cultural anthropology, while the debate simultaneously grows and proliferates in its topical dimensions. Much more than what we already have can be expected from socio-cultural anthropology in this regard. It was in this sense that I have used "advanced radical thought" in the introductory section to this chapter—as a shorthand formula for all those contemporary intellectual efforts that inspire and support anthropology and neighbouring fields towards establishing a Third Space outside this particular Great Divide.

The outcome of the intense debates between Viveiros de Castro (1992) and Philippe Descola (1994; 2005) certainly is part of this. They have demonstrated the many different forms of conceptualizing 'nature', which have led Viveiros de Castro to coining the terms 'perspectivism' and 'multinaturalism'. Secondly, those debates have distinguished various basic modes in which humans construct and enact the relations between humans and non-humans (Descola 2005). Finally, the same debates have confirmed and differentiated that and how indigenous thought and the human mind in general tend to see us as jointly embedded in the world around us. This rich outcome allowed one prominent commentator to summarize:

> What is clear is that this debate destroys the notion of nature as an overarching concept covering the globe, to which anthropologists have the rather sad and limited duty of adding whatever is left of differences under the tired old notion of 'culture'. Imagine what debates between 'physical' and 'cultural' anthropologists might look like once the notion of multi-naturalism is taken into account. . . . [A] bright new period of flourishing opens for (ex-physical and ex-cultural) anthropology now that nature has shifted from being a resource to become a highly contested topic, just at the time, by chance, when ecological crisis . . . has reopened the debate that 'naturalism' had tried prematurely to close. (Latour 2009: 2)

One may raise an anthropological eyebrow when a glamorous Parisian voice refers to "the sad and limited duty" of addressing cultural diversity, as if Indian or Iranian or Chinese cultural values had no future in a global '*civilisation*'. Moreover, it should be added that the same Parisian voice may have been somewhat too optimistic here about the immediacy of intellectual effects that the Viveiros de Castro-Descola debate might possibly exert upon the anthropological communities in question. "In the mutual

misunderstandings of the two parties it is often difficult to judge who are the more ignorant of the other and the more arrogant," Michael Carrithers (1996: 335) dryly writes of biological and cultural anthropologists.

Still, a new vision of humans being embedded in different modes within one world is a major outcome of that debate. That embeddedness can be conceptualized as interacting forms that relativize anthropocentrism while suggesting ways of perceiving dispersed assumptions of subjectivity. It seems to me that beyond Latour's comments on the exchanges between Descola and Viveiros de Castro, an older differentiation by Maurice Godelier (1986) also might have gained new relevance through the outcome of that fascinating debate—which, however, did not explicitly address that differentiation. In his "*L' Idéel et le Materiel*," Godelier already had pointed out the human capacity for distinguishing external from internal worlds and the thresholds connecting them, between their respective, pragmatically accessible or appropriated forms and their inaccessible elements, and among the latter again, between those that are known to human cognition and imagination and those that are perceived as unknown.

The argument about the 'unknown' is crucial here, and had already been raised by Godelier in some of his earliest anthropological writing. All human societies are aware that some aspects of the world may be perceived, but cannot be directly influenced by them. Under given conditions, some of them are never and others are not always available to human practical activities. Beyond the respective realms of perception without any, or without any regular, pragmatic access for human agency lie the realms of no direct human perception. In line with Godelier's reasoning the argument can be made that all humans are capable of *'l'imaginaire'*, i.e. they are able to imagine that the world has dimensions that lie beyond their respective perception, and beyond activating memory or projecting it onto that which is not or not yet perceived. Godelier once situated the enduring roots of basic religious values in this human capacity of imagining the unknown. It need not be repeated that the actual contents of what is and what is not unknown differs and changes between historical eras and socio-cultural contexts. Still, the shifting but enduring existence of a human awareness of unknown internal and external realms of world and life has to be seen as part of the *conditio humana*.

The world as it is respectively perceived and enacted upon therefore imposes itself on the ways humans relate to it, but also in the ways it is not so much perceived but nevertheless imagined. This line of reasoning might provide some useful links between the Descola-Viveiros de Castro debate and the valuable research insights offered by Tim Ingold on the cumulative growth of *embodied skills of perception and action* within socio-environmental contexts (Ingold 2000). To my mind, Ingold has most significantly contributed towards dissolving the nature/culture dichotomy. As far as it allows it, the outcome of the Descola-Viveiros de Castro debate therefore requires to be further connected to Ingold's impressive body of work.

The conceptual and theoretical differences between Ingold's and Descola's insights have been acknowledged by both authors. Yet at the present juncture of reasoning, I would argue that including the point made here about the unknown requires more substantial reconsiderations in and of Descola's work while it could be integrated much more harmoniously into Ingold's line of thoughts. This brings me to my final point.

Anna Tsing (2000) is encouraging anthropologists to work out ways around the socio-cultural divide with nature by her notion of 'world-making'. To an extent, this can be seen as corresponding to Ingold's "embodied" (and embedded, I would add) "skills of perception and action" as I read them—with a somewhat stronger emphasis on the agency side of the process. Tsing's work is especially rich in reminding us that the tasks of anthropology always relate to at least two socio-cultural contexts, which may sometimes intersect but often enough do not: those in which our ethnographic fieldwork takes place, and those in which most of us hopefully are active as academic researchers and teachers or students. In both contexts, people including anthropologists make worlds for themselves while being part of global worlds. For me, the crucial next step in establishing a 'Third Space' for the present debate lies in envisioning and conceptualizing the ways in which to connect in both these contexts perception and action with language as the missing 'third' element linking and partially translating the two. An awareness of being at the mercy of language needs to be fused with the need to keep language alive in order not to imprison the moving world.

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8 The Inevitability of Nature as a Rhetorical Resource

Steve Rayner and Clare Heyward

> *'Nature', 'natural', and the group of words derived from them, or allied to them in etymology have at all times filled a great place in the thoughts and taken a strong hold on the feelings of mankind. That they should have done so is not surprising when we consider what the words, in their primitive and most obvious signification, represent; but it is unfortunate that a set of terms which play so great a part in moral and metaphysical speculation should have acquired many meanings different from the primary one, yet sufficiently allied of it to admit of confusion.* (Mill 1874 [1904: 7])

As an undergraduate philosophy student I was struck by the fact that philosophers throughout history consistently seemed to have had two sets of ideas: one consisting of ideas about how the world is, captured by ontology and epistemology, and another consisting of their ideas about how the world ought to be—a politics or ethics.[1] The observation was not a novel one. Bertrand Russell (1946) makes a similar distinction in his magisterial *History of Western Philosophy*. But what struck me as particularly intriguing was the fact that any philosopher's ideas about nature inevitably seemed to underpin and lend legitimacy to his or her moral or political preferences.

For example, Plato is famous for his antipathy towards what he saw as the fickle democratic polity of the Athenian state that condemned his mentor, Socrates, to death. Plato preferred political stability. This was to be achieved through the rule of the wise; a largely hereditary class of elite philosopher kings who are able to acquire true knowledge of the "form of the good." Plato's political theory was buttressed by a theory of nature according to which the ephemeral objects that we encounter in daily life are mere projections of the perfect prototype of each object which exists fixed and unchanging forever in the "world of forms" (Plato c. 380 BC [1953]). In contrast, a little over two millennia later, Marx and Engels were excited by the idea of boiling water as exemplifying the dialectics of nature and its so-called laws of "the interpenetration of opposites" and "change of quantity leading to change of quality" (Engels 1883). The opposites in this case were the gravitational attraction of water molecules and their excitation by increasing heat, leading, at boiling point, to a sudden change from liquid

to vapour as a parallel to the anticipated revolutionary moment that would mark the transition of society from capitalism to socialism.

Philosophers from Aristotle to Hegel have invoked the idea that women's capacity for rational thought is naturally inferior to men's as grounds to exclude them from politics (Jaggar 1983; Lloyd 1984), while philosophers and social scientists of the 19th and 20th centuries have frequently resorted to the supposed natural characteristics and capacities of different peoples to justify everything from colonialism to apartheid and even genocide. Perhaps the most notable exception to this pattern of classic Western philosophical thought was John Stuart Mill, who noted that the word 'nature' and its cognates have been used to convey recommendations and even obligations on how to live and how to act, from the Stoics and Epicureans of Ancient Greece, to the Roman jurists, to Christian theology. His 1874 essay *On Nature* argues that to look to nature for prescripts on how to live is entirely misguided; being either meaningless, or irrational and immoral. Injunctions to follow nature cannot show how a human being ought to live:

> In sober truth, nearly all the things which men are hanged or imprisoned for doing to one another are nature's every-day performances. . . . The physical government of the world being full of the things which when done by men are deemed the greatest enormities, it cannot be religious or moral in us to guide our actions by the analogy of the course of nature. (Mill 1874 [1904: 17–19])

In moving to graduate studies in anthropology I learned that it was not just philosophers who invoked the idea of nature, either as a world apart from humanity or an ecology in which humanity is enfolded, to justify their moral and political preferences. It seems to be a near universal aspect of human behaviour. In fact, the ethnographic record suggests that the buttressing of moral or political beliefs by appeals to nature or some analogue of the idea of nature is a universal phenomenon. Thus, in certain traditional African societies, leprosy was viewed as an automatic consequence of adultery. Cattle disease was merely a natural consequence of violating the traditional sexual division of labour (Douglas 1966). In such cases, nature is a direct source of moral feedback for behaviour, desirable or undesirable.

I hark back to these early ruminations in the light of contemporary calls for anthropologists and STS scholars to abandon the very idea of nature. The calls come in various flavours. Some seem to suggest that nature is simply a linguistic or cultural construct that artificially distinguishes the world of human life and artifice from the world of things—privileging the agency of sentient beings over that of things (Latour 2004). Others emphasize the artificiality or even impossibility of locating the boundary between the biological and cultural aspects of human behaviour (Ingold 1986). Where does the human arm end and the tool begin? Why should we consider a city to

be less natural than a bird's nest or termite mound? Work on multispecies ethnography calls into question 'human exceptionalism' (Kirksey & Helmreich 2010). Scholars may argue the merits of different metaphors, of 'networks' of actors and actants, or 'webs' of being (Ingold 2008), or for the recognition of the inseparability of the biological and social in the category of the 'biosocial' (Palsson 2009). The common thread appears to be that we should eschew one of the most enduring and pervasive legacies of the Enlightenment—the very idea of nature.

I am largely sympathetic to the abandonment of nature as an intellectual category in the analytic repertoire of the social sciences, not least because I share Mill's reservations about its coercive potential. But I have also long been puzzled by the idea that the lives and works of humans are somehow fundamentally different from those of other species, even as the span of Western history from the Enlightenment to ecology (at least deep ecology) has redefined humanity's role from superior steward of nature to rapacious parasite. However, I am wary of the proposition that we can dispose of the idea of nature altogether. The existence of a term that "in its commonest and most fundamental sense . . . refers to everything which is not human and distinguished from the work of humanity" (Soper 1995: 15) is just too useful a resource in human affairs to go quietly. As Mary Douglas was wont to observe, nature is the trump card that can be played to win an argument even when time, god, and money have failed. When we assert that something is only natural, or unnatural, we draw a line in the sand. We declare that it is simply the way things are and that no further argumentation can change that. And, as Mill earlier observed, "the word 'unnatural' has not ceased to be one of the most vituperative epithets in the language" (Mill 1874 [1904: 10]).

Of course, different societies invoke what the post-Enlightenment world calls nature under different guises, using different grammars and terminology. But even in the English-speaking world there are significant differences in what people conceive of as nature and natural. Roderick Nash's 1967 classic, *Wilderness and the American Mind*, makes the compelling case that the idea of wilderness provided American settlers with a unique identity constructed around an abundance of pristine nature that was almost entirely absent in Europe. Wilderness became the prime source of inspiration for distinctively American art, such as the Hudson Valley School, and for literature. To this day, when you ask Americans what they think of when you say the word 'nature', most will respond by describing national parks and wilderness areas. Nature is where people are not. In the UK, however, the same question tends to elicit descriptions of the countryside consisting of fields and hedgerows and contentedly grazing sheep and cattle. This may have some relevance to the different consumer responses to genetically modified (GM) foods in the United States and UK (Rayner 2003a). In the United States, food production is obviously an industrial process, even when it is conducted outdoors. In the UK, people still cling to the idea of

food production taking place in a milieu of the countryside in which people live and go about other sorts of business. Interestingly, there seems to be no difference in the public acceptability of GM pharmaceuticals in both countries, perhaps due to the fact that they are seen in both as industrial products made in factories.

THE SCIENTIZATION OF NATURE

The examples of different consumer responses to GM products highlight another aspect of the idea of nature as it is encountered and deployed in daily life. In the early 21st century, nature is seldom apprehended directly. It is heavily mediated through the categories of science. Nature outside of our bodies is scientized as the 'environment' and nature inside our bodies as 'medicine'. In the post-Prozac world, not only our bodies, but also our emotions and cognitive capacities have become thoroughly medicalized. Information about the state of our biological selves is now more likely to be derived from urine and blood tests or other diagnostic technologies than from self-awareness or even from the hands-on clinical craft skills of medical practitioners. Increasingly we rely on various kinds of technical experts and knowledge intermediaries to interpret the state of both our environment and our health for us. Technologies that are seen to touch on health and the environment are likely to attract public attention and even controversy. Examples include nuclear power, GM foods, wind turbines, power lines, food additives, and so on. Technologies that may have an equal or greater disruptive impact on people's lives but are not associated in the public mind with health or environment seem to have an easier ride, for example, the Internet.

Although I have described medicalized nature as internal, modern science views both kinds of nature from an external standpoint to facilitate 'objective' observation. For the social scientist, these techniques raise fundamental issues of what kinds of knowledge are valued and validated. Tim Ingold (1993) aptly illustrates the importance of internal versus external standpoints with reference to Maffei's *Scala Naturale* of 1564. In this work, the scholar is represented as standing at the centre of the environment consisting of 14 concentric spheres envisaged to form a giant stairway, the ascent of which affords a more comprehensive knowledge of the world through experience within it. In contrast, Ingold represents the contemporary view of the environment as the view from outside, looking in or looking at (see Figure 8.1). The external standpoint privileges observation to the exclusion of experience. Local knowledge is downgraded as partial, parochial, and ultimately unreliable whereas global knowledge is treated as universal, total, and real. This resonates with modern satellite imagery, which relocates the scholar from a vantage point within the environment to the stance of an observer from without.

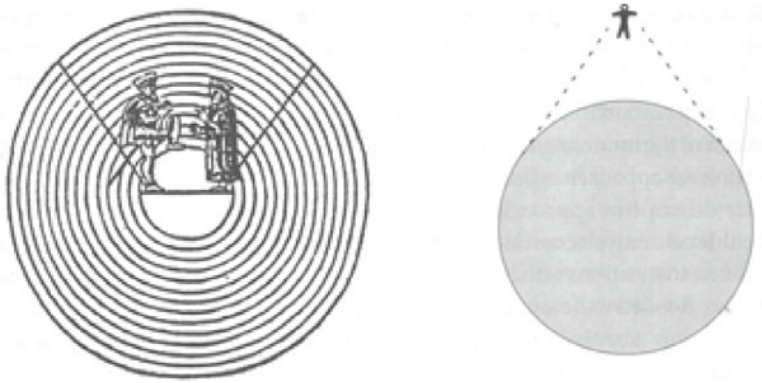

Figure 8.1 Nature is externalized to be observed (after Ingold 1993).

> The difference between them [the local and global perspectives], I contend, is not one of hierarchical degree, in scale or comprehensiveness, but one of kind. In other words, the local is not a more limited or narrowly focused apprehension than the global, it is one that rests on an altogether different mode of apprehension—one based on an active perceptual engagement with components of the dwelt-in world, in the practical business of life, rather than on the detached, disinterested observation of a world apart. (Ingold 1993: 40)

Medical imaging represents a similar shift of viewpoint. Brain images produced by the instrumentation of modern neuroscience bear a striking resemblance to satellite images of the earth. Where brain imaging generates colourful pictures of enhanced blood flow, often referred to as parts of the brain 'lighting up', enhanced satellite images and global models employ similarly colourful images to show changes in factors such as temperature, precipitation, and land-cover.

In responding to the "inscriptions" (Latour & Woolgar 1979) of both earth-imaging and brain-imaging devices, we are prone to Whitehead's (1929) fallacy of misplaced concreteness. The mode of representation as images, or as tables and graphs, persuades us of the reality of an independent nature observed from the outside and obscures the way in which that same nature has been achieved by acts of external instrumentation, measurement, and representation.

NATURE AND NATION BUILDING

We should not underestimate the political potency of this trinity of scientific or technical instrumentation, measurement, and representation of nature. For example, the measurement and recording of weather in the 18th

century played a role in establishing the identity of the modern nation state. The historian, Jan Golinski (2003) shows how, at this time, scientific concern about the weather emerged in the context of a broader set of worries about the effects of industrial development on nature in the context of state emergence. Prior to this period, it was commonplace for extreme weather events to be attributed to divine judgement upon the dissolute ways of modern life. Nature was seen as God's instrument for enforcing his moral will rather than as an impersonal moral force in its own right. The Great Storm of 1703 seems to have stimulated the keeping of systematic weather diaries among natural philosophers (as scientists were then called) determined to assert the regularity, that is, the naturalness of weather in the face of the claims of divines that it was an instrument of God's judgement. If every day's weather could be recorded, not just extreme events, then it could be reduced to the formulaic and routine. The keeping of detailed weather diaries by educated gentlemen recording standard variables of temperature, precipitation, and barometric pressure became commonplace. The 18th century also exhibited a trend towards the wider adoption of uniform measures of time, defined by the clock and the civic calendar. For the urban middle classes, at least, work and social activity was increasingly regulated by clock time, based on the Greenwich Meridian rather than local noontime. Similarly the uniform interval scale of the calendar began to replace the variable and ordinal rhythms of agricultural life.

Instrumented and measured in this way, the British climate was found to be generally temperate, punctuated by bracing diurnal variations: a climate free both from extremes and from monotony. Ironically—although perhaps inevitably—the scientists of the day could not resist finding common cause with their religious interlocutors in interpreting this climate as evidence of divine favour towards the newly born British nation state, which had been brought into being by the 1707 Act of Union between the Kingdoms of England and Scotland. By the 19th century, writers, following in the traditions of climatic determinism established by Herodotus and Hippocrates, were nearly unanimous in equating hot weather with the tendency of a culture towards indolence and low productivity. Temperate zones were thought to lead nations to be industrious and productive.

If the 18th century represented an important step towards the social achievement of nationally identifiable weather in Britain, then the 19th century saw its outright nationalization by the state on both sides of the Atlantic. The British Meteorological Office was established in 1854 under Admiral FitzRoy, former commander of Darwin's Beagle. FitzRoy was a pioneer of British attempts at developing weather forecasts based on forward inference from atmospheric observations of precursor conditions. The British initiative was strongly oriented towards maritime applications, reflecting national commercial and political priorities.

In the United States, attempts were made to establish a weather service also around mid-century. But politics and professional rivalries meant

that the National Weather Bureau was not formally constituted until 1870 (Fleming 2000). In contrast with Britain, the initial US audience for weather forecasting was primarily agricultural. The basis for prediction was also quite different from that used in Britain. By the mid-19th century it was well understood that North American weather systems moved fairly uniformly from west to east (Meyer 2000). The Weather Bureau's original name was "The Division of Telegrams and Reports for the Benefit of Commerce" reflecting the fact that, in the United States, weather forecasting evolved with and depended upon the electric telegraph, which was also used to communicate information about crop prices. Both weather and postal services were important civic innovations by which the modern state has asserted its authority and identity. In view of this role of weather forecasting, there should be little wonder that contemporary proposals to privatize substantial operations of national weather agencies have proved controversial, as have parallel proposals to privatize those other great state-building institutions, the British General Post Office and the US Mail.

If the instrumentation, measurement, and recording of weather played a role in the emergence of modern national identities in the 18th and 19th centuries, a similar process has unfolded around the global climate in the late 20th and early 21st centuries. The idea that industrial emissions of carbon dioxide could induce warming of the earth's atmosphere had been proposed by Arrhenius in 1896, and daily measurements of atmospheric CO_2 were begun in Mauna Loa in 1956 in connection with the declaration of the International Geophysical Year. In the 1970s, the idea began to emerge as a public policy issue. But climate change only achieved widespread public attention in the wake of the 1988 heat wave and drought and the fall of the Berlin Wall a year later. The coincidence of these two unrelated events enabled what had been a relatively specialized scientific concern to become an object of public policy and, importantly, increased public funding for scientific and diplomatic initiatives. The 'discovery' of the global environment provided a new idiom for 'one-world' international relations to replace the bi-polar opposition between capitalism and communism, which had defined the world order following the Second World War (Rayner 1994). We should be in no doubt that the very idea of a 'global climate' is every bit as much of a late 20th century achievement, as the characterization of national weather was in the 18th and 19th centuries. This is not to deny that there is a serious climate change issue to address, but we should be aware of the political work that the idea of nature is calling upon to perform here, not least because of the light it casts onto the different ways in which climate change is perceived in different parts of the world.

For example, it seems highly plausible that at least some of the differences in the way climate policy discourses have developed in Europe and the United States are related to the very different constitutional trajectories of America and Europe. Climate change came at just the right moment for the European Union as it was embarking on an agenda of political

integration. An external threat to the common welfare of Europe provided the opportunity for a joint project, a rallying point apparently requiring co-ordinated response.

On the other side of the Atlantic, the longstanding tension between the Federal government and the prerogatives of the 50 States has been moving in a centrifugal direction since the apotheosis of Federal power in the 1960s, which saw the passing of civil rights legislation and the most important pieces of US environmental legislation in the Clean Air and Water Acts and the National Environmental Policy Act. Since that time, the pendulum has been swinging away from Washington, and advocates of states' rights, suspicious of appeals to nature, have resisted centralized environmental and health-care legislation.

MYTHS OF NATURE

While these examples suggest how the idea of nature has been important in constituting macro-political identities at the level of nations, regions, or even of global humanity, there is much variation within the geographical borders that the idea of nature has helped to define. Such differences have been evident throughout history. Early in the 20th century, John Muir and Gifford Pinchot famously fell out over the issue of grazing sheep within the boundaries of US National Forests, setting the tone for the long-running dispute between 'preservationists', who wanted natural resources preserved intact for their own sake, and 'conservationists' who advocated managed use of what were called 'natural resources' (Nash 1967). At least since the formation of the Club of Rome in 1968, there has been a persistent parallel contrast in Britain and the United States between 'catastrophists', advocating limited growth, steady state economics, and regulatory preservation of nature, and 'cornucopians', supporting unlimited economic growth and a laissez-faire attitude in which the market determines where the natural environment should be preserved or modified (Cotgrove 1982). Thirty years on from Cotgrove's analysis, this distinction is vividly represented by the highly polarized views of climate change in the United States.

Cornucopians, Cotgrove argues, are entrepreneurial types who view nature as intrinsically robust and forgiving, overflowing with an abundance of exploitable resources. On the other hand, catastrophists present a view of nature as fragile and vulnerable to the plundering actions of the cornucopians. Not only do catastrophists and cornucopians have conflicting views of nature, members of each group share fundamentally different views on social relations, organization, science, and technology and core moral values.

The catastrophist versus cornucopian dichotomy is a variation on a longstanding dualism within social science between 'markets' and 'hierarchies' (e.g. Williamson 1975; Lindblom 1977). As worldviews, they are readily identifiable by the conflictual discourse between incentives and sanctions

that they so readily invoke. Cotgrove's analysis extended this traditional dichotomy in that the cornucopian market's interlocutor is the modern environmental movement, which combines the regulatory imperatives of hierarchies with a more egalitarian set of beliefs about nature and social organization in which people come together in respecting nature's rights, rather than simply to manage nature (hierarchy's goal) or commodify it (the market's aim). However, in reducing the organizational and conceptual complexity of the environmental position to a single polar opposite of the cornucopian, Cotgrove fails to capture some other and equally valid ideas of nature in public and technical discourses.

For example Kempton et al. (1995) distinguish three sets of mental models in the American public's environmental perspectives. The first concerns nature as a limited resource upon which humans rely. The second relates to notions of nature as balanced and unpredictable. The third consists of the cultural models relating society to nature. Kempton et al. focused particularly on the market's devaluation of nature and the alienation from nature that accompanies it, leading to nature being appreciated less but idealized more. Their study also revealed an expectation that factors such as significant biodiversity loss, climate change, and increased pollution could lead to catastrophic environmental changes. Interviewees often referred to "the balance of nature" and referred to interactions between humans and nature as "chain reactions." While worried about catastrophic changes, they simultaneously revealed a perception of nature as resilient to small perturbations. Other interviewees perceived nature as unpredictable in its response to human interventions and took a conservative stance about altering or intervening in the natural system in any way.

Pushing beyond the catastrophist/cornucopian dichotomy begins to reveal systematic heterogeneity in ideas of nature and the political and ethical discourses in which they are deployed as instruments of persuasion and even coercion. Furthermore, Kempton et al.'s findings closely match the 'myths of nature' identified by environmental historians and theoretical ecologists.

Of course, I am using the term 'myth' in an anthropological sense, to describe fundamental propositions or assumptions that are unquestionable within the context of a particular discourse and assuredly not in the popular sense of a widely held but incorrect belief. Conventionally, myth, like history, takes a narrative form because it "is the chief literary form that tries to find meaning in an overwhelmingly crowded and disordered reality" (Cronon 1992: 1349). Also, like histories, myths are selective. They achieve coherence only by excluding those elements that did not contribute to the tale.

> In the act of separating story from non-story, we wield the most powerful yet dangerous tool of the narrative form. . . . Whatever its overt purpose, it cannot avoid a covert exercise of power: it inevitably sanctions some voices while silencing others. (Cronon 1992: 1349–50)

Cronon, an environmental historian, traces four distinctive narrative histories of the Great Plains, focusing on the Dust Bowl events of the 1930s. Each of these histories recounts essentially the same events, but each tells a fundamentally different story about nature and humanity and the relationship between them. Two are progressive histories of immigrant pioneers domesticating a wild empty landscape. They differ essentially in the degree to which nature is a passive resource to be shaped like a vessel out of clay or an active antagonist that resists its own improvement.

The other two accounts are declensionist in that they describe how human intervention in a fragile ecosystem led to land degradation. One of these is unremittingly catastrophist. It is that of the Crow Indian Chief Plenty Coups, who wrote, "When the buffalo went away the hearts of my people fell to the ground, and they could not lift them up again. After this nothing happened" (Linderman 1930: 311). This was surely a heart-stopping assertion of both the end of nature (McKibben 1989) and the end of history (Fukuyama 1992).

However, the second declensionist narrative has a happier ending with the managerial intervention of the New Deal. According to this version, the destruction of the Great Plains ecosystem resulted from people telling themselves the wrong story about nature. Having settled their lands in an unusually wet interlude, the new inhabitants regarded the return of the more prevalent dry conditions as a drought anomaly and they failed either to move on or to adapt. In the end, the Great Plains and their hapless inhabitants were rescued in the nick of time by the scientific planning and technology-based intervention of the Federal government, which tapped vast underground resources for irrigation.

Each of these narratives contains true elements, yet each is a coherent story only because of what it doesn't tell, but the others do. They can be told sequentially or in parallel, but attempting to tell all four stories simultaneously leaves us with an incoherent chronology and a contradictory set of messages.

Mythic narratives can also be compressed into icons that simultaneously represent the essential elements of a story. A potent example of such compression is the iconography devised by the Canadian ecologist C.H. Holling (1986) to describe the assumptions about nature underlying the seemingly disorganized and contradictory spruce-budworm control strategies practiced by foresters in British Columbia.

Holling discerned that there was a consistent pattern in these interventions. His problem was that if the managers were irrational, then there would be no pattern to what they did. If they were all conventionally rational, then they would all do the same thing. Hence Holling asked, what are the minimal representations of reality that must be ascribed to each managing institution if it is to be considered rational? He found he needed at least three representations, which he called 'myths of nature', each of which could be represented by an icon of a ball in a landscape (see Figure 8.2).

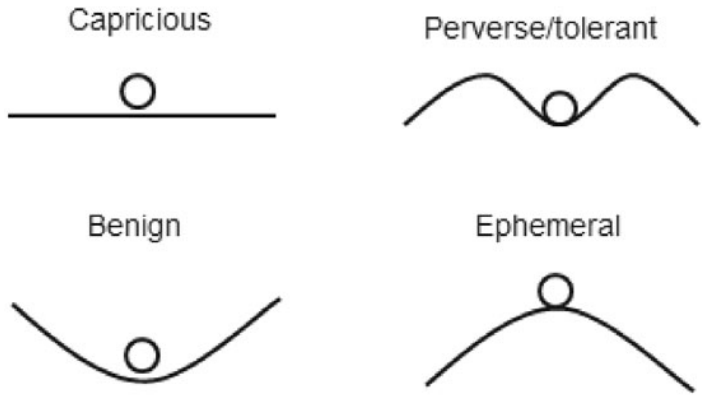

Figure 8.2 Myths of nature (after Holling 1986; Thompson 1987).

The myth of 'nature benign' is that the environment is favourable towards humankind. It is a myth of global equilibrium according to which nature renews, replenishes, and re-establishes its natural order regardless of what humans do to their environment. However much the ball is perturbed, the steeply sloping sides of the basin return it to equilibrium. It encourages a trial-and-error approach in the face of uncertainty. It is a myth that supports bold action.

Diametrically opposed to this is the myth of 'nature ephemeral'. Far from being stable, nature is seen to be in a precarious and delicate balance. The ball is perched on an upturned bowl and the least perturbation results in a decisive and irreversible change in the state of the system. This myth supports a thoroughly precautionary approach to managing nature.

At first blush, the illustration of the third myth, that of 'nature perverse/tolerant', might appear to be a simple hybrid of the first two. However it is quite distinctive. Although it acknowledges a certain degree of uncertainty as being inherent, it assumes that scientific management can limit any disorder. The ball will return to equilibrium, provided that measures are taken to ensure that no perturbation is too great. This myth supports neither the unbridled exploitation of the myth of nature benign nor the cautious, restrictive behaviour of nature ephemeral. Instead, it maps and manages the boundary lines between these two approaches through monitoring indicators, auditing, and the construction of elaborate technical assessments (Rayner 2003b).

To these three nature myths, an anthropologist, Michael Thompson (1987) added a fourth, that of 'nature capricious', represented by a ball on a flat surface, liable to move unpredictably in response to any perturbation. The myth of nature capricious is associated with a fatalistic world outlook that does not actively engage in managing nature, which is, in principle, unmanageable.

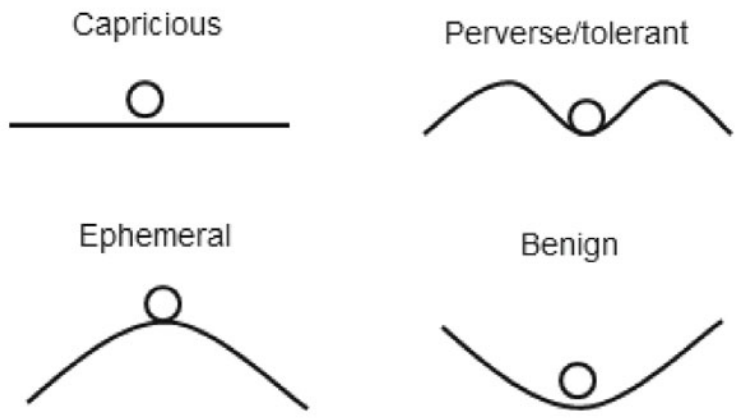

Figure 8.3 Myths of the economy (after Holling 1986).

It is instructive to apply the same iconography to perceptions of the economy (see Figure 8.3). While those who see nature as capricious or perverse/tolerant tend to see the economy in the same terms, the icons for the economy are the inverse of those representing nature in the other two perspectives. That is to say, those who see nature as benign tend to be most worried about the impact of environmental policies on the economy. Those who fear that nature is ephemeral tend to be convinced that greening the economy will not only assure the security of ecosystems but will also improve economic performance. This situation was clearly visible in the contrasting approaches taken by George W. Bush and Al Gore on climate change. Bush repeatedly warned that the United States would not compromise its economic position and the American way of life by implementing policies to reduce carbon dioxide emissions from energy production and use. In contrast, in 2004 Gore co-founded Generation Investment Management based on his commitment to the idea that the same kinds of environmental policies deplored by Bush open up new opportunities for green investment and promote economic growth. There are two points to make here. First is that monothetic and dichotomous representations of ideas of nature both fail to capture the heterogeneity of views. In describing four myths of nature here, I make no claim to completeness, merely to parsimony, based on the experience that seeking to make finer distinctions tends to be prone to diminishing returns on the effort of doing so. The second point is that even the fourfold heterogeneity that I have described is often difficult to detect because one of the four establishes a dominant rhetorical framework to which the representation of rival views must be adapted if they are to be accepted into the discourse. Elsewhere (Rayner 1994) I have referred to these as 'hegemonic myths'. In contrast to the idea of 'epistemic

communities' proposed by Haas (1990), hegemonic myths do not represent a shared episteme or worldview. Rather they set the rhetorical terms within which rival views must compete. Arguments rooted in rival myths are likely to adjust to the rhetorical assertions of the hegemonic myth while providing for specific elaborations or exceptions that effectively undermine it—a "Yes, but . . ." approach to debate. What a rival myth cannot do is directly challenge a hegemonic myth and expect to remain a credible participant in the mainstream discourse.

For at least the past two decades, the hegemonic myth of nature, dominating environmental discourse, whether about climate, biodiversity, freshwater and oceans, or any of a multitude of concerns, is the myth of global vulnerability and fragility (Cantor & Rayner 1994; Thompson & Rayner 1998). The myth is communicated in metaphors, such as 'spaceship earth' (Boulding 1966) and in vivid imagery designed to evoke the idea of a single vulnerable planet. For example, in his account of the formation of the stratospheric ozone regime, its principal architect, Richard Benedick, writes:

> Perhaps the most poignant image of our time is that of the earth as seen by the space voyagers: a blue sphere, shimmering with life and light, alone and unique in the cosmos. From this perspective, the maps of geopolitics vanish, and the underlying interconnectedness of all of the components of this extraordinary living system—animal, plant, water, land and atmosphere—becomes strikingly evident. (Benedick 1991: 199)

This immensely powerful symbol consists of three elements. First, the imagery of the earth itself emphasizes fragility. The adjectives "blue," shimmering," and "light" all evoke, and are designed to evoke, a delicate object, easily broken. "Alone" and "unique" stress another aspect of vulnerability: that the object once lost or shattered can never be rescued or restored. The second element evokes the complexity and interdependence of earth systems. Interestingly, in addition to land and water, which are clearly visible in such photographs, the writer mentions "atmosphere" which may be inferred from the presence of clouds above the planet's surface, but is not actually visible to the eye. He also supplies the details of plant and animal life, which are not observable from space at all. The third component emphasizes the claims that human divisions—"the maps of geopolitics"—are somehow artificial illusions of local, ethnic, political, and economic independence that "vanish" once the quintessential truth of environmental interdependence is grasped. But such divisions and borders were never visible from this vantage point to begin with. What is presented as a simple perception of reality is really a carefully constructed mythic vision of a fragile system of natural interdependence endangered by human hubris.

Because the construction of nature as fragile represents a hegemonic bound on contemporary environmental discourse, any voice that does not acknowledge the idea that nature is fragile abdicates its claim to legitimacy

in the conversation. Currently, anyone who deviates from the mainstream diagnosis and prescription for climate change risks being denounced as a 'climate denier'—a deliberate attempt to tar such deviants with the same brush as holocaust deniers. However, even mainstream environmental discourse moves rapidly from an initial agreement that there is a problem to profound disagreement about the nature and definition of the problem, the forces underlying it, and the appropriateness of potential solutions. The conditions for the viability of the global capitalist system, the imperatives of national development, and the system of international relations all provide debating grounds for the rhetorical conflict, especially as the discourse moves from basic diagnosis of increasing carbon concentrations to policy prescriptions. Hence, translating scientific observations and calculations into policy has proven to be a drawn out and bloody affair characterized by much lamentation from advocates of science-driven policies that their warnings are not being heeded.

CATASTROPHE POLITICS

At least partly in response to the lack of progress in international negotiations and the inexorable rise in global greenhouse gas emissions, the past decade has seen an intensification of the use of the myth of nature ephemeral as the hegemonic discourse among mainstream ecologists, geographers, and earth-systems scientists. While scientific or 'empirical' catastrophism is not entirely new (Theisen 1984), originating in the work of Thomas Malthus (Linnér 2003), its modern career began with the rise of the environmental movement in the 1960s. The seminal text of the decade, *Silent Spring* (Carson 1962) foretold a future in which humanity's use of pesticides wrought destruction upon nature. *The Population Bomb, the Closing Circle and the Limits to Growth* (Ehrlich 1968; Commoner 1971; Meadows et al. 1972) all warned of impending crisis due to, respectively, overpopulation, toxic waste, and severe resource shortages. These concerns subsided somewhat when the predicted disasters of famine and resource scarcity failed to materialize in the light of the green revolution, which radically increased agricultural productivity; the demographic transition, as countries became wealthier; and resource substitution and the development of new materials that enabled us to do more with less. But recently, scientific catastrophism has become the order of the day again, as policy advocates from the world of science increasingly deploy the vocabulary of 'tipping points' to describe sudden, irreversible discontinuities with disastrous consequences. In principle, the idea of tipping points could also be used to describe positive outcomes of sudden events. But the term is seldom deployed that way, even to describe the potential for rapid behavioural and technological change that would avert catastrophe.

The idea of specifically 'catastrophic' or 'abrupt' climate change, largely rejected by the IPCC in its first four assessment reports, has gained ground in

both the scientific and popular literatures. Prominent climate scientists have warned of the danger of climate tipping points beyond which runaway global warming will wreak irreversible disaster (Lenton et al. 2008). According to NASA climatologist James Hansen (2005: 8), "We are on the precipice of climate system tipping points beyond which there is no redemption."

The use of tipping points in climate science is of interest in itself. The concept originated as an explanation of sudden changes in mass human behaviour, popularized by the journalist Malcolm Gladwell (2000), and was imported into scientific discourses by activist scientists precisely because of its ability to motivate lay audiences (Russill & Nyssa 2009). Now it seems, however, that these scientists are beginning to believe their own propaganda as science imitates popular culture. Once considered too alarmist for respectable scientific discourse, tipping points are now the subject of entire research programmes, such as that at the University of Durham (see http://www.dur.ac.uk/ihrr/tippingpoints/). Positing a tipping point invites one's audience to consider the possibility that a catastrophe is looming: the end of the era of humanity using nature's resources carelessly and greedily. The forces of nature will react to centuries of mistreatment in ways that will make humanity quake unless immediate action is taken. Unless greenhouse gas emissions are curbed, the positive feedbacks will soon begin and a tipping point reached (e.g. Romm 2011). The rhetoric emphasizes the very worst that can happen: the end of the world as we have come to know it, with no promise of anything better.

The idea that we are collectively on the brink of overstepping 'planetary boundaries' that will render civilization unsustainable has been prominently propounded by a group of scholars around Johan Rockström of the Stockholm Resilience Centre. In common with other scientific catastrophists, Rockström et al. make much of the claim by Nobel prizewinning chemist Paul Crutzen (2002) that the earth has entered a new geological period, the 'Anthropocene', "in which human actions have become the main driver of global change" that "could see human activities push the Earth system outside the stable environment state of the Holocene with consequences that are detrimental or even catastrophic for large parts of the world" (Rockström et al. 2009: 472). A few sentences further on they assert that:

> Many subsystems of Earth react in a non-linear, often abrupt, way and are particularly sensitive around the threshold levels of certain key variables. If these variables are crossed then important subsystems, such as a monsoon system, could shift into a new state, often with deleterious or potentially even disastrous consequences of humans. . . . Most of these thresholds can be defined by a critical value for one or more control variables, such as carbon dioxide concentrations.

The authors go on to identify nine such planetary boundaries, two of which, the nitrogen cycle and biodiversity loss, they claim have already been transgressed with climate change rapidly approaching the point of no return (see Figure 8.4).

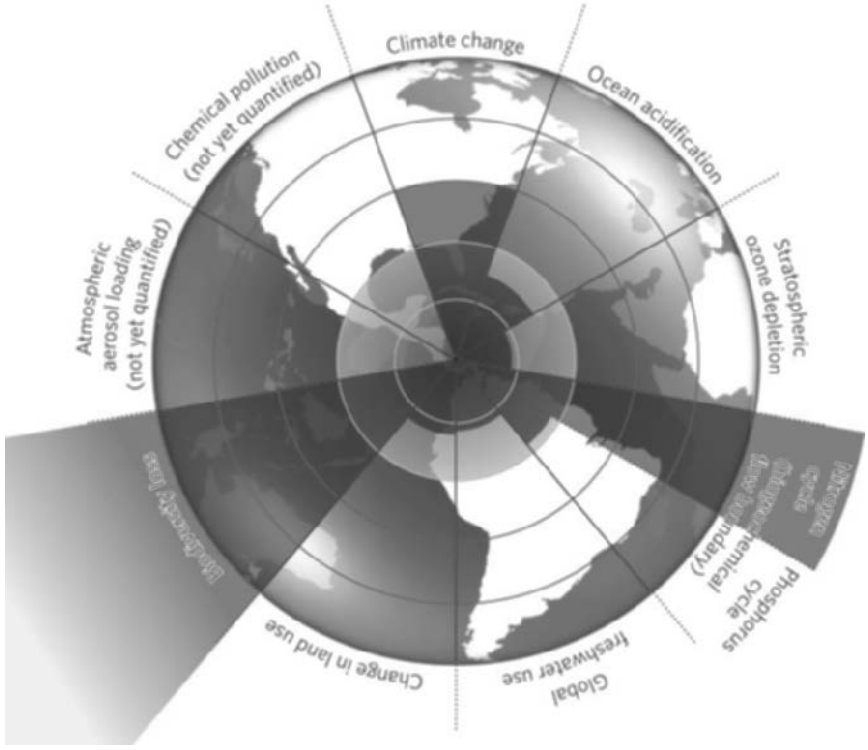

Figure 8.4 Planetary Boundaries (Adapted by permission from Macmillan Publishers Ltd: Nature; Rockström et al., Copyright 2010).

Subsequently, 18 past winners of the Blue Planet Prize published a report warning that civilization faces a "perfect storm" of ecological problems driven by overpopulation, overconsumption, and environmentally damaging technologies (Bruntland et al. 2012). These ideas echo the Malthusian arguments of the Limits-to-Growth, Small-is-Beautiful movements of the 1960s and 1970s. The notion of impending cataclysmic events with dystopian outcomes is frequently invoked not only by environmental NGOs but also by policy makers in highly public forums. Examples include the UNFCCC, the World Economic Forum in Davos, the European Parliament, and recently at "Planet under Pressure," a major conference in London designed to feed into the 2012 Rio Plus 20 summit, which opened with one of the Blue Planet prize-winners setting the catastrophist tone. 'Reality' and 'nature' were frequently invoked as the impetus for radical action. In the words of Anne Glover, the Chief Science Advisor to the European Commission, "The facts just are." All the while, 'society' was blamed for failing to respond to the urgent messages of scientists and campaigners, and social scientists chided for failing to market the natural scientists' warnings effectively.

The rhetoric employed in the plenary sessions was especially striking in its efforts to establish the present as a uniquely defining moment for the future of humanity requiring urgent action on a global scale which seems slow in coming. Nobel laureate Elinor Ostrom declared that, "We have never faced a challenge this big." Johan Rockström drove home the point, claiming that, "We are the first generation to know we are truly putting the future of civilization at risk." Apparently, those who lived through the Second World War or the prospect of mutual nuclear annihilation in the 1960s were deluded in their estimation of the challenge they faced or the consequences for civilization, to say nothing of Old Testament prophets who only had the authority of God that destruction was imminent if people did not mend their wicked ways. Lest there be any doubt that behavioural change was the goal, Dutch political scientist Frank Biermann spelled out the imperatives that "the Anthropocene requires new thinking" and "the Anthropocene requires new lifestyles."

Indeed, the rhetorics of the Anthropocene, tipping points, and planetary limits have all three characteristic features of traditional millenarianism that I identified in an early study of the credibility of millenarian prophesies among small Marxist splinter groups, long before I turned my attention to environmental issues (Rayner 1982). These are the foreshortening of time (the claim that catastrophe is imminent), the compression of space (the assertion that the earth is a closed system), and an egalitarian concern for the plight of the weak and vulnerable.

In keeping with egalitarian advocacy, a radical redistribution of certain key resources is needed: the dramatic cut in the use of fossil fuels upon which industrialized economies are based. Moreover the advocates' preferred strategy is presented as the only course of action that will let humanity avoid its fate. In the climate discourse, therefore, the success of this rhetoric is evident in the prominence given to mitigation of carbon dioxide over other strategies, such as the reduction of short-term climate-forcing agents (such as black carbon), adaptation (Pielke Jr et al. 2007), and, more recently, climate geoengineering (Shepherd et al. 2009).

At first sight, the contemporary resurgence in catastrophist thinking might be understood as a response to improvements in our understanding of critical Earth systems resulting from research-led improvements in scientific understanding. However, I have not been able to identify any new empirical studies to justify the claim that, "Although Earth's complex systems sometimes respond smoothly to changing pressures, it seems that this will prove to be the exception rather than the rule" (Rockström et al. 2009: 472). Leading ecologists have long suggested that the general assertions of systems theorists that "everything is connected to everything else" and "you can't change just one thing" are actually less robust than is often claimed. It seems that most species in many ecosystems are actually quite redundant and can be removed without any loss of overall ecosystem character or function (e.g. Lawton 1991; but for a contrasting view, see Gitay et al. 1996). While

it is doubtless the case that there are many non-linear relationships in natural systems, it is another matter as to whether non-linearity dominates and whether we should, as a matter of course, expect to find tipping points everywhere. Indeed, a recent review challenges Rockström et al.'s claims, arguing that out of the planetary boundaries posited, only three genuinely represent truly global biophysical thresholds, the passing of which could be expected to result in non-linear changes (Blomqvist et al. 2012).

The same report also challenges the idea that the planetary boundaries constitute 'non-negotiable thresholds'. The identification of the planetary boundaries is dependent on the normative assumptions made, for example, concerning the value of biodiversity and the desirability of the Holocene. Rather than non-negotiables, humanity faces a system of trade-offs—not only economic, but moral and aesthetic as well. Deciding how to balance these trade-offs is a matter of political contestation (Blomqvist et al. 2012). What counts as "unacceptable environmental change" is not a matter of scientific fact, but involves judgements concerning the value of the things to be affected by the potential changes. The framing of planetary boundaries as being scientifically derived non-negotiable limits obscures the inherent normativity of deciding how to react to environmental change. Presenting human values as facts of nature is an effective political strategy to shut down debate.

Identifying the rhetorical strategies of climate policy advocates who are using catastrophist arguments does not, of course, mean that the catastrophist perspective is necessarily false or wrong. Critics of environmentalist arguments frequently fall into the error of assuming that exposing epistemological or ontological flaws in their opponents' arguments means that nature will resolve itself in humanity's favour and, therefore, no policy response is merited (e.g. Wildavsky 1995). By the same token, the well-documented disputes about climate change science highlight the mirror image of the issue of "How do people maintain catastrophist beliefs when evidence is weak or prophesy repeatedly fails?" which is "How do people consistently dismiss plausible warnings?" Both sides are engaged in systematic selectivity concerning the available evidence for and against catastrophism. They deploy their respective ideas of nature in the effort to persuade or coerce others to behave as they would have them behave. Thus the response of both sides to the considerable uncertainties and ignorance about potential catastrophes has not been how to manage uncertainty and ignorance but to assert their positions with greater conviction and increasingly *ad hominem* attacks on those with whom they disagree. Climate sceptics accuse climate activists of deliberate scaremongering and using climate as a stalking horse for socialist redistribution. Climate activists complain that secret disinformation campaigns by multinational corporations are the major cause for their failure to galvanize publics and policy makers to take radical measures to protect the environment. Both appeal to nature as the ultimate arbiter of their political disputes.

CONCLUSION

The coercive power of the idea of nature and the political impasses that we reach when people invoke their incommensurable ideas of what nature is and how it works would seem to be reason enough for us to dispense with the concept altogether. The way in which the idea of nature is deployed in current environmental discourses to assert the political primacy of science and scientists in policy making is particularly alarming. Following Mill in this regard, I am deeply sympathetic with John Meyer's more recent argument that those who seek to protect, preserve, or improve the quality of the environment in which we all live should refrain from reifying nature as the standard for political action. Appeals to nature as the source from which economic, social, and political principles must flow should be resisted, argues Meyer (2001: 1),

> for precisely the same reason they are powerful—they cede enormous authority over human affairs to something deemed 'nature'. At the very least, any democratic politics would be imperilled by an acceptance of these claims.

However, the idea of nature as the ultimate justification for our political and moral preferences seems to be so thoroughly entrenched that it is unlikely to disappear from our vocabulary any time soon. It remains a seemingly indispensable rhetorical resource.

NOTES

1. This chapter is based on a talk given by Steve Rayner at the "Conference on Nature and Society," which was organized by Kirsten Hastrup at the Royal Danish Academy of Sciences and Letters, Copenhagen, in 2011. We have elected to retain the first-person singular voice of the original presentation.

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9 Divide and Rule

Nature and Society in a Global Forest Programme

Signe Howell

Based on my ongoing comparative research project on the high profile global REDD+ initiative (Reducing Emissions from Deforestation and forest Degradation)[1] in developing countries, I shall present some findings from studies in the Amazon, Tanzania, and Indonesia that show how a project, initially perceived by the financiers (UN, World Bank, Norwegian government, etc.) as a straight-forward 'nature' (in this case forest) project, with technocratic solutions, has turned into a highly complex 'society' project.[2] The original exclusive focus on preserving forests can be brought back to the misconception that forests exist outside society. The policy makers failed to appreciate that people are intrinsically involved in, rather than separate from their environments. In many parts of the world local ontologies (theories about what exists in the world and how they are related) and epistemologies (theories of the nature and grounds of knowledge), and practices that are predicated upon these, intimately intertwine 'society' and 'nature' in ways that science ignores. I shall suggest that this misconception by the initiators of REDD was a result of an assumed and unquestioned conceptual division between nature and society.[3] Perceived consequences upon the life of the people who live in tropical forests, and are dependent upon them for their livelihood, activated international and national environmental and human rights NGOs as well as indigenous forest populations. At the discursive level,[4] I argue that this has resulted in a shift from a focus upon trees to a focus on the people who live among the trees. NGOs' vocal protests and activities have forced a shift in the rhetoric that, if not totally collapsing a nature/society separation, has at least led to a blurring of the boundary between them. In what follows I shall be examining some of the paths that led to this shift and raise some questions about how to interpret the imaginaries and narratives of the four main categories of stakeholders: policy makers, NGOs, local populations, and entrepreneurs. I shall suggest that we are dealing with four distinct narratives about the relationship between the natural and social worlds and that while each of these narratives is more or less coherent in its own terms, they, in important ways, do not overlap. Drawing on some recent theories about the interpretation of 'nature' in social life, I will examine this plurality of narratives.

The research may be described as multisited in a rather special sense: it covers a broad geographical ground as well as several levels of social arenas within each national setting. This is a challenging undertaking, but one that brings to mind the pertinent observation made by Hannerz in his discussion of multisited fieldwork: "Sites are connected with one another in such ways that the relationships between them are as important for this formulation as the relationships within them; the fields are not some mere collection of local units" (2003: 7). I have, indeed, found this to be the case in the far-flung and multileveled ethnographic investigations that this project has undertaken on the REDD initiative.

NATURE AND SOCIETY IN ANTHROPOLOGY

The relationship between the natural and social worlds has, since the early days of anthropology, been subjected to intense attention and critique from a number of different theoretical positions. In much recent philosophical anthropological writing, a boundary between human subjects and natural objects is being challenged afresh. Thus many argue that we do not *become* simply in relation to each other, or even to other species of living things, but also in relation to significant material objects in our environment (e.g. Ingold 2000). The approach was summed up by Bruno Latour in *We Have Never Been Modern* (1993), where he makes what Penny Harvey calls a "programmatic call for social scientists to abandon their misplaced faith in what he refers to as the 'modern settlement', namely the foundational separation of society from nature, politics from science" (quoted in Harvey 2012). More recently, he proclaims, "[t]hank God, nature is going to die. Yes, the great Pan is dead. After the death of God and the death of man, nature, too, had to give up the ghost" (Latour 2005: 26). This has been heeded by many and, according to Mol, we are witnessing a shift in the workings of the social sciences which

> has come to extend itself to encompass the physicalities whose study used to be the prerogative of the natural sciences . . . but not in ways such that physics can take over the world, or that genetics is allowed to explain all to us. The (serious) game played here makes a move that is the other way round: like (human) subjects, (natural) objects are framed as parts of events that occur and plays that are staged, if an object is real this is because it is part of a practice. (Mol 2002: 44)

I shall consider if and how these and similar arguments can help in my analysis of the REDD discourses that I have encountered. Is nature dead? Can objects be 'real' outside practice? On whose authority shall we override what people say and do?

Just because in some narratives nature and society are perceived as mutually inclusive—or indeed constitutive—does that preclude perceiving them in other contexts as separate? What about the many narratives that insist on two separate categories where the meaning of each is derived precisely from the complementary opposition between them? As anthropologists—in distinction to adherents to ANT (Law 2007)—we usually start with human beings rather than with non-human entities, abstractions, or patterns of practice—and we seek to understand *other people's* perception and interpretation of *their* lives and worlds and changes in them, not our own. This is not to claim that what we learn from others does not have a bearing on how we understand our own world.

Concerned with similar questions, but from a more familiar perspective, Escobar describes the purpose of his recent book *Territories of Difference* (2008) as being "about the incredibly complex intersections of nature and culture, space and place, landscape and human action, culture and identity, knowledge and power, economy and politics, modernity and globalization, and difference and sameness associated with imperial globality and global coloniality" (2008: 5). Escobar's formulation of his concerns and his analysis are highly relevant for the world beyond Latin America and I shall be drawing on some of his arguments in this presentation.

It is precisely the intersections of nature and culture—or possibly more relevant in a European anthropological discourse, nature and society—that is at stake in REDD, a global initiative aimed at mitigating climate change through the protection of tropical forests by paying (nations, people) not to cut down their trees through the establishment of a carbon market. How the different stakeholders (politicians, bureaucrats, experts, NGOs, local populations, and entrepreneurs) perceive, understand, and experience the forest, and what actions do they take based on their understandings, is the question. Not surprisingly, there are a number of conflicting views and agendas, and trying to identify these and the 'friction' (Tsing 2005) that necessarily results when they confront one another will be my task. The background to and justification for REDD is that tropical deforestation and degradation accounts for a fifth of global greenhouse gas emissions, more than the entire global transportation sector (Voigt 2010). My argument is that the initial aims of REDD can be brought back to the conception that forests exist outside society, and that, in line with Western scientific tradition, nature and society are two separate categories that may be treated as independent of each other—an approach that Descola has characterized as the 'scientific mode' (1996: 96). In their original planning of the REDD initiative, the policy makers failed to appreciate that people who have lived in, and with, forests for generations experience an intimate relationship with their forest environment and that this is an integral part of their ontology. To them, the category 'nature' as something separate or separable from their social existence is unthinkable. In such understandings nature is not dead, it was never there in the first place.

Despite the rigorous divide between the natural and social worlds that constitute the project of the REDD policy makers, it is worth bearing in mind that many who are brought up in Western scientific traditions also perceive themselves at times as emotionally entangled in the natural environments in which they live. This is manifested, inter alia, in a range of mundane, but no less significant, popular outdoor activities, such as country walks, mountain trekking and climbing, skiing, sailing, fishing, and camping, in which people experience an awareness of a special relationship between self and environment, the more so as they achieve a sense of mastery in their interaction with natural elements. In her study of rock climbing, Penelope Rossiter, drawing on insights from ANT, makes a similar point when she writes, "Rock climbing may be fruitfully understood as a network of interrelations between humans, within humans, between humans and non-human natures (the latter including rocks, cliffs, vegetation, water and animals)," and "Cliffs become climbs and humans become climbers" (2007: 293).[5] The increasing number of adherents to the many varieties of 'deep green religion' (Taylor 2010) in the contemporary Western world seems to indicate the seeking of a more all-encompassing mystical experience of 'nature' (Milton 2002). By contrast, planners tend to see nature as a resource to be managed, implying a clear separation between it and them. This appears still to be the case today, despite the fact that global warming has shown us that people and their actions are intrinsically intertwined with the natural world. The commonly encountered metaphor that trees are the lungs of the forest, giving the human body and the forest a symbolic equivalence, has failed to alert the attention of the policy makers who persist in maintaining two realms.

CAUSES OF CLIMATE CHANGE: NATURAL OR HUMAN?

In what follows I shall explore some of the background for the REDD initiative, the assumptions that gave rise to it and how it sprang out of the global concern about climate change. Current debates about climate change demonstrate uncertainty about the relationship between nature and people. The protagonists fall into two main camps: those who claim that climate change is caused by human actions that affect the environment detrimentally, and those who claim that observable changes are part of a pattern of natural changes that have always been taking place. While not denying that human practices may represent a contributing factor to the speed of change, through for instance increasing CO_2 emissions, the 'naturalists' nevertheless insist on regarding climate and climate change as primarily a natural process. What is certain is that what is natural and what is man-made—and where the boundaries between them should be placed—is, in this contentious and highly politicized discourse, not easy to resolve. What the two camps nevertheless appear to agree upon is that there are two separate

worlds: the natural and the social. What they disagree about is if—and how—the situation in one affects the situation in the other; certainly how to privilege a possible causal direction is hotly disputed. As manifested by the numerous COPs that have been organized in various parts of the world during the past decade and the heated debates they generate,[6] it is fair to say that there is a general global concern about climate change (whatever its causes) and about how human behaviour may be altered in order to alleviate its effects. This is where REDD comes in.

Avoiding deforestation has become recognized as an important keystone of a proposed climate agreement given that deforestation accounts for anything from 12% to 20% (Schroeder 2010: 318) of global greenhouse gas emissions. These figures received attention in international climate policy circles in the wake of the *Stern Review on the Economics of Climate Change* which stressed the cost-effectiveness of reducing emissions from avoided deforestation (Stern 2006), and inspired the approach which became REDD. Initially, money would come from countries in the North, which would get the various projects off the ground in the South, for later income to be generated from a carbon market (Angelsen 2009). From its original conception REDD was not going to be an aid project, but a commercial one—payment being dependent upon demonstrable results. Part of the controversial nature of REDD can be brought back to the fact that funding will be derived from the establishment of a carbon market. This fits well within a neo-liberal approach to environmental initiatives and was inspired by the relatively successful Payment for Environmental Services (PES) that had been tried out in parts of Latin America, primarily with regard to water supply.

The trees and forests of the REDD initiative are those of countries in the South, primarily the rainforests of the Amazon, Indonesia, and New Guinea, but other forested areas in Asia as well as in Africa are also being included. REDD is no longer only about the storage of forest carbon stocks, but aims also to incentivize the role of conservation and sustainable forest management. Tropical forest nations are to be financially compensated for voluntarily keeping their forests intact. In this way, their lost revenue from not developing the forests would be offset. To what extent this will occur through funds or through the market remains for the time being an open question. What I wish to emphasize is that the REDD initiative was perceived from the outset as one whose purpose was to save forests from human interference, and that once the practicalities had been worked out, as a spin-off effect, people who live in the forests should also benefit.

NATURE AND SOCIETY IN REDD NARRATIVES

The rather dramatic shift that has occurred in REDD from a protection-of-forests project to a project that, in many ways, is as much concerned

with the people as the trees, can be brought back to efforts made by NGOs and other interested parties. They are insisting on the clarification of land-rights and a non-negotiable inclusion of 'Free Prior and Informed Consent' (FPIC) by affected local populations in any proposed REDD scheme. The arguments for the inclusion of people into the plans were not based on an assumption that humans and forests constitute one another, being a case of 'mutual inclusion' (Law 2007), but grounded in principles of human rights as formulated in *UN Declaration on the Rights of Indigenous People* (UNDRIP). It was not a question of indigenous ontology and epistemology (ultimately these are mutually implicating), but of politics.

I shall argue that the written formulations to date of the REDD initiative display many paradoxes and contradictions. These are apparent in the numerous policy documents that have been produced during the past two years, as well as in the attempts to formulate concrete plans to instigate actual REDD projects in the various signatory countries. I suggest this may be brought back to an unresolved understanding of the relationship between people and nature.

Despite a noticeable shift in policy, which has led to declarations about a "rights-based approach to rainforest protection" and the right of indigenous peoples to be consulted in the implementation of actual REDD projects, I argue that people (society) and forests (nature) ultimately remain separate categories in *all* REDD narratives. Differences between them emerge in the degree to which human activity is thought to affect the forest, as well as in how one category is privileged at the expense of the other in specific discursive contexts, not that a dividing line is thought irrelevant. It is highly unlikely that REDD politicians and bureaucrats would understand Mol's assertion (above) that "human subjects and natural objects are framed as parts of events that occur and plays that are staged, if an object is real this is because it is part of a practice." Some NGO employees, especially those from indigenous NGOs, may be closer to such an understanding, at least insofar as their own worlds are concerned, but it is not an argument I have encountered (but see further discussion below). In the global arenas such views are not offered. However, what is important to explore is how, in the different REDD fora and narratives, the two categories are differentially privileged in relation to each other. That today account is being taken of the people in designated REDD forest areas in a manner very different from the Bali conference (see below) is undoubtedly the case. But in what ways, or if at all, forest and people are seen as mutually constituting, is another matter.

DIFFERENT IMAGINARIES AND NARRATIVES ABOUT NATURE AND SOCIETY

When Western imaginaries of the 'problem' and the 'solutions'—global warming and forests as carbon sinks—meet local imaginaries, the project becomes

necessarily reconfigured. I shall briefly consider the premises for action and reaction of the four main groups actively involved in REDD, paying particular attention to their implicit as well as explicit narratives of 'nature'.

(i) Policy Makers, National Governments, and Bureaucrats (Nature as Wilderness)

The unquestioned and absolute division between nature and society that lies at the basis of REDD has led the policy makers to plan accordingly. This may be brought back to what Escobar has characterized as "the coloniality of knowledge and nature" (2008: 120), which not only marginalized local knowledge, but also essentialized the notion of nature as wilderness (ibid.). REDD should be implemented as a forestry project, not a social project. Affected populations would be paid for refraining from cutting trees, but they themselves were thought of as epiphenomenal to the forest. The main challenges that the initiators perceived in implementation were technical. For example, developing methods for undertaking baseline studies and monitoring progress (MRV),[7] which are essential for payment, has received much attention. Furthermore, definitions of forest, deforestation, and degradation are imprecise and contested. This demonstrates not only fuzzy categories, but also many different agendas and stakeholders. For example, Malaysia includes oil-palm plantation in their official definition of forest, Indonesia does not (although they tried to), but they include rubber plantations. Finally, questions of good governance and how to implement REDD without corruption are high on the agenda of the Northern politicians and bureaucrats. However, although problematic and extremely difficult, these and other perceived challenges are, nevertheless, seen as soluble. Implicated governments in the South are cautiously positive to REDD, seeing a chance to enhance their national incomes, and many are starting to establish structures to meet the demands of the initiators.

(ii) Non-governmental Organizations (Nature as Populated)

REDD was rapidly confronted by a number of stakeholders whose perceptions were very different from those of the initiators. International, national, and indigenous environmental and human rights NGOs were quickly alerted to the REDD initiative and regarded it as misconceived with damaging implications if carried out in its initial form. NGOs' and indigenous organizations' active engagement has led to a major shift in the formulations of REDD documents. Their reasons varied. Many objected to the neo-liberal approach and its ensuing commodification of nature; others to the single-minded focus on trees to the exclusion of the people who live among them. While many international environmental NGOs, such as WWF, were hostile to REDD at the outset (although they later changed their minds, I return to that), others like the Norwegian Rainforest Foundation

and Friends of the Earth were supportive on condition that the rights of the local populations were ensured. Several indigenous civil society organizations in the Amazon (Reed 2011) and Indonesia quickly opposed REDD on the grounds that it would exploit the local people and ignore their rights to land, forest, and forest products. Many others took a 'wait and see' stance. Few national NGOs, or indigenous activist groups, if any, were enthusiastic. The thrust of much NGO objection to REDD is that the local people are ignored. They insist on a rights-based approach. More recently, the activists have focused on the inclusion of 'Free, Prior and Informed Consent' (FPIC) in all implicated communities, the need for specified safeguards, transparency of all proceedings, and the granting of rights over traditional land, before an area may be included in a REDD project. Their arguments are predicated upon principles of human rights and they make explicit reference to UNDRIP (*UN Declaration on the Rights of Indigenous Peoples*). According to HuMa, an Indonesian human rights NGO, "[t]he nightmare scenario of REDD is that [if] a spotlight will be turned on . . . the communities, they will be judged to be a threat to the conservation of carbon stocks, and, lacking formal rights or organizations to represent them . . . excluded from their lands and livelihoods" (HuMa 2010: iii).

The increasing vocal protests have forced a shift in the rhetoric. That it is having an effect was demonstrated recently. When Ecuador presented its REDD proposal to the World Bank it was rejected on the basis that it did not take sufficient account of the rights of the indigenous population. However, this, and similar opposition elsewhere, has not led to a collapse of a nature/society divide because this has not been how the NGOs have argued their case, but their efforts have led to a blurring of the boundary between forests and forest populations in the overall REDD discourse. But to the activists, their demand is a political issue, not a theoretical one.

(iii) Local Populations / Indigenous Peoples (Mutual Interconnectedness of 'Nature' and Humans)[8]

The rights of affected local populations have become central to the REDD narrative today. However, despite much rhetoric about the importance of their voices being heard, there is not much sign of serious attempts being made within REDD to find out what their views actually are. As NGOs are becoming more and more professionalized they are losing touch with those they are meant to represent (Lewis & Kanji 2009). So far, the level of the affected communities' understanding of what REDD may mean to them varies enormously. Undoubtedly, for international, national, and local environmental and human rights NGOs REDD represents a new source of income, and a new opportunity to participate in global debates. Such concerns appear to have, in many cases, overshadowed the enthusiasm for investigating local conditions. The benefits for local communities are far less clear. While one must be careful not to lump together all indigenous

people who live in forests in Asia, Latin America, or Africa, ethnographic studies from such societies show that many adhere to an ontology that links them closely to the environment in which they live; indeed they do not operate with a category of nature on par with that of the policy makers or most NGOs. What I find interesting is that the vocal environmental and indigenous NGOs hardly front this argument in their protests.[9] At most they point out that their rights are founded on the fact that their ancestors have lived and worked in the area for generations—thereby marking a mutuality of people and nature, and perhaps also signposting that the earmarked area is one of local religious significance.

Some activist organizations have chosen a line that presents indigenous people as contemporary manifestations of 'the noble savage'. For example, AMAN, the Indonesian umbrella organization for the rights of indigenous groups, comprising more than 1100 member organizations scattered throughout the archipelago, claims that indigenous people know how to look after the forest, and that their traditions are in line with the principles of FPIC. "Indonesia is rich with local wisdom, and FPIC is part of local wisdom," commented a local AMAN representative when asked about his views on REDD. While it ignores the huge variety in Indonesian social-cultural traditions, the argument probably has an impact in national negotiations.

(iv) Entrepreneurs and Commercial Interests (Nature as Profit)

The main destroyers of tropical forests are not local people, but large national and multinational logging, mining, plantation, and cattle-rearing companies with huge economic interest in continued deforestation. Interestingly, they receive little direct attention in policy documents or in the various debates and discourses. At the same time, they have political clout in many of the countries concerned. For example, it is generally held that the watering down of the Indonesian government's promised moratorium on timber extraction is due to pressure from oil-palm plantation companies. Entrepreneurs generally view nature as a source for economic exploitation, usually argued in terms of beneficial national economic gain. Recently some have jumped on a green bandwagon and added sustainable forestry to their rhetoric.

COMMODIFICATION OF NATURE AND NORWAY'S INTERNATIONAL CLIMATE AND FOREST INITIATIVE[10]

The introduction of market logics into environment policy has led to a reconceptualization of nature, and its reproduction, in terms of market processes. The idea of REDD was that people should be paid not to cut down trees. According to Stern, this would be thought of as an example

of a 'low-hanging fruits' project: cheap, efficient, and effective. Later, as REDD took form, it was talked of by the initiators as a win-win project. By preserving tropical forests these would act as CO_2 'sinks' and reduce emissions and, moreover, biological diversity would be ensured. People and nations would eventually receive compensation through the carbon market for their agreement not to cut trees, and, more or less as an after-thought, alternative economic initiatives in forest zones could be made to benefit the people who lived there through sustainable cash-generating projects (in addition to the vaguely formulated carbon market) and this would help to alleviate poverty.

When the Norwegian prime minister launched the Norwegian Climate Initiative in Bali in December 2007, he pledged up to three billion Norwegian kroner per year ($US half billion) to reduce emission from deforestation and forest degradation in developing countries. This sum has been added to in subsequent years; the pledge to Indonesia alone is one billion dollars. The rationale behind Norway's contribution to REDD is to make a substantial contribution in the struggle against global warming. The funding shall be used in accordance with the following objectives:

- To work towards the inclusion of emissions from the deforestation and forest degradations in a new climate regime,
- To take early action to achieve cost-effective and verifiable reductions in greenhouse gas emissions,
- To promote the conservation of natural forests to maintain their carbon storage capacity (NORAD 2011: 5).

From these original aims we can see a straight-forward focus on forests. REDD is about preserving forests. REDD was established as a performance-based system where payment is supposed to be made in the wake of demonstrable emission reduction. People hover implicitly in the background in these three objectives insofar as they represent the causes of the emission and, as destroyers of forests in the countries concerned, preventing sufficient carbon storage to take place. It is possible to discern an unarticulated mutuality in the relationship between people and forests. This relationship is only recently being articulated, and only as a result of civil society pressure.

It is a curious fact that, although the main destroyers of tropical rainforests are not the indigenous people, but the logging, mining, and plantation companies who perform large-scale destruction, it is the indigenous groups that receive the bulk of attention. This shift can, I suggest, be brought back to the efforts made by the NGOs. Today much of the debates about REDD is embedded within an overarching concern with the rights of the smallholder forest-dwelling people.

Having said that, recent developments in Indonesia are thought-provoking. Indonesia has one of the fastest rates of deforestation and forest

degradation in the world. The *Letter of Intent* between the Norwegian and Indonesian governments signed in May 2010 promises the latter one billion dollars under certain conditions, the most important of which is to impose a two-year moratorium on all new logging concessions. Another condition is to give indigenous people and local communities "the opportunity to full and effective participation of REDD planning and implementation." And further, to "take appropriate measures to address land tenure conflicts and compensation claims." Interestingly, no direct mention is made of the envisaged role of the commercial companies with an interest in forests. Indonesian policy discussions with the Norwegian government and with UN-REDD revolve to a large extent around issues related to good governance and FPIC. The issue of local communities' rights was always raised by the people I interviewed recently—from government officials, UN bureaucrats, Norwegian embassy staff, to international, national, and local NGOs. At the same time I was told that the task to ensure that FPIC is being performed was taken care of by AMAN.[11] NGOs in Indonesia are sceptical of REDD and have worked intensely to place themselves on the map. Representatives are now included in most high-level discussions, but some, like the Indonesian branch of Friends of the Earth, has produced a pamphlet entitled *REDD Wrong Path—Pathetic Ecobusiness* in which they express a strong scepticism towards a market-based approach. 'Land belongs to the people by virtue of their having lived on it for generations' is the basis for claims made for rights. Land and people are not separate. Local notions that 'land owns people' (de Coppet 1985: 79) could equally well be argued in many instances, but has not, to my knowledge, been put forward by any stakeholder.[12]

The following example will illustrate how policy makers were made to acknowledge that people who live in the forests are integral to them.

NATURE AND SOCIETY BROUGHT BACK TOGETHER

In the spring of 2008 I attended a workshop in London organized by an organization called Rights and Resources Initiative (RRI): Supporting Forest Tenure, Policy and Market Reforms, which is a coalition of a number of environmental NGOs from a number of countries. The coalition's stated *raison d'être* is as follows:

> We believe it is possible to achieve the seemingly irreconcilable goals of alleviating poverty, conserving forests and encouraging sustained economic growth in forested regions. However, for this to happen, the rights of poor communities to forests and trees, as well as their rights to participate fully in markets and the political processes that regulate forest use, must be recognized and strengthened. (www.rightsandresources.org)

This particular workshop was organized in order to take stock of the negotiations at the COP15 in Copenhagen as regards progress on REDD. It was the fourth in a series entitled *Dialogue on Forests, Governance, and Climate Change* established in the wake of REDD, "designed to foster critical reflection and earning on forest governance, the rights of forest communities and indigenous peoples, and forest tenure in the context of global action to combat climate change, including reducing emissions from deforestation and forest degradation (REDD)" (ibid.). As is well known, NGOs had been very active at the COP in Copenhagen and much of their severe criticism of the superpowers was directed at being excluded from many of the fora. This became one of the central issues at the London workshop also. "We demand a place at the table [of future REDD negotiations]" became the mantra throughout the day. References were made to UNDRIP, a convention not initially thought relevant by the initiating governments. In addition to the presence of more than 100 representatives from a range of indigenous and international NGOs were the head of the Norwegian government's REDD initiative and representatives from the French and British governments (partners with Norway in REDD) and from the World Bank. The fact of this high-power presence was indicative of their unease. Being hard-pressed by the NGOs, they conceded that they would ensure a stronger focus on indigenous peoples' rights, and would work towards better transparency of their deliberations, and consider the possibility of allowing wider participation at their meetings.

I regard this meeting as a turning point in the REDD initiative. From this point onwards, the forest people and their rights were firmly placed on all agendas. By the end of the year, special mention of the need to ensure 'Free, Prior and Informed Consent' (FPIC) appeared in documents, meetings, and negotiations at all levels.[13]

REDD, NGOS, AND PEOPLE IN FORESTS: MONEY, POWER, AND PRACTICE

Environmental NGOs vary in their attitudes to people. Until recently, several of the large international NGOs, such as the WWF (World Wide Fund for Nature, previously called World Wildlife Fund) saw their role as protecting the natural environment (forests, oceans, and wild animals that lived in them). People who also shared these habitats were often regarded as a disturbance and efforts were made to keep them away. There are many reports from nature reserves and national parks in Africa and Asia where armed guards, employed by WWF, forced the local populations to live and work outside the parks / nature reserves which had been their traditional habitat. In the early days, WWF claimed to rely on "best-available scientific knowledge" with a focus on the protection of endangered species. As far as WWF was concerned nature and society should be kept apart. In 1986 the

organization changed its name to World Wide Fund for Nature to combat increasing criticism of its narrow approach, but retained the WWF initials and the panda logo. In the 1990s, WWF revised its mission to: "Stop the degradation of the planet's natural environment and . . . build a future in which humans live in harmony with nature." Today, the WWF has become actively engaged in REDD initiatives in several countries, a turn-around that seeks to take note of local populations as well as animals. This shift is quite dramatic. However, there are few signs to indicate a conceptual collapse of the boundary between nature and society. The panda has not been joined by humans on the logo. Recent activities of the WWF and the Norwegian REDD initiative in Tanzania have provoked several researchers to claim that WWF (funded by Norwegian REDD) supports the Tanzanian government's project in a mangrove area that forcibly removes the local population from their traditional habitat in order to preserve and enhance the Rufiji delta (*Aftenposten* 10 January 2011).

Other environmental NGOs have similarly changed their attitudes to humans in nature. Why this sudden change? It is tempting to suggest that it may be brought back, not so much to a shift in perceptions about the relationship between the natural and social worlds, but rather that it reflects a more mercenary attitude. REDD represents lots of money for NGOs who, increasingly, are employed to act as intermediaries between bi- and multilateral organizations, governments, and the local populations. The sudden new source of income has activated a range of NGOs—international as well as local. Some of these have always viewed forests and people who live in them as mutually implicated, others (the majority) viewed them as quite separate entities. Today, they are all enthusiastically claiming that REDD must not exclude considerations of the people who live in the REDD designated forest areas. National governments are following suit, sensing that Norway has taken a lead and is making this a condition for support. One question I ask myself is: What do the various stakeholders actually mean by the people-forest relationship? Again, there is no one answer; the different stakeholders adhere to different imaginaries. The Norwegian Rain Forest Foundation, which has played an initiating and influential part in the Norwegian REDD initiative, insists on the interdependence of forests and people.[14] According to its home-page, its slogan is "Securing Rights, Saving Rainforests." Other NGOs privilege forests. In a key message by the *Accra Caucus on Forests and Climate Change* following the COP in Cancun in 2011,[15] it is stated that any REDD agreement must "protect intact natural forests and their biodiversity, support restoration of degraded natural forests, recognize that plantations are not forests and should be excluded." No mention is made of the forest populations.

A number of different issues are clearly involved as well as a number of different stakeholders, each with their own agenda. The REDD initiative displays a number of narratives that often do not speak to each other in any meaningful manner. These range from the meta-level of scientific

explanations, global and national political and economic concerns, and the straight-forward neo-liberal market discourse, to the micro-level of local communities and their self-appointed protectors in the form of NGOs. The nature-and-society relationship takes on different meanings in each case. However, nowhere have I, so far, come across an argument that, however implicitly, draws on recent theories that spring out of science studies (inspired by Ingold, Latour, and Mol) and the so-called posthumanist school of thought that is gaining ground in anthropological circles. The various REDD stakeholders appear unquestioningly to accept that the natural world exists outside and separate from the human world and that what is at stake are the ways in which different categories of humanity act upon it. While the policy makers still adhere to a predominantly 'natural' focus, the activist narratives adhere to a different knowledge practice (Escobar 2008) that emphasizes the inhabitants of that natural world while, at the same time, maintaining a distinction between nature and society.

CONCLUSION: NATURE/SOCIETY A PARADOXICAL DISTINCTION

The stress on a symbolic division between society and nature—or culture and nature—characterized most of the work by Lévi-Strauss. However, towards the end of his career he became concerned that the distinction lacked objective criteria, and in the second volume of *Mythologiques* he stated:

> The contrast of nature and culture would be neither a primeval fact, nor a concrete aspect of universal order. Rather it should be seen as an artificial creation of culture, a protective rampart thrown up around it because it only felt able to assert its existence and uniqueness by destroying all the links that led back to its original association with the other manifestations of life. (1973: xxix)

This does not mean that Lévi-Strauss abandoned his position that there is a general human tendency to create meaning through complementary opposition. That would go against his life's work. I fully agree that binary categories *are* indeed good to think, but they represent one amongst several options for creating meaning. Nevertheless, it is worth bearing in mind his statement when considering the vicissitudes of REDD policies.

Undoubtedly, the original impetus to the REDD initiative sprang out of a model that places forests firmly in a domain of nature and people in a domain of society (culture). From a purely natural-science point of view, forests manifest the natural domain, separate from the human domain, and may in theory be studied as objects. Undoubtedly, photosynthesis—the natural process of central relevance for REDD—occurs regardless of human activity. Photosynthesis is the process that plants (and trees)

perform, taking carbon dioxide, water, and sunlight to produce energy for the plant and releasing oxygen as a by-product. Undoubtedly, photosynthesis reduces the amount of carbon dioxide in the air. Conversely, reducing forests and other vegetation will produce a net increase in atmospheric carbon dioxide and lead to global warming. Therefore, increasing photosynthesis will act to reduce global warming. Thus, the relationship between human social action and the forest *is* a two-way process—in material, natural terms. Plants are a 'sink' for CO_2 in the environment; trees are 'the lungs of the forest'. Indeed, photosynthesis and human breathing are converse processes: The former inhales oxygen and emits CO_2, the latter absorbs CO_2 and emits oxygen. This knowledge forms the basic idea behind the REDD initiative in which natural processes are privileged at the expense of social ones. At the same time, human activity that produces emissions affects the amount of carbon dioxide that needs to be stored, and human activity affects the amount of available trees to perform the photosynthesis process. While this is well known, it is not acknowledged as relevant in the REDD narratives.

Scientific knowledge encapsulated in the theory of photosynthesis and its effects is deeply social as we know from a growing body of science studies. We might also argue that the resulting attitudes to trees and forest are likewise a cultural product (cf. Lévi-Strauss 1973). But photosynthesis takes place without humans and it is therefore a distinct natural process upon which human existence depends. However, the state of tropical forests affects human life, but its ability to continue to do so is not independent of human activity. Humans have the power to cut down trees at will, even to their own detriment in the long run; they similarly have the power to reduce CO_2 emission. From this point of view there is no clear-cut division between the natural and social worlds.

Carbon, the storage of carbon in leaves and peat, and the photosynthesis process are the subject of sophisticated scientific knowledge. The same applies to the suggested carbon market that will pay local communities in compensation for not cutting trees. The causal reasoning behind these two proposals depends upon much wider domains of knowledge. Trying to disseminate the intention and details of implementation of REDD projects and their underlying reasoning to local forest communities is a daunting task in which different ontologies and epistemologies confront one another. Both photosynthesis and the market need to be explained. Very few forest dwellers have enough formal education to understand what is at stake; even those with some education cannot be expected to understand the issues. Few NGO employees have enough knowledge fully to understand them, few bureaucrats and politicians have enough knowledge to understand them, and the same applies to anthropologists. Most of the people I have talked to about REDD feel extremely uncertain about what is involved, and slide backwards and forwards in their explanations of the causes and the effects of human behaviour in the forest. The path from this to a carbon

market is murky. How can one sell carbon? Is it surprising that people in a Bolivian village in the Amazon, after having been given some rather garbled information about carbon, photosynthesis, global warming, the atmosphere, financial benefits, etc. exclaimed "We do not want to sell our wind"? Similarly, the slightly more educated man who refused to sell their oxygen because they need it for themselves, further demonstrates how difficult the REDD project is to understand (Bardalen 2010).[16]

So, what can we learn from all this that may be relevant to the subject of this book? The shift from a focus upon trees to a focus on the people who live among the trees represents an important shift in the imaginary of what is at stake. Through the activists, the policy makers were made to acknowledge that there is a significant relationship between forests and the people who live and work in them. But does this represent an ontological shift in terms of the perceived categories of nature and society? I do not think so. There is little evidence to show that the activists thought so either. Their concern was to get the policy makers to acknowledge the existence of people whose rights were being ignored or abused. The arguments for rights were based on occupancy, not upon the metaphysics of their relationship with the forest as such which may, or may not, collapse a separation between 'nature' and 'society'. Undoubtedly, many of the indigenous societies engaged by REDD adhere to an ontology in which humans and non-human beings and objects in the forest environment mutually include and constitute each other—where no 'nature' exists outside 'society', or vice versa. In other REDD narratives 'the social' and 'the natural' lose their autonomy at certain moments and in certain places, but I suggest only temporarily, in order for them to re-establish themselves in other contexts. On what basis, then, can I argue for dissolution of the categories?

Finally, what, inter alia, the various REDD narratives have demonstrated is a "coloniality of nature" (Escobar 2008: 120); the growing managerial rationalization of the forests that all stakeholders espouse—except perhaps the local populations themselves, but including increasingly anxious capitalists with a strong desire to maintain access to forests for financial exploitation—is a direct effect of the scientific discourse that accepts 'nature' as a meaningful category. Indeed, much of the policy makers' power to rule is predicated upon the division. As I have shown, it is not possible in a project such as REDD to maintain a clear-cut division between the natural and social domains. However, such a division is built into the premises of the project and remains, so far, stubbornly present.

NOTES

1. Subsequently, several 'co-benefits' were added, such as: conservation, sustainable management of forests, enhancement of forest carbon stocks, and poverty alleviation.

2. The project is part of a larger project at the Department of Social Anthropology, University of Oslo entitled *Cultures of Biodiversity: Precepts and Practices* funded by the Norwegian Research Council. Master students undertake six months' fieldwork focusing on the implementation of REDD in a number of Latin American countries, Tanzania, and Indonesia over a period of three to four years. They work to a common methodological plan developed by myself which makes comparison possible. Funding for the collaborative research with Universitas Gadjah Mada in Indonesia is provided by the Norwegian Embassy.
3. Although today most documents describe the initiative as REDD+, for the sake of simplicity, I refer to it as just REDD in this chapter. The + was added in 2008 in order to indicate the added 'co-benefits' of sustainable management of forests and the enhancement of forest carbon stock.
4. This is the case nationally in most of the countries where REDD is being instigated and at the level of bi- and multilateral stakeholders. However, despite massive lobbying, rights of indigenous peoples and local communities have not been incorporated into agreements resulting from discussions at COPs.
5. I am grateful to Kirsten Hastrup for drawing this article to my attention.
6. United Nations Framework Convention on Climate Change (UNFCCC) sets an overall framework for intergovernmental efforts to address climate change. It is called a framework convention. Conferences of the Parties (COP) are held regularly, the most recent one in Durban (COP17), November 2011.
7. Measurement/Monitoring, Reporting, and Verification
8. What constitutes 'indigenousness' is highly contested. Different countries have different definitions and policies, but today the *United Nations Declaration of the Rights of Indigenous Peoples* (UNDRIP) forms the basis for activists everywhere. In many countries, for example Indonesia, communities that are drawn into the REDD process are often ethnically very mixed. Expressions such as 'forest communities' or 'forest-dependent communities' are therefore used by some of the policy makers and NGOs.
9. In a study of indigenous leaders' rhetoric (mainly from North and South America where they are more politicized) Doolittle (2010) argues that two core arguments may be noticed: a belief that Earth is a living being with rights and that indigenous peoples have environment knowledge that will enhance its protection, to more recently, an argument about historical exploitation and marginalization and the right to control their land.
10. Although Norway was not the first to propose the REDD international initiative, Norway—due to the substantial financial contribution they have pledged—rapidly became the major stakeholder. In many international and national fora, REDD has become synonymous with Norway. Similarly, discussions about forestry and the protection of forest within political as well as research circles are today almost exclusively conducted from a REDD perspective. For these reasons, I have concentrated my research on REDD from the standpoint of the Norwegian REDD initiative.
11. Indonesia has many environment NGOs. In the regional capital of central Sulawesi where the first UN-REDD pilot project is being instigated, there are more than 35 local NGOs. The government is allocating its 'socio-cultural' responsibilities in connection with REDD to them, showing, I suggest, that forests are one thing, people in forests something altogether different.
12. The signing of the final Agreement was delayed and when it finally was done in May 2011, the Indonesian commitments had been watered down. In effect, the commercial interests of the huge companies involved in forest destruction

had won the day. Concerns for forest preservation and the rights of the local communities were ignored. This caused an uproar among NGOs. Perhaps in response to the heavy criticism, and the Norwegian concern about the revised document, the Indonesian government (Ministry of Forestry) arranged a conference on the future of REDD in Indonesia July 2011. The head of the President's REDD Task Force announced the government's intention to prioritize the needs of the forest communities and to 'recognize, respect and protect *adat* rights [traditional rights]'(REDD Monitor). This was received by all concerned as a major victory.

13. That priorities are changing can be seen from the following report from a seminar recently organized by Norway's International Climate and Forest Initiative (NICFI) and the Norwegian Agency for Development Cooperation (Norad). It is stated: "1) The tremendous experimentation and innovation unleashed by REDD is to be welcomed but with the full knowledge that there should be no experimentation with the rights of the people, and 2) Performance based payment systems are good but should also be linked to the performance on implementation of safeguards" (Rights & Resources Initiative News update April–June 2011, http://www.rightsandresources.org/documents/files/doc_5312.pdf).
14. The RF which started 22 years ago as a small support group for the plight of Amazonian Indians has grown into a major NGO engaged in a number of forest preservation projects in Latin America, the Congo, Southeast Asia, and PNG in which the forest dwellers are viewed as integral to the forest. The RF, which is run by an anthropologist and employs a number of anthropologists has, not surprisingly, been adamant from the start that without taking proper account of the opinions of the forest dwellers and ensuring their rights, REDD will not succeed.
15. This is a coalition of more than 100 NGOs from 30 countries that was established in 2008 in order to discuss REDD.
16. Perhaps if those who are commissioned to go to villages in order to explain REDD had sufficient knowledge of local ontology and values, they might have been able to explain the thrust of it in a way that made sense to the locals. However, from our studies on the spot, this is definitely not the case.

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10 Life at the Border
Nim Chimpsky et al.

Gisli Palsson

> *Terrific achievement. To cast off apehood in five years and gallop through the whole evolution of mankind!* (Franz Kafka, "A Report to the Academy," 1917)

Chimpanzees seem to occupy a special position in recent writings on the nature/culture divide, as a liminal species at the main border of modernist discourse. Partly drawing upon the life and work of Nim Chimpsky (1973–2000), a chimpanzee raised in experimental and familial settings in the United States in order to test hypotheses about innate and acquired mental capacities, especially language, this chapter discusses the history of comparisons of chimpanzees and people and, more broadly, the relations of humans and other species. If one takes Chimpsky's near-namesake Noam Chomsky seriously, assuming that language as we know it rests on an innate language "device," one is inclined to ask what such a device consists of, how it developed, and what might be learned through comparisons of humans, other primates, and other "lower" species, an issue only recently addressed by Chomsky himself (see Hauser, Chomsky, & Fitch 2002). I shall argue that academic debates about language and mind generated by Chimpsky, other chimpanzees, and their human and non-human collaborators reflect different understandings of the nature/culture divide and what used to be called the 'animal kingdom'. While experiments with the language and sociality of chimpanzees and other species are often non-conclusive and sometimes misguided, they usually bring home important points about ourselves and our relations to other species. The outline of the chapter is as follows: I first briefly discuss the history of human experimenting with chimpanzees, partly with reference to an illuminating and perceptive short story by Franz Kafka that seems to have anticipated what was to come. I then discuss the amazing case of Nim Chimpsky and some of the lessons we may and may not learn from it. This is followed by a brief tour into evolutionary and comparative discourse on primate becomings and capacities and linguistic doubts about language universals. Finally, I sum up the arguments and their implications for discussions of the nature/society divide and anthropological engagement with it.

Chimpanzees continue to attract our attention, illuminating the human-animal condition one way or another. Not only is Nim the subject of both a recent biography *Nim Chimpsky: The Chimp who Would Be Human* (Hess 2008) and a documentary, *Project Nim* (2011), by James Marsh, also now there is an "autobiography" of a chimpanzee, *Me Cheeta: The Autobiography* (Lever 2008), nominated for the Booker Man Prize in 2009. Moreover, one of the most popular films of 2011 is the science-fiction film *Rise of the Planet of the Apes*, a restart of a popular earlier series, featuring a chimpanzee named Caesar who is tested for a new Alzheimer's cure and, as a result, becomes highly intelligent and eventually leads a revolt of the lab primates. Time and again, animal experiments and their accounts in all kinds of media reveal our own preoccupations and the ways in which we relate to other animals.

Relations between humans and other animals, almost by definition, especially perhaps relations between humans and other great apes, represent a central theme in both anthropology and philosophy, inviting fundamental questions about us and them, nature and culture. Both fields, however, have tended to take a highly anthropocentric position. Ingold has indicated that the comparative anthropological project itself might be the problem: "Does not the anthropological project of cross-cultural comparison rest upon an implicit assumption of human uniqueness *vis-à-vis* other animals that is fundamentally anthropocentric?" (1988: 1). Derrida launched a similar critique of philosophy, emphasizing the tendency to discuss 'the animal' in the singular, almost invariably in contradiction to 'the human': "All the philosophers we will investigate (from Aristotle to Lacan . . .), all of them say the same thing: the animal is deprived of language. Or, more precisely, of response, of a response that could be precisely and rigorously distinguished from a reaction" (2008: 32). Within this general singularity, Derrida continues, "are *all the living things* that man does not recognize as his fellows, his neighbors, or his brothers. And that is so in spite of all the infinite space that separates the lizard from the dog, . . . the parrot from the chimpanzee" (2008: 34; italics in the original). Interestingly, however, while Derrida emphasizes "structural difference between nonhuman types of animal" (2008: 99)—presumably he is referring to biological differences between species—he seems to see no point in exploring the ethnography of human takes on relations with other animals, restricting his own account to biblical narrative, ancient Greece, and a handful of 20th century continental European philosophers.

While Derrida's dismissal of ethnography may resonate with his troubled relationship with anthropology (Morris 2007), it seems to contradict his emphasis on pluralizing voice. In fact, he might have found much inspiring thought in recent ethnographies, in particular the broad kind of "multispecies ethnography" (Kirksey & Helmreich 2010) that seeks to go beyond the traditional scale of primates with which many biologically minded

anthropologists operate. A rapprochement of anthropology and philosophy on this score is timely and urgent. Recently, the field of animal studies has been vastly expanded and revitalizes through new avenues, including those of cognitive studies, primatology, and the animal rights movement (see, for example, Manning & Serpell 1994; Mullin 1999; Haraway 2008; Kirksey & Helmreich 2010). The revival of totemism, the reappearance and escalation of animal sensibilities in spite of Lévi-Strauss' dismissal of the "totemic illusion," seems to continue on full course. More generally, there is a growing body of work on both the labour of animals and the traffic of animal substances. Harré has called for "a comprehensive view of how organic beings and their parts and remains have actually been used, together with some idea of the kind of people who have used them and for what scientific purposes" (2009: xii). This means paying attention to and granting agency to all those participating in the 'living laboratory', including insects, organic clocks, model organisms, and language-learning chimpanzees. "What if a chimpanzee," Harré asks (2009: 10), "has its own agenda in interacting with those who are studying it?"

REPORTS TO THE ACADEMY: ALMOST HUMAN, ALMOST CHIMPANZEE

In popular as well as academic discourse, chimpanzees are often seen as a liminal species, endowed with cognitive capacities and socialities that almost elevate them above nature, nearly making them human, almost possessing culture. Humans, likewise, are frequently presented as apelike beings, quasi-chimpanzees, firmly rooted in their primate past despite their cultural heritage. This is exemplified by popular book titles such as *Almost Chimpanzee* (Cohen 2010). Recent developments in genomics have highlighted the same themes, in new terms—thus, *What It Means to Be 98% Chimpanzee: Apes, People, and Their Genes* (Marks 2002). While the popular qualifying reference to 'almost' highlights a categorical difference between nature and culture, establishing a narrow but fertile comparative zone of meaningful difference for both biological and social anthropology (Barnard 2011), it also suggests fascination with experimenting and transcendence—in particular, as we will see, the possibility of communication across the species divide—expanding at the same time the community of 'culture' to other primates and possibly beyond. The etymology of the word 'chimpanzee' introduced into the vocabulary of the Western world in 1738 is significant. Derived from *kivili-chimpenze*, a term in the Tshiluba language spoken in what is now the Democratic Republic of Congo, it translates as 'mock human', suggesting perhaps that Tshiluba speakers may have seen chimpanzees as the product of couplings between humans and other species. The first ape that became widely known in Europe arrived on an English merchant ship, the Speaker, in London in 1738. Coming from

Angola, she was reported as "an animal of remarkably and terribly hideous countenance . . . called by the name Chimpanzee" (see Marks 2002: 19).

Despite their depressing early impression, chimpanzees eventually became the subject of systematic experimenting and observation, sometimes in close company to humans. A widely discussed case was that of Köhler's 'Anthropoid Station' on the island of Tenerife between 1912 and 1920. In his account on the experiments to the Prussian Academy, Köhler (1956) demonstrated that chimpanzees were capable of solving simple practical problems, typically by rearranging boxes as tools for getting access to food, as if they were making a ladder or, as Köhler reasoned, climbing a tree. While anthropoid apes, contrary to common assumptions, turned out to be capable of creating and using tools, the absence of the sign from their world of communication seemed to reaffirm a boundary between us and them—exemplifying what Haraway calls "simian Orientalism" (1989: 10). Köhler's historic experimenting at the Anthropoid Station and its reporting to the Prussian Academy may have inspired Kafka to write his much-cited 1917 short story "A Report to the Academy" about Red Peter, a chimpanzee performing on the variety stage who turned human and told his story. I return to Kafka's motives later on. In any case, the saga of Red Peter took on a life of its own. Not only did it foreshadow recent discussions of the use and treatment of laboratory animals, it also anticipated language experiments with chimpanzees, including Nim Chimpsky, and the idea of chimp-human transcendence, beyond the almost-culture rhetoric of beyond-nature.

Kafka's story is centred on a chimpanzee who is captured on the Gold Coast of Africa and five years later, following a traumatic experience, is able to deliver an account of his life: "Honored members of the Academy! You have done me the honor of inviting me to give your Academy an account of the life I formerly lead as an ape" (Kafka 1983: 250). After capture, when he came to his senses, Red Peter found himself inside a cage: "The whole construction was too low for me to stand up in and too narrow to sit down in. . . . Hopelessly sobbing, painfully hunting for fleas, apathetically licking a cocoanut, beating my skull against the locker, sticking out my tongue at anyone who came near me. . . . But over and above it all only one feeling: no way out" (ibid.: 252–53).

Red Peter offers an account of how he acquired language. One evening he took hold of a schnapps bottle and "like a professional drinker, with rolling eyes and full throat, actually and truly drank it empty," and in the heat of the moment "called a brief and unmistakable 'Hallo!' breaking into human speech, and with this outburst broke into the human community, and felt its echo: 'Listen, he's talking!' like a caress over the whole of my sweat-drenched body" (ibid.: 258). At the same time, he offers some witty observations regarding his spectacular transition to humanity. Breaking into human community by means of speech meant bypassing the evolutionary past, transcending the nature of the ape:

> The strong wind that blew after me out of my past began to slacken; today it is only a gentle puff of air that plays around my heels. . . . To put it plainly, much as I like expressing myself in images, to put it plainly: your life as apes, gentlemen, insofar as something of that kind lies behind you, cannot be farther removed from you than mine is from me. Yet everyone on earth feels a tickling at the heels; the small chimpanzee and the great Achilles alike. (ibid.: 251)

"And so I learned things, gentlemen," Red Peter concludes, "My ape nature fled out of me. . . . With an effort which up till now has never been repeated I managed to reach the cultural level of an average European" (ibid.: 258). Those listening to Red Peter are impressed by his account and his accomplishments. One of them observes (ibid.: 261): "Terrific achievement. To cast off apehood in five years and gallop through the whole evolution of mankind!"

Why would Kafka write such a narrative? As already mentioned, he may have been inspired by Köhler's account of the chimpanzees in Tenerife. There must be more to the story, however. Coetzee speculates (1999: 15), partly through his fictive character Elizabeth Costello, a moral philosopher and animal rights activist, that the saga of Red Peter on the variety stage may have been "an allegory of Kafka the Jew performing for the Gentiles." Coetzee has Costello reason: "If Red Peter took it upon himself to make an arduous descent from the silence of the beasts to the gabble of reason in the spirit of the scapegoat, the chosen one, then his amanuensis was a scapegoat from birth, with a presentiment, a *Vorgefühl*, for the massacre of the chosen people that was to take place soon after his death" (Coetzee 1999: 32). Kafka, Costello suggests, saw both himself and Red Peter "as hybrids, as monstrous thinking devices mounted inexplicably on suffering animal bodies" (ibid.: 40). Levinas similarly juxtaposes chimpanzees and Jewish prisoners of war under the Nazi regime: "We were subhuman, a gang of apes" (see Derrida 2008: 117). Derrida comments that the animal "remains for Levinas what it will have been for the whole Cartesian-type tradition: a machine that doesn't speak, that doesn't have access to sense, that can at best imitate 'signifiers without a signified' . . . , *a sort of monkey with 'monkey talk'*" (ibid.; emphasis added).

Whatever the concerns or motives that drove Kafka to write the story, the plot seems to anticipate several highly modern issues—the case of Nim Chimpsky, the biography of Cheeta, the expanding animal rights movement, the unprecedented subjugation of the animal, the biopolitics of life itself, and increased attention to interspecies relations in social theory—all of which figure prominently in the unfolding and collapse of the nature/society divide.

THE LIFE AND WORK OF NIM CHIMPSKY

Serious language experimenting with chimpanzees began in the 1950s. The Hayes tried to teach 'Vicki' to speak, raising her as if she were a human

child. Apparently she only learned four words in six years ('mama', 'papa', 'cup', and 'up'). Later, the Gardners taught Washoe, caught in the wild in 1966, gestural language, realizing the inadequacies of chimpanzees' vocal chords for forming words. Washoe accumulated 150 signs in five years, appearing to make sentences and invent new combinations like 'candy fruit' (for 'watermelon'). The study of Nim Chimpsky signalled a brave new era of ape research and language experimenting, with intense socializing, this time in the wilderness of hippie Manhattan. Sometimes, however, the goal of rigorous testing and observation was overshadowed by chaotic atmosphere and frequent changes in personnel.

Nim was born on 19 November 1973 in Norman, Oklahoma. His mother was Carolyn, a wild-born eighteen-year-old, imported from Africa as an infant and sold to Chicago Zoological Society. The same year Nim was born, Geertz summed up attempts to distinguish between species in terms of difference in kind rather than in degree: "Man can talk, can symbolize, can acquire culture, this argument goes, but the chimpanzee (and, by extension, all less-endowed animals) cannot. Therefore, man is unique in this regard" (1973: 66). Geertz's qualification "this argument goes" seems to suggest that statements about human uniqueness had been elevated to clichés; such attempts, he argued metaphorically, "see adulthood as a sudden transformation of childhood and miss adolescence altogether" (ibid.). Devoid of sign making, non-human animals—our presumed closest relatives chimpanzees—were mere signifiers. Nim would become a test case, potentially resolving the issue on the language device highlighted by a famous debate between Skinner and Chomsky (Chomsky 1959)—whence the name 'Nim Chimpsky'.

The experimental subject began his stormy life as 'number 37' in primate records. About two weeks old Nim was sent to New York, to join a human family and to participate in a major ape language study at Columbia University, Project Nim, led by psychologist Herbert S. Terrace. Terrace's aim (1987) was to raise the chimpanzee as if he were a human child and to explore whether he could learn to use American Sign Language (ASL). This would be a challenge to the thesis often attributed to Chomsky that language is inherent and unique for humans. As Nim's biographer remarks, "Like racehorses breathlessly running around the track, the chimps and the psychologists who were training them were headed toward an elusive finishing line, where Skinner and Chomsky—each with an entourage of followers—stood, waiting to judge the race" (Hess 2008: 132). While thousands of primates (monkeys and apes) lived in laboratories during the 1980s, none of them received the same attention that was shown to Nim. He became a public sensation, frequently discussed in the media. At one point anthropologist-novelist Kurt Vonnegut visited him.

At first Nim was adopted and raised by psychology student Stephanie LaFarge. She would nurse him in her family apartment along with her own children; for a while Nim requested breast-feeding from his "mother," and LaFarge's daughter Jenny once asked if Nim was a new baby or a new pet.

At Columbia, Nim's linguistic performance and abilities were subjected to numerous inscription devices, translated into tables and graphs. While few of the instructors were fluent in sign language, Nim turned out to be a real signer. One of the dialogues he had was as follows: "What do you want to do?" / "Rick tickle Nim" / "Tickle where?" / "Tickle here" (see Anderson 2004: 278). In the course of his life, Nim encountered a series of nurses, teachers, labs, and experiments—engaging several families, research teams, and universities in a somewhat unique living laboratory. Most of the people who came anywhere near him developed a personal relationship with him; Nim would play a joke on them or teach them a sign. No one, however, wanted to be stuck with a chimpanzee for good. When the project ran out of funds and Nim's family, friends, and bosses had turned their attention to other things, he was sold to a medical lab to be the subject of experiments. Eventually, thanks to the intervention of some of his human friends, he was placed in a sanctuary in Texas. There he showed signs of depression, but later he settled in with the inmates, gradually assuming a central place: "He watched the other animals—elephants, giraffes, monkeys, and gibbons—from a captain's walk in his cage as they arrived at the ranch" (Hess 2008: 320). On 10 March 2000, he had a massive heart attack in the middle of playing. A few days later, a small group gathered for a memorial. Only one representative from Project Nim showed up, Stephanie LaFarge.

Many of those who followed accounts of the language experiments at Columbia in the media and the literature expected that Terrace and his colleagues would proudly announce that Nim had become the first ape to demonstrate a human kind of language structure. However, Terrace asserted to the contrary in a *Science* article (Terrace et al. 1979) that there was no evidence that Nim had any ability to string signs together in the manner of human language. Marks (2002: 182) sums up the results of sign-language experiments with apes: "First, they do have the capacity to manipulate a symbolic system given to them by humans, and to communicate with it. Second, unfortunately, they have nothing to say. And third, they do not use any such system in the wild." Language, Marks goes on, "is just not a chimpanzee thing" (2002: 184). Terrace's conclusions, however, may have been biased against Nim, complicated by other concerns: "Was it possible that Terrace had taken such a negative view of Nim's abilities because dumping a language-using, humanized ape back in a cage with non-language-using chimpanzees would be worse than doing that to an animal without the ability to use language?" (Singer 2011; see also Terrace 2011). Significantly, some of Nim's caregivers were surprised by Terrace's apparent surrender—his "change of mind," to use his own words. After all, Nim would make sentences much like a human child, initiating conversations that could hardly be pure imitation. Moreover, to some he showed signs of self-awareness and strong emotional bonding. Other studies, notably Savage-Rumbaugh's keyboard signing with the bonobo (pygmy

chimpanzee) 'Kanzi' (Savage-Rumbaugh & Lewin 1994), born in 1980, seem to have reopened the issue of the uniqueness of human language.

Despite all the experimenting with apes and language, it has been difficult to settle what was taken as a Chomsky-Skinner issue. But perhaps both sides of the debate missed the point. Recently, the intellectual front-line has moved from the innate language device to other issues, to experimenting among chimpanzees with problem solving and prosocial behaviour, studies of the evolution of social interaction, genetic analyses, phylogenies of language, and doubts about language universals—to mention a few related themes.

BECOMING PRIMATES, BECOMING HUMAN

Early reflections on chimpanzee communication tended to emphasize the role of imitation in vocal signalling, its limits, and its developmental and evolutionary implications. If human language was not simply the gift of God, why and how did it emerge and what, if anything, might be learned from chimpanzees and other close relatives? These were central and heated issues in 19th century discussions, involving, among others, C. Darwin, M.M. Müller, E.B. Tylor, and R.L. Garner (see, for instance, Harris 1996). In *The Descent of Man* Darwin suggested that imitation might have been the forerunner to the language of "barbarous races" and, eventually, civilization:

> The strong tendency in our nearest allies, the monkeys, in microcephalous idiots, and in the barbarous races of mankind, to imitate whatever they hear deserves notice. As monkeys certainly understand much that is said to them by man, and as in a state of nature they utter signal-cries of danger to their fellows, it does not appear altogether incredible, that some unusually wise apelike animal should have thought of imitating the growl of a beast of prey, so as to indicate to his fellow monkeys the nature of the expected danger. And this would have been a first step in the formation of language. (2008: 239)

Such ideas seemed to draw upon fairly common perceptions of higher apes as masters of mimicry. Indeed, many languages have words related to 'aping' for the act of copying.

At the beginning of the 20th century, evolutionary speculations about the mentality of primates gave rise to behavioural, psychological experimenting. In their book *Ape, Primitive Man and Child: Essays in the History of Behavior* Luria and Vygotsky extended evolutionary reasoning to ontogenetic theory and observation, maintaining the tripartite distinctions earlier made by Darwin, Köhler, and others about the mentality of chimpanzees, primitives, and humans: "The absence of even the rudiments of speech, in the broadest sense of the term—the ability to make a sign, to introduce auxiliary psychological resources—that everywhere distinguishes human

behavior and culture, is what draws the boundary between the apes and the most primitive man" (Luria & Vygotsky 1992: 31). This picture was radically changed through numerous studies of behaviour and tool use among a variety of non-human animals. New insights were generated, for instance, by detailed field studies among chimpanzees in the wild pioneered by Goodall's book *In the Shadow of Man* (1971), based on participant observations in Tanzania in the 1960s. Another important chimpanzee study was that of Kortlandt (1986) who explored tool use in Guinea and Liberia. His evidence suggested that chimpanzee communities had copied habits of cracking oil-palm nuts by means of stone tools from local farmers after careful observation. These communities, Kortlandt suggested (1986: 77), "may represent the first identifiable cases of direct cultural transmission of technology from man to animal in the wild."

Over the last years, research in several fields, including anthropology, genomics, archaeology, primatology, cognitive psychology, and linguistics, has redefined the historiography of humans, their ancestors, closest relatives, and means of communication (see, for instance, Gibson & Ingold 1993; Marks 2002). At the same time, claims about what counts as grand narrative have changed. In particular, with the development of the 'modern evolutionary synthesis' of the 1940s and the 'new genetics' of the 1960s onwards (Palsson 2007), skeletal material was moved from the centre towards the margin. Some biological anthropologists began to see bones as almost trivial antiques, rather like ancient manuscripts, secondary to DNA sequences and gene frequencies. There is broad agreement on some things—including rough timelines, evolutionary trajectories, and biological and behavioural differences—although many important theoretical issues remain unsettled and debated.

At about six million years ago (at point t_1 in Figure 10.1), a population of African apes separated into two distinct species, eventually leading to humans and chimpanzees (see, for instance, Cavalli-Sforza 2000: 57). *Homo sapiens* arrived on the scene about 500,000 years ago and modern human language between 50,000 and 150,000 years ago. One of the evolving narratives on the evolution of language in the wake of the new genetics is that of the 'Forkhead box P2' or *FOXP2* genes. Recently it was reported that the language problem associated with the so-called KE family in Britain, a partially compromised ability to speak and process words, was linked to a mutation in one of their two *FOXP2* genes (Lai et al. 2001). Almost immediately, this discovery sparked some evolutionary speculations. Human *FOXP2*, at most 200,000 years old, it was argued, signalled a selective sweep paving the way for modern language (Krause et al. 2007). The two amino changes involved in humans seem to have occurred after they separated from chimpanzees.

Neandertals, who split off from modern humans more than half a million years ago, turn out to have the same two changes in their *FOXP2* as modern humans. Their case may be particularly interesting, due to their

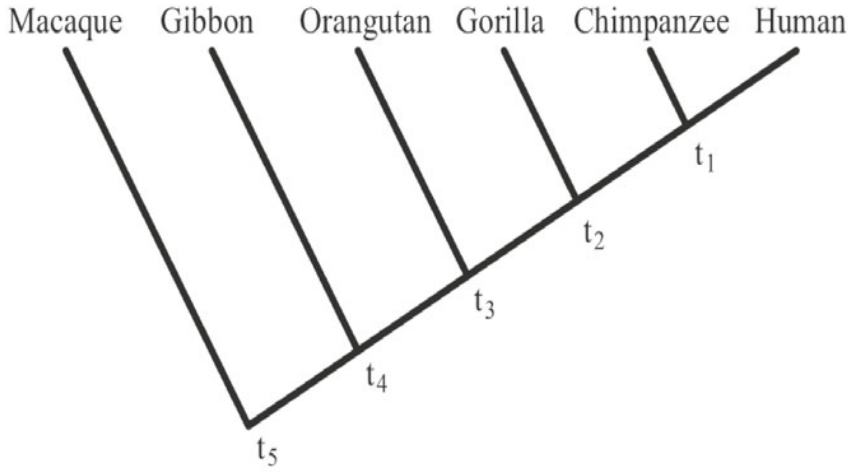

Figure 10.1 The evolutionary position of humans among primates.

close phylogenetic affinity to modern humans, but here the only evidence available is that of skeletal material. It is only very recently that a Neandertal genome has been sequenced, by Svante Pääbo and colleagues. It now seems, given Pääbo's evidence, that humans and Neandertals were not only contemporaries for a long time, they also interbred (see Kolbert 2011). These developments signalled a kind of truce in debates between biological and physical anthropologists about what kinds of material provide the best data about the hominid past; skeletal material was *still* useful—albeit on limited terms, as the source of DNA. Had Neandertals or other relatives closer to us than chimpanzees survived to the present day and we would be in a position to interact with them next door or 'in the wild', our fascination with human exceptionalism and the capacity for language might have been subdued—and chimpanzees would probably be far less appealing as experimental objects and liminal icons illuminating the nature/society divide. Would we simply attribute liminality to another species, drawing the lines with higher resolution, focusing on Neandertals, applying the Tshiluba notion of 'mock human' (*kivili-chimpenze*)—or some equivalent—to Neandertals rather than chimpanzees? Or would we perhaps take the existence of Neandertals as evidence of continuity, representing 'adolescence', to use Geertz's analogy mentioned above, the smooth transition from childhood to adulthood in hominid evolution? Would we, in other words, have relaxed our assumptions about human uniqueness? But, then, evolution and history would have unfolded differently and we have no way of knowing how—or who would be 'us' in 'our' accounts.

Some geneticists and cognitivists imagine the *FOXP2* saga has established order in the house, finally testifying to an innate language faculty, attributing it to a couple of genes. The jury, however, is still out. Other

developments, in particular the emerging evidence of epigenetics, suggest the roles of DNA and the connections between genotype and phenotype are not only highly complex but also non-deterministic (see, for example, Moss 2003). Certainly, the hype associated with discovering the genetic roots of common diseases has faded as a result of relatively meagre evidence despite extensive research efforts. Perhaps when reflecting on the issue of the genetic roots of language we might keep in mind an earlier moment in the history of experimenting with chimpanzees: Just as the Gardners realized that despite her inadequate vocal chords Washoe might not only learn to 'speak' by means of sign language but also to teach her adopted son some signs, should we not consider the possibility that humans are capable of language whatever the mutations on the *FOXP2* genes? Genetic avenues into history and relatedness have undoubtedly proved quite powerful, but they are likely to be redirected in the future with the growing destabilization of gene talk—much like the single-minded bone talk of the past with its cephalic index and measurements.

We might also keep in mind that the broad quest for language has not only been extended to other primates but also to many other far more distant relatives, including whales and dolphins (Rendell & Whitehead 2001) and even "lower forms of life" such as honeybees (Crist 2004). The dance of the honeybee, Crist observes, disturbs "'the great chain of being' still at large . . . ; the picture of man (and other 'higher mammals') at the apex and invertebrates in the basement of a hierarchy of ability and value" (ibid.: 35). While many people probably find it mind-blowing, to say the least, to attribute mind and language to insects, creatures way below primates and mammals in the cladograms of evolutionary discourse (exemplified by Figure 10.1), it has been notoriously difficult to exclude honeybees from the republic on fair and objective grounds (for another view, see Anderson 2004).

WHY LANGUAGE?

Whatever the genetics of language, a larger issue remains: Why would we remain focused on the autonomy of language—on "language . . . in and for itself," as Saussure had it (1959 [1916]: 232)? In fact, a series of recent studies of primate comparison have emphasized the interactive precursors to language at the cost of genetics and an innate language faculty. Thus, Tomasello suggests that rather than placing human forms of communication at the centre of evolutionary enquiries one should start with the foundation on which they rest, with uniquely human forms of collaborative engagement, including shared intentionality. "Many of the aspects of language that make it such a uniquely powerful form of human cognition and communication," he argues, "are already present in the humble act of pointing. And so in searching for the phylogenetic roots of human linguistic competence, we might profitably begin with the pointing gesture" (2006:

518). Apparently, apes do not point declaratively; they may point imperatively with an individualistic motive, to say "Gimme water!" or something like that, but they do not simply summon our attention by saying "Look!" to share an attitude about a referent. If this is the case, for chimpanzees gestures are procedures for getting things done, not a matter of intersubjective experience. One wonders, however, if honeybees point declaratively in the process of dancing. Or sperm whales with their sonar clicks.

Given Tomasello's perspective, "Asking why only humans use language is like asking why only humans build skyscrapers, when the fact is that only humans, among primates, build freestanding shelters at all" (2006: 520). Similarly, Levinson maintains that through our fixation on innate linguistic structures we have overlooked the critical issue of everyday human interaction, the 'interaction engine', "a set of cognitive abilities and behavioural dispositions that synergistically work together to endow human face-to-face interaction with special qualities" (2006: 44)—a precursor, perhaps, to the virtual social networks of Facebook and Twitter. Many experimental studies have followed such leads, emphasizing chimpanzees' 'theory of mind' and prosocial behaviour such as generosity and altruism. Schmelz et al. (2011: 2), for instance, conclude from their study of chimpanzee mentality: "If we define thinking as going beyond the information given in perception to make inferences, we may conclude that not only is thinking not the exclusive province of human beings, but thinking about thinking is not either."

If there is some kind of innate language device, organ, or faculty, it should be manifest in some universals common to all languages. Assuming that we adequately cover or reflect the variety of human language, it is pertinent to ask with Foley: "If the knowledge of language is innate, simply the flowering of a pan-human 'language instinct,' how can we account for the obvious significant variation in the structure of human languages?" (2005: 46). Some studies have introduced computational phylogenetic methods to address the nature of constraints on linguistic diversity in an evolutionary framework (Dunn et al. 2011). Interestingly, however, while geneticists claim to have located 'the language gene' accounting for unique characteristics of human communication, linguists are busily challenging the core Chomskyan notion of language universals. There seem to be good grounds for taking any claims about language universals with a grain of salt. For one thing, claims about universals have been questioned on the grounds of a few detailed empirical studies of non-Western languages. Thus, both Foley (2005) and Levinson (2009) have objected to Pinker's claim (1994: 284) that "in all languages words for objects and people are nouns . . . words for actions and changes of state are verbs." Foley concludes on the basis of studies of Tongan and Tagalok: "Whatever is innate or 'instinctual' . . .—and therefore fixed—in humans acquiring language, it can be neither the noun-verb distinction nor any connection between nouns, objecthood, and categorization of verbs, eventhood, and predication. These connections

are learned, not preset, because . . . the lexicon and grammatical patterns can be built otherwise" (Foley 2005: 59).

There may be universals, but they are not of the kind normally assumed. Generalizations, however, are difficult if not meaningless due to the problem with variation; only a fraction of the 5,000 or more languages spoken today have been documented and studied by linguistic methods (Evans & Levinson 2009). The issue of language variation is not a trivial one. One of the persistent problems with generalizations about the structures of language is that they have been based on a limited and possibly skewed sample: "One could probably justifiably characterize the efforts of much scientific (and not so scientific) linguistics in [Greco-Latinate] . . . languages over the last few centuries as a kind of linguistic imperialism (killing off indigenous languages being another, more pernicious kind)" (Foley 2005: 60). Ironically, keeping in mind Derrida's concerns with animals—with pluralizing the 'animal', the brutality of humans to non-humans, and granting voice to other species—this kind of imperialism is echoed in Derrida's own work (2008), in the lack of sensibility to ethnographic variation.

CONCLUSIONS

It seems likely, given the evidence of recent primate studies, that human language is 'just' the tip of the evolutionary iceberg, based on the broad foundation of sociality that we share to one degree or another with at least our closest relatives. How to read this theoretically, however, is another issue. One common reading is the dualistic one, assuming the separate but interlinked systems of biology and culture, nature and society (Richerson & Boyd 2008). A rather different reading, drawing upon developmental-systems theory and related developments in several fields, in particular anthropology, psychology, and philosophy (Descola & Palsson 1996; Oyama 2000; Ingold 2001), seeks to collapse biology and culture. The great challenge is to picture humans, chimpanzees, and other beings as constituted by, and embedded in, a single, integrated ensemble of biosocial relations (Palsson 2013), and to explore what such a perspective might entail for the understanding of communication, language, and cognition as they unfold in the stream of life and, more broadly, for the understanding of the human condition and for the refashioning of disciplines traditionally erected around the nature/society divide. The 'nature' with which we are born and which we develop is thoroughly biosocial, embodied through human activities.

Cognitive nativists and evolutionary psychologists (see, for instance, Pinker 1994) draw upon Chomsky's notion of the language faculty to argue that human language is unique, a pan-human skill engraved in our genome thanks to selective pressures during the hunter-gatherer past, pointing out that it is effortlessly acquired by children and universally manifested in

the diverse languages of human history and dispersal. Judging from the accounts just discussed, the language universals are still on the run and nativist theory about the uniqueness of human language remains unconvincing. Interestingly, in his co-authored *Science* article Chomsky seems to have distanced himself from the thesis of human uniqueness: "The available data suggests a much stronger continuity between animals and humans with respect to speech than previously believed. We argue that the continuity hypothesis thus deserves the status of a null hypothesis, which must be rejected by comparative work before any claims of uniqueness can be validated. For now, this null hypothesis of no truly novel traits in the speech domain appears to stand" (Hauser et al. 2002: 1574). For some scholars, this must count as a radical shift in perspective, given Chomsky's earlier writings, a shift that seems to have irritated some of his followers (see Haraway 2008: 235). Yet, although the conclusion of the *Science* article may have violated some linguistic orthodoxy (Anderson 2004), for Chomsky it need not have represented a major move. In his *Knowledge of Language* he suggested that the language faculty is "a distinct system of the mind/brain, with an initial state S_0 common to the species . . . and *apparently* unique to it in essential respects" (1986: 25; emphasis added), adding, however, an important footnote: The questions of "innateness and species-specificity are distinct" (ibid.: 48, footnote 13), he argues, emphasizing that he has avoided confusing the two. Perhaps, then, *both* chimpanzees and humans acquired a language device in the course of evolution, and possibly sperm whales and honeybees as well. Alternatively, it might be argued, *neither* the language of humans nor that of chimpanzees and other 'lower' creatures is best attributed to anything that may be identified as an innate language device. Perhaps the *absence* of universals, too, should be taken as the null hypothesis, to be challenged by further comparative work.

A few decades ago, anthropologists imagined they could safely cling to the cliché that only humans were capable of tool making, inferences, subjectivity, and, above all, language—in sum, of making and having 'culture'. In spite of, perhaps because of, their focusing on comparison and evolution, their perspective has largely remained anthropocentric. Step by step, however, each of the traditional indicators presumed to demarcate human culture and mentality from the natural world of non-human animals—tool use, signing, cultural transmission, emotional bonding, sociality—have proved to be erroneous, flawed, exaggerated, or far more complex and tricky than previously anticipated. And language no longer occupies the centre stage. Despite all the attention he received, Nim Chimpsky may not have made history, at least not in the context of theory of mind and language. However, while he didn't contribute much to syntax and semiotics, he was clearly capable of responding, playing, and suffering. If ever there was a serious attempt to cultivate a chimpanzee (or for that matter, any non-human animal)—to "cast off apehood," as the story of Red Peter had it—it was Project Nim.

As we have seen, chimpanzees are often presented as a border species, almost endowed with speech, almost human, almost in culture. Reaching out to chimpanzees, whether through sign language in experimental settings or participant observation in the wild, has often been rhetorically represented as communication across the nature/society divide, as a handshake through millions of years. The researchers involved seem to imagine they have managed to gallop back through evolution—much like Neil Armstrong triumphantly announced a "giant leap for mankind" across space, when landing on the Moon. As a liminal species, chimpanzees keep attracting our attention, offering a kind of view-from-afar on us, across great divides. Such divides, Fox Keller (2010) suggests, represent a persistent, if not unavoidable, "mirage." For a growing number of scholars in a variety of disciplines it seems both essential and feasible to move beyond the mirage. In the absence of a better non-dualistic language, the notions of becomings and biosocial relations (Ingold & Palsson 2013) may help to challenge current understandings of the division of biological and social anthropology and their essentialist takes on key issues, including those of human nature and relatedness and the interdependencies of humans and other kinds of beings. Chimpanzees, just as humans, are ensembles of biosocial relations, relational beings continually becoming with other beings, including humans. Anthropology, in fact, might be expanded and redefined as the study of more than one species, as the 'anthropology of life': "to encourage the practice of a kind of anthropology that situates all-too-human worlds within a larger series of processes and relationships that exceed the human" (Kohn 2007: 6). In this perspective, the study of humans is inseparable from the study of other animals. Many ethnographies already support such an argument, giving voice to those who refuse to make the fundamental distinctions between humans and other beings that characterize modernist discourse.

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11 Human Activity between Nature and Society

The Negotiation of Infertility in China

Ayo Wahlberg

Recent debate among geologists about whether or not a new geological era has dawned provides a helpful entry point for a chapter that aims to unpack the different ways in which a notion of 'human modification' (or anthropogenic effect) allows us to query nature/society separations. The sticking point in this debate concerns whether or not the 'scale of human modification of the earth' in the past century or so has been comparable to the kinds of meteorite strikes, tectonic collisions, and volcanic eruptions that are deemed to have punctuated previous geological eras. That is to say, the 'Anthropocene'—if there indeed is such a '-cene'—is the result, not of geological events, but rather, of 'human activity', 'human influence', 'human impact', 'human modification', or 'human intervention' and therefore scientists have been busy deliberating whether or not a 'human imprint' can be perceived in sedimentation, carbon dioxide levels, rates of biotic change, sea levels, etc. An Anthropocene Working Group has been formed "to critically compare the current degree and rate of environmental change, caused by anthropogenic processes, with the environmental perturbations of the geological past" with a call to include botanists, zoologists, atmospheric scientists, ocean scientists, as well as geologists in this task (Zalasiewicz et al. 2010: 2230).

While the question of whether or not we are living in the Anthropocene is academic, the effects of anthropogenic processes are certainly not. And indeed, it is exactly anthropogenic effect that is held responsible for what some have referred to as 'ecological overshoot', namely the suggestion that since the mid-1970s, humanity's 'Ecological Footprint' has exceeded the earth's biocapacity. As summarized in the Living Planet Report from 2010: "During the 1970s, humanity as a whole passed the point at which the annual Ecological Footprint matched the earth's annual biocapacity—that is, the earth's human population began consuming renewable resources faster than ecosystems can regenerate them and releasing more CO_2 than ecosystems can absorb" (WWF 2010: 34). Once seen as able to regenerate and restore in and of itself, in the face of ecological overshoot, the earth is considered as no longer able to sustain its life.

In this chapter, I shift empirical focus from the earth to the human body/soul as yet another site(s) of contestation over anthropogenic effect. For, as I will show, the search for a 'human imprint' has not been limited to the earth's oceans, forests, glaciers, and atmosphere, or to the kinds of scientists who make up the Anthropocene Working Group. A parallel effort to discern a 'human imprint' within the human body/soul itself has been unfolding over the last many decades through debates among medical and social scientists alike. And although the two debates have been and remain somewhat detached, both have pinpointed the industrial revolution of the West as the approximate starting point of those anthropogenic processes that are seen as causative of a 'human imprint'. Moreover, both sets of debates are vital in that they are circumscribed by concerns about human impact on vital processes (both human and non-human), concerns that have crystallized under a common invoking of 'quality of life'.

Another sphere of life where a 'human imprint' has been made increasingly visible by scientists in recent decades is that of human reproduction. Around the same time that plans were being drawn up to form the Anthropocene Working Group, another group of scholars gathered in Copenhagen (in May 2007) for a workshop to discuss the possible effects of chemical toxins in consumer products on human populations. At stake, according to the workshop's organizers, was nothing short of a crisis: "We stand before a reproductive crisis which we should take just as seriously as global warming . . . Our species is in danger" (Politiken 2007). It is this crisis of human reproduction—or anatomical overshoot—that will form the empirical backdrop of the analysis that follows. The task of this chapter, however, is not to assess anthropogenic impact on human fertility and fecundity. Instead, as already suggested, I intend to show how a notion of 'human modification' allows us to explore the apparent logic of nature/society separations. While a growing body of anthropological literature has been committed to undermining any supposed epistemological or ontological foundations of nature/society dichotomies, I will instead shift analytical focus to the question of method in the generation of knowledge about the impact of human modification in the sphere of reproduction. In particular, I will argue that when it comes to the problem of infertility, nature/society separations continue to organize the methods, techniques, and tools used to diagnose and assess infertility while at the same time putting these very separations at stake when technological solutions are used to overcome infertility.

I start the chapter by discussing how anthropologists have deployed the notion of 'artificiality' as a means of undermining supposed nature/society dichotomies. However, a resulting empirical focus on specific forms of techno-science associated with the natural sciences—from genomics to biotechnology and reproductive science—I argue has come at the cost of equally important scrutiny of how knowledge is produced through other forms of science. Most importantly, I argue that the birth of 'quality of life' within the social sciences and subsequent methodologies and instruments

to measure it have been formative for the field of reproductive medicine. I then go on to show how infertility has come to be configured as a problem in my current site of research, namely urban China, a country otherwise internationally known for its concerted efforts to curb fertility rates.

THE NATURAL AND THE ARTIFICIAL

As noted in the opening of this chapter, the proposal to geologically name our current time of living 'the Anthropocene' relies on the idea of 'human modification of the earth'. This -cene is, for the first time (so the argument goes), man-made. Anthropologists and other social scientists have in recent years turned their attention to another form of human modification, namely the modification, or manipulation, of life at molecular and cellular levels through genetic and reproductive technologies. For example, Strathern, in her analysis of the concerns surrounding 'new reproductive technologies' in England, shows how an "artificiality of human enterprise" comes to be contrasted with the "naturalness of biological kinship" (Strathern 1992: 53), while Rabinow suggests that around and through the 'new genetics' "nature will be known and remade through technique and will finally become artificial" (Rabinow 1996: 99). Just like the figure of the cyborg, the notion of artificiality turns out to be very helpful for "the confusion of boundaries" (Haraway 1991: 150), as we find it difficult to pinpoint where the natural ends and the artificial begins.

In the years that have followed, considerable ethnographic attention has been directed at the practices and technologies emerging from the life sciences, or better yet on how practices, technologies, and knowledges of life and living processes come to be co-produced. As a consequence, we have learned how 'new reproductive technologies' and the 'new genetics' have generated new forms of (bio)sociality, citizenship, and politics, all centred on and around 'life itself' (Rabinow 1996; Rose 2006; Franklin et al. 2000).

Notwithstanding an increasing number of ethnographic accounts of co-production in the life sciences, for Escobar an unresolved impasse remains between the natural and social sciences: "For constructivists, the challenge lies in learning to incorporate into their analyses the biophysical basis of reality; for realists it is examining their frameworks from the perspective of their historical constitution—accepting that, as scholars in science and technology studies have been demonstrating, the natural sciences are not ahistorical and nonideological" (Escobar 1999: 3). And while most so-called 'constructivists' within the growing field of sciences and technology studies (STS) would undoubtedly agree that the social sciences are as historical and ideological as any natural science, when it comes to the empirical study of how knowledges and practices of life come to be generated, molecular/cellular understandings of life have been given far greater attention by anthropologists and other STS scholars. What we are missing in these accounts is

a curiosity about how social sciences crucially participate in the production of knowledge about life and living, thereby generating certain forms of practice and vice versa. In what follows, I propose some possible directions that might help us in pursuing just such a line of curiosity.

THE BIRTH OF 'QUALITY OF LIFE'

Three books stand out as emblematic if we are to somehow situate a birth of the notion of 'quality of life': John Galbraith's *The Affluent Society* (1958), Rachel Carson's *Silent Spring* (1962), and Ivan Illich's *Limits to Medicine* (1976). Spanning the fields of economics, ecology, and medicine respectively, each of these books contributed to a kind of diagnosis of the times: Even if people (in the West) were living longer, more affluent lives, they were at the same time suffering from the pollution, decay, and toxins that industrial societies had brought in their wake (see Wahlberg 2007a). That is to say, to know how long people were living and how rich they were was no longer sufficient if one wanted to know or assess their lives:

> The family which takes its mauve an cerise, air-conditioned, power-steered and power-braked automobile out for a tour passes through cities that are badly paved, made hideous by litter, lighted buildings, billboards and posts for wires that should long since have been put underground . . . They picnic on exquisitely packaged food from a portable icebox by a polluted stream and go on to spend the night at a park which is a menace to public health and morals. Just before dozing off on an air mattress, beneath a nylon tent, amid the stench of decaying refuse, they may reflect vaguely on the curious unevenness of their blessings . . . A satisfactory increase in Gross Domestic Product remains the first test of accomplishment. No one should doubt the convenience of a simple arithmetical measure of success in a world in which so many things are subjective. But it is no longer unusual to inquire about the quality of life as opposed to the quantity of production. (Galbraith 1958: 208, 148)

> Today we are concerned with a different kind of hazard that lurks in our environment—a hazard we ourselves have introduced into our world as our modern way of life has evolved. The new environmental health problems are multiple—created by radiation in all its forms, born of the never-ending stream of chemicals of which pesticides are a part, chemicals now pervading the world in which we live, acting upon us directly and indirectly, separately and collectively. (Carson 1962: 213)

> The true miracle of modern medicine is diabolical. It consists in making not only individuals but whole populations survive on inhumanly

> low levels of personal health. Medical nemesis is the negative feedback of a social organization that set out to improve and equalize the opportunity for each man to cope in autonomy and ended by destroying it. (Illich 1972: 154)

It is perhaps no coincidence that Galbraith, Carson, and Illich were writing around the exact time that 'ecological overshoot' is thought to have kicked in. And, they were of course not alone; rather they participated in what by the 1960s had become a chorus of critiques of modernity's growing inventory of '-izations' (industrialization, bureaucratization, technologization, rationalization, globalization, medicalization, etc.). It is a style of modernization critique which since the dawn of the industrial revolution in the West has relentlessly diagnosed the alienating, disenchanting, ossifying, repressing, dehumanizing, disorienting, and toxic effects of these –izations (Wahlberg 2007b). If we follow this line of diagnosis, not only is the Anthropocene (catalyzed by the West's industrial revolution) a time of 'human modification of the earth', it is also a time of human auto-modification as the various processes set in motion through human activity since the industrial revolution have come to impact on the very souls and bodies of Mankind. How then might a human imprint be discerned on/within our bodies and souls?

To begin with, we have seen how epidemiologists, endocrinologists, oncologists, reproductive scientists, and other medical scientists have sought to measure, not atmospheric carbon dioxide levels or sea levels, but rather levels of carcinogens and toxins found in biological samples taken from large groups of volunteer human subjects (blood, semen, tissue, etc.). Such research seeks to identify a cellular/molecular imprint within our biologies, as, in the words of Carson, "toxic materials become lodged in all the fatty tissues of the body" (1962: 170), and to see whether this imprint is causative of pathology, i.e. whether it is associated with diagnosed incidences of certain diseases, from cancer to heart disease and infertility. In this sense, human bodies become one among many other 'natural' elements (alongside the atmosphere, sediments, flora, fauna, etc.) within which anthropogenic pollutants can be found.

Yet, if we read Carson, Galbraith, and Illich carefully, we will note that they are not only concerned with biological imprints—however prominently the toxic side effects of chemicals, modern pharmaceuticals, and other pollutants figure in their diagnoses—rather they are also explicitly pointing to the impact of anthropogenic processes on something that has since come to be known, measured, and assessed as 'quality of life'. That is to say it is not only our biological life (understood as a cellular-molecular process) that has been impacted, it is also Mankind's *experience* of life that has been affected by modernization processes. Each book—and the various 'green' and 'alternative' social movements that would coalesce around the discontents they came to symbolize—is concerned with the human side effects that affluence,

extended life expectancy, and urban convenience has engendered. Yet, however phenomenological and personal such experience of life might be, we have seen a marked proliferation of efforts to define, measure, and assess 'quality of life' since the 1960s (see Armstrong & Caldwell 2004). And this time, it has been the social (rather than the biological and/or natural) sciences that have played a crucial role in generating knowledge about the 'quality of life' of nations, cities, populations, communities, and individuals.

We can see then how, just as the earth's biocapacity has come to be seen as weakened by unsustainable anthropogenic processes, so too has humanity's 'quality of life' come to be seen as diminished by these same processes. I will now turn my attention to the specific context of human infertility in China in order to show how a notion of 'human modification' continues to straddle nature/society separations aided by what Strathern has called "the elision between nature and biology" (Strathern 1992: 173). For infertility is a condition that has brought natural and social scientists into close negotiations about just what it is that constitutes the infertility 'problem'.

INFERTILITY: A MODERN SCOURGE

In some ways, the academic debates about anthropogenic imprints between geologists and atmospheric scientists on the hand, and medical and social scientists on the other (most of whom are based in Europe or America) couldn't be farther removed from my current site of research at a fertility clinic and related sperm bank in China's Hunan province. Yet, as became abundantly clear to me shortly after beginning research on reproductive technologies in China in the spring of 2007 (primarily in Beijing and now Changsha), if there was one trope that would constantly recur when talking to reproductive clinicians and scientists it was that of anthropogenic effect. I embarked on my fieldwork just prior to the Beijing Olympic games (held in August 2008), an event which not only reinstated China within a global arena of spectacles, but also spotlighted China's looming environmental crisis (*huánjìng wēijī*). Moreover, those first smog-filled months spent in China were dominated by two major national scandals. Firstly, a drug safety scandal lead to the execution of the former head of China's drug and food safety administration (SFDA) for having compromised public safety by accepting bribes in exchange for drug licenses. And secondly, a food safety scandal lead to the execution of two people for selling milk powder tainted with melamine, which had resulted in six infant deaths and illness for hundreds of thousands more. I even recall reading somewhat incredulously a news story about how the police had arrested a man for selling fake eggs (eggshells filled with some kind of chemicals). Having my own family with me at the time did not moderate a sense of unease, which most vividly manifested itself when standing in the aisles of a hypermarket about to take care of the week's groceries.

Whenever I have met with fertility clinic doctors and nurses I have always enquired about the prevalence and extent of infertility in China, especially because statistics can be hard to come by. And there are two rather standard answers I have tended to receive. Firstly, that by now in the vicinity of 10% of couples have trouble conceiving 'naturally' (which is comparable to global international estimates), and secondly, that infertility is on the rise. Not being a trained epidemiologist, I have not been so much concerned with the accuracy of these estimates and projections, as I have been interested in exploring how these trends are accounted for. And I have tentatively identified four explanations that are most commonly given by those reproductive scientists I have spoken with.

Firstly, the stress of 'unhealthy modern lifestyles' as men and women don't sleep enough, don't get enough exercise, eat poorly, etc. Such lifestyles, the doctors suggest, are hardly conducive to conception. Secondly, married couples are waiting longer to have a child because of their careers, much like in many other industrialized or industrializing countries, which of course has a marked impact on a couple's fertility. Thirdly, China's so-called 'one child' policy has exacerbated the problem of multiple premarital abortions, which can damage women's reproductive organs seriously and indeed cause infertility. Given the difficulties involved in registering a child born out of wedlock and without a so-called 'pregnancy certificate', the suggestion is that more abortions are being carried out than might be under different population policies, a point worsened by the hypothesis that modern life is also leading to "increasing promiscuity." And fourthly, environmental pollution, as plastics, pesticides, air pollution, and other chemical toxins are also blamed for rising rates of infertility in both men and women. Indeed, it was suggested to me that pollutants were the main cause behind an apparent disturbing decline in average sperm quality that amounted to a 'sperm crisis' (*jingzi weiji*).

Given the size of China's population, if it is the case that somewhere around 10% of all couples has trouble conceiving, then the numbers are quite staggering. Yet, given China's well known and, at times, internationally controversial efforts to curb population growth since the 1980s, is infertility in fact considered a 'problem'? This has always been my second question to informants, "How can it be that infertility treatment is such a booming business in a country that is working so hard to keep population growth down?" The answer to this question is, in many ways, much more complex.

First of all, what I have learned is that, just as was the case in the United Kingdom, where the world's first IVF (in vitro fertilization) child was born in 1978, assisted reproduction has had a 'difficult birth' in China. Robert Edwards and Patrick Steptoe, the first to confirm the effectiveness of the IVF method in humans, have suggested that the resistance they met from peers, government officials, and research funding agencies was at least partly grounded in a "belief that infertility should not be treated because

the world was overpopulated" (quoted in Johnson et al. 2010: 2). China's first IVF baby was born in 1988, an event that was met not only with wonderment but also great caution by a government that had only recently embarked on a nationwide effort to bring down fertility rates. Research into and provision of IVF was stalled, as some doctors and ministry officials expressed concern that assisted reproduction was contrary to the country's population policies (see Handwerker 2002). By the late 1990s, however, the tide slowly began to turn. As one leading reproductive scientist explained to me, when development of fertility treatment was meeting so much resistance from government officials, "I told them that my opinion is that the population policy requires that every family only has one child, but this is for fertile couples, then you have one child. But for infertile couples . . . we should also help them to have one healthy baby. So this is the real population policy . . . I told them that our population policy should be based on this idea that every family should have one healthy baby, not only fertile, but also infertile couples, so this is fair to every family."

At the same time, just as has been the case in many countries, the stabilization of infertility as a 'disease' was, and in many ways still is, very much underway in China. The condition is very much stigmatized and remains taboo while no health insurance schemes (whether private or public) cover infertility treatment, which can be very costly for couples. As Melissa Pashigian, writing on infertility treatment in Vietnam, has put it, "Infertility is a striking condition in any country in that it can be difficult to resolve, is not life threatening, and for some, might not be considered an illness at all" (2012: 204). Being involuntarily childless is of course nothing new in China, what is new is its techno-medicalization via the range of treatments offered by over 200 infertility treatment clinics throughout the country.

When I have asked in which ways infertility or being involuntarily childless is understood as a disease, I have usually been given standard biological explanations for infertility such as blocked tubes, azoospermia, or endometriosis. When asked about those many cases of so-called 'unexplained infertility' (when no biological cause can be isolated) my informants have then gone on to distinguish between the biology of infertility on the one hand and the social experience of involuntary childlessness on the other: "Surely a majority of infertility has a biological origin, however suffering with infertility is not only a biological problem, but also a psychosocial process." It is this social experience of involuntary childlessness that is seen to cause suffering: "You have to understand that in China, not to have a child is a big problem, it causes a lot of shame (*xiuchi*)" (see also Wahlberg 2010). Add to this shame the pressures wrought by a 'one child policy' and a collapsing social security net in the wake of economic reforms, whereby one's child also becomes an integral part of one's pension plans, and we get a sense of the urgency and 'desperation' that can surround involuntarily childless couples' quests for conception in China. And so, while the forms of infertility treatment offered in modern IVF clinics are biologically

grounded, at a conference on reproductive technologies that I attended in Changsha, Xiao Shuiyuan from the Central South University argued that "improving the quality of life [*shenghuo zhiliang*] of the couple and the family should be considered the primary purpose of treatment."

MEASURING QUALITY OF LIFE

It seems then that apparently rising rates of infertility in China can be and in large measure have been accounted for in terms of human auto-modification. Rising infertility rates, perhaps in the same way that rising sea levels are seen to be, have become an anthropogenic effect, the imprint of which can be discerned by reproductive scientists in Chinese bodies with the aid of laparoscopes and microscopes. Yet, what I want to suggest is that yet another instrument, the 36-Item Short Form Health Survey (and others like it), has become as important in the measurement of the impact of this particular (and other) anthropogenic effects. Let me explain.

While attempting to contextualize my interest in the newly booming infertility treatment sector in China I bumped into an article by social psychologist Liu Li entitled "Quality of Life as a Social Representation in China" in which he notes that: "China has been undergoing a massive and rapid transition towards a market economy since the early 1980s . . . improvement in material wealth goes hand in hand with environmental degradation; greater freedom links up with social alienation; increased opportunities blend with insecurities and uncertainties; modern lifestyles confront the traditional way of life" (Liu Li 2006). When I met up with him in his campus office at the Beijing Normal University, he suggested that an emergent interest in 'quality of life' (*shenghuo zhiliang* or *shengming zhiliang*) was directly linked to the rapid modernization that especially urban populations in China had experienced in the last decade. The development and application of QoL indicators in China, he said, was only nascent but there was plenty of interest.

In the context of infertility, this certainly seems to be the case. Since I met with Liu, Lau et al. (2008) have published a paper on "Infertility-Related Perceptions and Responses and Their Associations with Quality of Life among Rural Chinese Infertile Couples," and my colleagues at the Reproductive and Genetic Hospital in Changsha have conducted pilot research inspired by the Copenhagen Multi-centre Psychosocial Infertility protocols used to investigate the psychosocial consequences of infertility (with a focus on fertility problem stress, marital benefit, communication, coping, social relations, and social support as well as attitudes to and evaluation of fertility treatment) (Schmidt et al. 2003).

What such research instruments, which often bring social and medical scientists into collaboration, are used for is to measure the 'impact' certain variables can have on the 'quality of life' or 'coping capabilities' of a person.

Through questionnaires, infertile couples are asked questions like "How much of the time during the past 4 weeks: Did you feel full of pep?; Have you been a very nervous person?; Did you have a lot of energy?; Did you feel tired?" or "People cope with their fertility problem in different ways. How do you cope? Avoid being with pregnant women or children?; Ask a relative or friend for advice?; Find other life goals?" Having completed a questionnaire, an infertile man or woman can then be given a Quality of Life score or a Coping score, which can then be used to compare across populations and against other variables. Following their research, Lau et al. concluded that "a lower income, a worsened spousal relationship, infertility related perceptions, pressuring oneself or spouse due to infertility, and a strong desire for children were significantly associated with a lowered quality of life" (2008: 248).

The point I am making here is that while it might be tempting to scoff at the formulations in such questionnaires, we need to take QoL or Coping scores as seriously as we do sperm quality scores or histologic evaluations of endometrial biopsies. They are just as instrumental in the circumscription and stabilization of infertility as a problem that requires therapeutic intervention. And in fact, when it comes to making a case for providing fertility treatment in China, it is the severity of the suffering of involuntarily childless couples that every one of the doctors and nurses I have spoken with has flagged. Infertility might not be life threatening but it certainly causes suffering and it is this suffering that justifies the enormous amounts of resources used (a single course of IVF can cost as much as €3,000) to try to overcome it. And the answer I got when I asked a doctor whether overcoming infertility leads to an increased quality of life for a couple, was "Absolutely, you should see how happy they are, this is the best part of my job."

CONCLUSION: OVERCOMING CHINA'S ANTHROPOCENE?

What this excursion into the ways in which infertility or involuntary childlessness has emerged as a problem in China has allowed us to do is to examine the concrete ways in which human modification (anthropogenic effect) is currently being implicated in certain (often deleterious) global effects. Zalasiewicz and colleagues have suggested that more than an actual geological time (this has yet to be determined by geologists and other natural scientists) the Anthropocene is perhaps better understood as a "vivid yet informal metaphor of global environmental change" (2008: 7) which was "coined at a time of dawning realization that human activity was indeed changing the Earth" (2010: 2228).

If we follow this heuristic, we are provided with a productive means of revisiting and rethinking nature/society separations. In contrast to Haraway's and Rabinow's buoyant praises of the cyborg and artificiality, the

Anthropocene metaphor is decidedly pessimistic. It highlights not techno-possibilities, but techno-catastrophes. In the Anthropocene metaphor, a notion of 'human activity' is what links nature and society, or more specifically, particular configurations of human activity (connections, associations, alliances, organizations) have set in motion particular social processes (those many '-izations'), which have left their imprints in nature, a nature which comprises the earth and its inhabitants.

As noted in the introduction to this volume, the most comprehensive influence of the nature/society distinction has perhaps been the division of science itself into natural and social sciences. What I have argued in this chapter is that those of us engaged in science and technology studies must not neglect the ways in which social sciences come to take part in the co-production of knowledge about life and living. As such, the separation I have focused on is that conjured up by the natural and social sciences respectively as a matter of methodology (shall I examine a cell or shall I listen to an involuntarily childless couple). We should not underestimate the important place that different forms of methodology have in processes of co-production. A 36-Item Short Form Health Survey is as palpable as a microscope when it comes to producing knowledge about and generating practices to tackle infertility.

The question I have asked is: How has infertility emerged as a problem in China over the last few decades? The answer, I have suggested, may be found through an Anthropocenic gaze which has informed the diagnoses of both natural and social scientists concerned with the plight of involuntarily childless couples. As such, what I have shown is that in the emergence of infertility as a problem in urban China nature and society remain infused. The problem is at once social and natural (biological).

Moreover, as China faces both its environmental and its reproductive crises we cannot help but be struck by the technological solutions which are being proposed to remedy them. The earth's biocapacity and Chinese people's reproductive capacities are at stake, and it seems overcoming China's Anthropocene requires more rather than less techno-science in the form of, for example, green energy or reproductive technologies. And so perhaps the Anthropocene will after all end up alongside the cyborg and artificiality as a metaphor of techno-possibility.

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12 Broken Cosmologies
Climate, Water, and State in the Peruvian Andes

Karsten Pærregaard

For more than a century the logic of capitalism has imbued European and American society and in the past two decades it has permeated the rest of the world as well. Inherent in this logic and the scientific and technological revolution it has entailed is the idea that humans have become the self-proclaimed masters of the planet Earth with the moral right to use and consume the environment they inhabit. The logic also posits nature and society as opposed spheres of life that only come in contact when humans interfere in their environment to hunt animals and fish, cultivate the land, extract oil, gas and minerals, or manipulate their own biology. Recent concerns over climate change and global warming, however, have made scholars, reporters, and activists question the equity and fairness of the world's distribution and use of natural resources (Beck 2010) and ask for a more "genuine human community" to control the economic interests that drive capitalism and jeopardize the global environmental balance (Foster et al. 2009: 1094). Some even argue that capitalism is "the main engine behind impending catastrophic climate change" and they therefore call for an "ecological revolution" and a "planetary emergency" to prevent the disastrous consequences that continuous economic growth entails (ibid.: 1085). Acknowledging that humans belong to nature and that social life and biological life are mutually constitutive is a first step in such an agenda.

The concern about capitalism and its impact on nature and human life is far from new. One hundred and fifty years ago Karl Marx wrote that the ideologists of bourgeois society had created a false opposition between nature and humans. In his writings Marx examined bourgeois society and the national-romantic ideology it propagates criticizing its notion of humans as a species alienated from nature free to exploit its physical environment. As a politically engaged intellectual Marx pointedly drew the attention to social inequality and environmental pollution, which he claimed to be caused by capitalist production. Just as the workers live under the yoke of economic profit, so has nature become the slave of humans, he contended. But Marx also claimed that the relations of exploitation under capitalism are based on an immanent contradiction between the technological and scientific development and the social order and that once the

former has undermined the latter both humans and nature will be able to obtain freedom. In his praxis theory he fleshed out the inconsistencies of capitalist production reminding us that nature and society are inextricably linked together and that human beings, like society, are an integral, yet particular and radically distinct, part of nature (Swyngedouw 2006: 108). Employing the notion of metabolism he scrutinized nature as the material in which human labour realizes itself. Marx's understanding of metabolism was closely linked to the term's German meaning, 'change of matter' (*stoffwechsel*), which implies a continuous process of transforming and reassembling of material elements (ibid.). Thus in Marx's view, through the mediation of labour, society emerged from nature, resulting in the production of what has been called a 'second nature', that is, the reassemblage of human-material objects resulting from human labour (Escobar 1999: 6–7). Marx's definition of the nature/society nexus as a metabolic relation led him to assert that "the workers can create nothing without *nature*, without the *sensuous external world*" (Marx 1992: 325) and to conclude that "nature is man's *inorganic body*, that is to say nature in so far as it is not the human body" (ibid.: 328). As labourers, then, humans can only bring the wrongdoings of capitalism to a stop by engaging with the second nature as their external body.

Marx's writings had important bearings for classical anthropology and continue to inspire modern anthropologists (Patterson 2009: 1). In particular, his concepts of metabolism and alienation are useful to anthropology. Yet anthropology also challenges Marx's theory by showing that humans' engagement with nature covers a complex relationship that historicizes the landscape and extracts specific places out of undifferentiated space (Lowell 1998: 6). Moreover, in many preindustrialized societies nature constitutes not only the "sensuous external world" and "inorganic body" of their members in their daily struggle to satisfy the physical needs but also the central point of reference of their cosmology providing humans with a sense of place and locality and a feeling of belonging. To anthropology Marx's metabolism refers to not only a biological but also a symbolic relation of exchange; similarly, his concept of alienation can be read as at once a critique of capitalism and modern consumer society and a lens to explore more general aspects of humans' construction of nature and their position in the physical surroundings.

ARGUMENT AND SCOPE OF THE STUDY

In many parts of the world nature is construed in a socio-centric model that configures the universe as dominated by non-human forces living outside the social domain but nevertheless recognizable to and in contact with humans (McLean 2009). In the cosmologies emerging from such worldviews supernatural powers often take the form of extra-human beings with human

features suggesting that humans often objectify nature by predicating the non-human realm with reference to their own human domain (Descola 1996: 85–86). In this chapter I explore how Andean people objectify their physical surroundings and redefine their predications of the non-human realm as well as the wider national and global world in a time of global warming and radical environmental change. My argument is twofold.

Firstly, I argue that even though there is a global consensus that climate change represents a growing threat to the planet Earth, it is perceived very differently in the world. Just as the climate and the environment in which it unfolds vary across the world so does the way people interpret and imagine climate change. I demonstrate this variety of cultural imaginaries of climate change by discussing how the villagers in an Andean community perceive the nature/society nexus and adapt their worldview to their changing environment. My inquiry draws on Marx's notions of metabolism and alienation which I suggest serve as conceptual tools to scrutinize Andean people's ideas of the anthropogenic 'second nature' that emerges from their labour. In Andean society, I argue, metabolism is imagined as a symbolic relationship with non-human forces that claim a 'gift' in return for humans' exploitation of the environment (Pærregaard 1989). I also suggest that if metabolism serves as a central metaphor for Marx's definition of labour and his understanding of the 'second nature' it produces, it helps the anthropologist to view ritual offerings as a way Andean people reassemble the nature/society nexus in a cosmological order that redefines their alienation from the non-human and human powers controlling their lives. More bluntly, through symbolic metabolism Andean people position themselves in not only 'second nature' but also the social and political hierarchies they are subject to as members of Peruvian society. As the glaciers of the Andes are melting because of global warming, however, people are increasingly questioning their ideas of symbolic metabolism and their belief in non-human forces. It is therefore imperative to study how Andean people respond to the 'second nature' when this is changing 'nature' and start to behave in new and unrecognizable ways refusing to return their gifts and symbolic offerings.

Secondly, I argue that the climate change Andean people are experiencing occurs at a moment when globalization is linking people in the remotest regions of the planet to the rest of the world prompting them to adopt modern lifestyles and consumer identities. Similarly, throughout the world international agencies, NGOs, and the national states are implementing development and modernization programs in rural areas that introduce new technologies and connect the local populations to the wider national and global world. In other words, marginal populations experience climate change at a time of profound economic, social, and political change and many find it difficult to distinguish its effects from other transformation processes that are taking place in their communities. I therefore suggest that we study climate change as one among many

of the global frictions, or "grips of worldly encounters" as Tsing prefers to call them (2005: 1), that shape the lives of rural and marginal populations. More specifically, I propose that we scrutinize the role of the nation state as manager of natural resources with a particular focus on how a state-orchestrated governmentality engages with and transforms local management systems based on the idea that non-human forces control nature. In the following I take up this challenge by studying how Andean people adjust to growing water scarcity in a situation of not only climate change but also rapid modernization and development and, more importantly, the growing presence and intervention of the Peruvian state. My point is that in their effort to adapt to climate change Andean people rethink their ideas of the state and turn to it for help.

CLIMATE CHANGE AND THE STATE IN THE ANDES

For centuries the fear of provoking the anger of the non-human world inhabiting their environment has induced Andean people to sacrifice not only animals and material objects but also members of their own communities. Before the Spanish conquest such practices formed part of a pan-Andean belief system but today offerings are only practiced in Peru's southern highlands where they vary from village to village according to the local topographies (Gose 1994). Moreover, the landscapes that emerge from these topographies are an integral part of the territories which Andean people inhabit and identify with and which they have been entitled to exploit by the Peruvian government since Peru achieved independence in 1821. In the past two centuries shifting national governments have granted Andean people the right to appoint their own political authorities and community leaders such as water allocators, whose duties traditionally encompass not only administrative but also ritual tasks including offerings to the mountain deities to increase the water flow. This conflation of secular and sacred authorities reveals that the boundary between not only human and non-human forces but also political and religious powers are blurred in Andean ritual practices and that even though such practices are locally bounded and inscribed in specific territories, they transcend these territories and link Andean people to power structures outside their villages. As the conflicts over water and other tensions caused by climate change intensify, such linkages to external secular powers become critical to Andean people.

In recent years water scarcity has become one of the most conflictive political problems in Peru that not only have made Andean people question their own cosmology and belief system but also reach out for help from the Peruvian state. Until recently Peru's rural population mainly relied on the support from international organizations and NGOs to improve agricultural production and to alleviate the effect of the growing

water scarcity, but in the past decade Peru has experienced an economic bonanza boosting the government's public budget and allowing it to make huge investments in the infrastructure of the country's marginal areas. Public works such as water canals and the introduction of new irrigation techniques to raise agricultural production have been one of the principal objects of these investments, which have not only mitigated the impact of global warming but also paved the way for new forms of governmentality and state rationalities.

In the rest of the chapter I discuss how the new role of the state has induced the villagers of an Andean community to change their irrigation practices and rethink their notions about water, mountains, and other elements in the physical surroundings. I conclude the chapter by suggesting how my own recent ethnographic findings in the Peruvian highlands shed new light on not only the water problems caused by global warming but also the possibilities climate change creates for the state to engage with Andean people and establish new politics of inclusion.

CABANACONDE

Cabanaconde is situated between 3,600 and 2,200 m in the Colca Valley in Peru's southern Andes. It is not only the second biggest village in the region with a population of 5,000 but also has more agricultural land than other villages. Many villagers even have small orchards on the banks of the Colca River at 2,000 m and some pastures on the *puna* above 4,000 m (Gelles 2000: 34–37). At the time of the Incas the village gained fame for its production of corn, which is appreciated for its taste, and today it continues to be an important centre for trade, transport, and, in recent years, international tourism (ibid.: 27–29). Cabanaconde also has large migrant populations in Lima and Washington, DC that contribute to its development and occupy a dominating position in its cultural and religious fiestas. Thus, in February and July Cabanaconde is transformed into a vibrating hub for migrants returning home to celebrate the local saints and, more importantly, drink and dance (Pærregaard 1997, 2010). At the same time the village has experienced an influx of rural migrants from the neighbouring regions of Cusco and Puno who first rent and later buy the houses and fields left by the Cabaneños who live in Lima and Washington, DC.

Although a growing number of villagers make a living as shopkeepers, tourist guides, etc., to the majority farming and herding continue to be the principal occupation. As the rain season only lasts three months (from January to March) and precipitation often is unpredictable, agriculture needs irrigation, which until recently entirely was fed by the melt water of Mount Hualca Hualca (6,000 m), the second highest mountain in the region (Gelles 2000: 50–54). The melt water is led by a man-made canal from the mountain to the *campiña*, the village's largest agricultural area

where most Cabaneños have fields and grow corn. In the *campiña* a labyrinth of smaller canals tap water from the main canal and direct it into first larger zones of cultivable land and then to the individual fields that are irrigated four times during the planting season. Most of the canals were designed and constructed in pre-Hispanic times just as the villagers' ancestors made the terraces and the fields they use to plant their crops. The villagers' strong attachment to Mount Hualca Hualca and their recognition of the importance of its melt water for their lives is reflected in the local legend that portrays the inhabitants of Cabanaconde as the descendants from the mountain and that since the times of the Incas has made them identify as the 'Children of Hualca Hualca'.

Although Cabanaconde's population centre is organized in four neighbourhoods called *cuarteles* and not in two moieties as the rest of the Colca villages (Guillet 1992; Pærregaard 1997), a dual division was up until recently employed to distribute irrigation water in the *campiña* in the dry season from September to December when the villagers plant their fields (Gelles 2000: 57). Unlike the neighbouring Colca villages that are organized in a comprehensive dual system, in Cabanaconde the moieties called Hanansaya and Urinsaya only apply to the allocation of water for irrigation (Gelles 1994: 248-53). In the traditional irrigation system the water-users in Hanansaya and Urinsaya each elected their own *regidores* every year to allocate water in the *campiña*. Starting upstream, the two *regidores* engaged in a fierce competition moving downstream to finish the allocation of water in their moiety first, a showdown that was repeated in the four irrigation rounds (Gelles 2000: 98–117). Older villagers recount that the competition served as a means to save water and ensure that everybody including those having fields downstream received an equal share. Nevertheless, they also recall that water was always scarce and that people fought over the smallest drop of water. Indeed, many state that the *regidor*, a mandatory duty that all males had to assume once in their lives, was the most onerous office they ever had occupied in Cabanaconde (Gelles 1994: 248). They relate that during the rainy season from January to March when the villagers were free to take water from the canals and irrigate their fields, disputes over water were very common, particularly in years with little or no rain. Arguably, Cabanaconde's chronic lack of water and its complex irrigation system have contributed to its fame of being one of the not only most conflictive but also best organized and rebellious villages in the region. To understand how the village has gained this fame, a brief summary of Cabanaconde's contemporary history is required.

CONFRONTING THE STATE

In the 20th century Cabanaconde's population more than doubled which triggered a growing pressure on land and after a road linking the village to

the city of Arequipa was built in 1965, transportation and communication with the surrounding society improved dramatically (Gelles 2000: 162–64). In the years that followed, the Peruvian state constructed a channel leading water from the Colca Valley to Majes located on the nearby coast, and while this was consequently irrigated and transformed into fertile land the planners of the project denied the population of Cabanaconde and neighbouring villages access to the water of the channel. The Majes project caused much anger in Cabanaconde to whom it was a token of the policy that the Peruvian state had pursued since colonial times, ignoring vital interests of Andean peasants such as water to irrigate their fields. In a desperate attempt to gain a right to tap water from the channel, the Cabaneños wrote a letter to President Belaunde to ask for his help. The President never replied and his silence only added fuel to their anger. In 1983, a year when water was particularly scarce, a group of villagers therefore decided to take things in their own hands and made a hole in the channel (ibid.: 64). The entire community confronted a police regiment that was sent to Cabanaconde claiming right to the water in the channel. Later when the authorities returned to arrest the men who had made the hole, the villagers collectively assumed the responsibility of the act thus frustrating the attempt to identify the suspects. Today, the men are remembered as heroes who stood up and fought for what matters most in Cabanaconde: water.

The village's move was effective; shortly after the act Cabanaconde and the rest of villages located on the right side of the Colca Valley began to receive water from the Majes channel. Today Cabanaconde taps water from four valves in the channel increasing its access to irrigation water considerably. The water the village receives from the Majes channel is partly directed into the *campiña* alleviating the constant demand for water in this area and partly used to irrigate over 1,000 hectares of abandoned terraced fields and place them back into production, doubling Cabanaconde's land base. As a result, the villagers now have an average of two hectares of irrigated land, compared to less than one before the village confronted the state and made a hole in the Majes channel (Gelles 2000: 66–68). The expansion of Cabanaconde's irrigated land has generated new incomes and more prosperity for the villagers and triggered a growing interest within the village's migrant population in defending their rights to land and other resources (ibid.: 66–74). Moreover, the villagers' achievement in 1983 has boosted their expectations to the future. The Peruvian state is currently planning to construct a new channel called Majes 2 that will direct more water from the neighbouring region of Cusco through the Colca Valley and crosscut Cabanaconde to irrigate the coastal desert. Before the construction even has begun, the project has caused deadly clashes in Cusco where the channel will tap water and where the local population is worried they will suffer from water scarcity. In Cabanaconde, by contrast, the villagers applaud the project, which they expect will augment their water supply even more. Indeed, the Cabaneños no longer view the state as the enemy but as a trustful ally.

Cabanaconde's confrontation with the state in 1983 has been followed by other developments of critical importance for the villagers. In recent years the village has become a centre of attraction to a growing numbers of tourists, who use it as a stopover when visiting the canyon located just outside Cabanaconde. As a result, the villagers have experienced the emergence of a veritable tourist industry including such services as hotels, restaurants, and tourist agencies, which have bolstered the economic development of the village. Simultaneously, the introduction of parabolic antennas, video recorders, and other modern media practices and communication technologies combined with electricity service around the clock have allowed villagers to watch not merely national television channels but also American movies. Another important change was the installation of a permanent telephone service and more recently also Internet service in the village (Gelles 2005: 82–87), which has generated new urban-inspired consumption practices rapidly transforming Cabanaconde's traditional rural lifestyle.

THANKING THE STATE

In 1995 Cabanaconde made the international headlines because of an event that surprised the villagers as much as the rest of the world. An American archaeologist and his Peruvian partner looking for relics from the village's pre-Hispanic past found a frozen mummy on Mount Ampato, the tallest mountain in the area located next to Hualca Hualca. The mummy was later identified as the body of a young girl sacrificed by the Incas 500 years ago. Due to its well-preserved condition the revelation of what has become known as the Inca Ice Maiden or Mummy Juanita caused a sensation in the scientific world and was chosen as one of the world's top ten discoveries by *Time* magazine (Gelles 2000: 80). In the following years the mummy was displayed in Japan and Washington, DC, where President Clinton declared his admiration for the girl's beauty. Today, the mummy is exhibited in the nearby city of Arequipa. Although the discovery placed Cabanaconde on the world map, it has also been of concern to many villagers, who think the mummy is part of their past and therefore belongs to them. Some even believe that the removal of the frozen body has caused the anger of the mountain deities and brought bad luck to Cabanaconde. Others claim that the two discoverers did wrong in bringing the mummy to Arequipa and blame the village authorities for not claiming it back. Ironically, it was the eruption of the nearby volcano of Sabancaya and the melting of the ice cap of Mount Ampato where the mummy was buried that made it appear and lead to its revelation. It was a natural disaster and the subsequent rising temperature and not human interference that brought Cabanaconde's past to the light of the day. The discoverers merely picked the mummy up thus saving her from thawing and decomposition. Several meanings therefore can be read in her reappearance: the violent customs of Cabaneños' ancestors,

the threats of global warming, and the national and international society's violation of Cabanaconde's right to protect its cultural heritage.

The discovery of Mummy Juanita happened at a time when Cabanaconde was feeling the impact of the Majes channel. Previously, the villagers only cultivated the *campiña*, now their irrigation capacity had more than doubled and the size of their cultivable land had almost tripled. Symbolically, the Majes channel had replaced Mount Hualca Hualca as Cabanaconde's main supplier of water and while the villagers before the incident in 1983 thought of themselves as the mountain's descendants, they now look toward the Peruvian state and the NGOs operating in the area for help to meet their needs. In the past 25 years the state and these organizations have indeed increased their presence in the Colca Valley and other Andean regions. During the 1990s the government launched a series of programmes to alleviate poverty and eradicate illiteracy in Peru's marginal regions, and in 1993 President Fujimori visited Cabanaconde to donate the village a new primary school. In this period a number of international NGOs also operated in the area and financed several projects in Cabanaconde to improve agricultural production and the village's infrastructure, providing the villagers with electricity, drinking water, a health clinic, telephone, etc. This development has continued in the past decade, propelled primarily by the state and the regional government of Arequipa that have financed the improvement of the village's irrigation canals and the construction of several water reservoirs. The reservoirs save the *regidores* from the work of irrigating at night and minimize the waste of water. Cabanaconde's migrant communities in Lima and the United States have also made contributions to the village's high school and one of the most prosperous migrant families is currently constructing a first-class hotel with swimming pool and casino in the village.

To Cabaneños, the discovery of Mummy Juanita and the growing presence of the state point in two opposed directions. On the one hand, the mummy represents a cosmological order in which the mountain deities and other spiritual forces reign. To secure the water supply and thus their own survival, these deities must be pacified through offerings, including human sacrifices. On the other hand, the state has introduced a new socio-political order that provides Cabaneños with public services similar to those other Peruvians enjoy and, perhaps most important, offers a supply of water that not only is more stable but also more powerful than Mount Hualca Hualca. The elderly Cabaneños relate that the entire village used to walk up to the top of the mountain at 6,000 m (and during years of drought they would go twice) to make offerings to the deities every year but that they stopped doing it after making the hole in the Majes channel in 1983 (Gelles 2000: 57). According to Paul Gelles, who conducted field research in Cabanaconde in 1987, the villagers remained at the foot of Mount Hualca Hualca for three days where they cut a central channel through the snow to redirect the snow melt to the main canal and thus increase the flow of water (2000: 57). Gelles concludes: "Ironically, the courageous effort to open the Majes Channel, which required

great communal unity, brought to an end the yearly sojourn—part work party, part pilgrimage—to Hualca Hualca, and with it an end to the annually renewed solidarity that it provided" (2000: 58).

In the years that followed the *regidores* continued to organize the offering but in 2011 the president of the water committee of the *campiña* told me that such rituals no longer are conducted on a regular basis and even so, the *paqo*, the person in charge of organizing the ritual, only climbs half way up the mountain and not all the way to the top to make the offering. He also affirmed that as the newly recovered land is irrigated with water from the Majes channel, villagers find no need to make offerings in other parts of the village. The shift from a cosmological to a governmental order has also led to a new irrigation regime in the *campiña*, where villagers no longer elect the *regidor* but pay professional *regidores* to irrigate their fields. The traditional dual system of two competing *regidores* representing respectively Hanansaya and Urinsaya has been replaced by a state-introduced system. A locally elected water committee administers the new system selling tickets to the villagers and thus authorizing them to claim water from the *regidores*. And while the village authorities previously appointed these *regidores*, the water committee now hires them. As the new irrigation system draws on a different bureaucratic rationale than the traditional system based on an idea of organizational duality and social competition, the ritual custom of making offerings to the local deities has yielded to other forms of tribute paying.

The Peruvian state has tried to introduce the new irrigation system for several decades but encountered stubborn resistance from Cabaneños (Gelles 2000: 69– 74). A small group of villagers has supported the state's attempt to modernize the village's water management but the majority has opposed it pointing to the advantage of using a dual model, which they argue encourages the competing *regidores* to reduce water waste and therefore is more efficient than a system with paid water allocators. Gelles writes: "At the heart of this conflict are issues of local autonomy, state control, and different cultural understandings concerning availability, efficiency, and the means by which to obtain an abundance of irrigation water" (2000: 71). He concludes: "Although the state model has gained ground over the years, many aspects of the local model remain firmly entrenched" (ibid.). However, in the 25 years that have passed since Gelles conducted his study, Cabaneños have almost entirely adopted the state system, undoubtedly urged by Peru's new water law introduced in 2009. The law states that all water sources are a public good and that the state is the proper owner of the country's water and irrigation infrastructure. It also stipulates the establishment of a new organizational structure to administrate the allocation of water in Peru and incites Peruvians to appreciate water as a common good that is scarce and therefore must be spent with great care. Finally, the law requires that the local water committees of Cabanaconde and other Colca villages participate in the Junta de Usuarios, the regional association

of water-users, which is a non-profit organization based in the provincial capital of Chivay. To acquire membership Cabanaconde's water committee pays an annual fee to the association which in turn represents the local water-users' interest in the government-controlled regional and national water institutions called ALA (Local Water Authority) and ANA (National Water Authority) (Oré et. al. 2009: 47–89). ALA and ANA also service Cabanaconde and other villages, providing their water committees with maps and other material, and have played an important role in making the villagers adopt a new form of citizenship that defies the mountain deities and recognizes a centrally controlled bureaucracy and a state-dictated rationale of water management.

DRY ROCKS AND FALLEN ANGELS

Climate change has renewed the scholarly interest in understanding humans' relation with its environment and instigated researchers to review the nature/society dichotomy. Up to recently regarded as a matter of local, regional, or national concern, environmental protection and resource management are today viewed as a global matter. Reducing carbon emissions, it is argued, is a collective challenge for the Global South as well as Global North and an important step in creating a brave new global "humanistic-naturalistic" community responsible for the caretaking of the atmospheric commons (Foster et al. 2009: 1095). However, in the contemporary globalized world, climate change affects people very differently. In the words of Beck, "There is no equality when it comes to 'natural' risk but, instead, social inequality in intensified form, the privileged against the non-privileged" (2010: 175). Moreover, the true victims of climate change often contribute very little to global warming themselves. As Orlove, Wiegant, and Luckman point out: "The global scale of climate change means that the people most directly affected by glacier retreat make a very small direct contribution to the worldwide emissions of greenhouse gasses that are its root cause. As a consequence, their behaviour have little impact on the future course of this shrinkage" (Orlove et al. 2008: 14).

My own findings during recent field studies in Peru (2010–2011) concur with the view that climate change enhances existing inequalities and that Andean people and other marginal populations have little influence on it effects. Until 1983 Mount Hualca Hualca was the only water source in Cabanaconde and the village was therefore extremely vulnerable to the the growing meltdown of Peru's glaciers and snow caps. Yet the Majes channel has changed the water situation in the village dramatically in the past three decades. Furthermore, even though Andean people are the first to suffer the consequences of global warming, they are reluctant to endorse the global discourse on climate change locating its cause in the Global North. While recognizing that industrialization and modern consumption lead

to rising temperature, many attribute this to pollution caused by people locally, regionally, and partly nationally rather than globally. Some even claim that climate change is a cyclical phenomenon related to other natural disasters such as earthquakes. In other words, Andean people interpret climate change very differently, some attributing it to nature itself and others to human agency. Still, most agree that the cause of global warming is to be found in their own locality or in Peru and not somewhere else in the world and, as in Cabanaconde, they read it as proof that the symbolic metabolism between nature and humans that traditionally has regulated the flow of water in the villages and assured the villagers' survival is breaking up and that the deities controlling water no longer respond to their offerings. These observations resonate with the findings of Bolin who studies the impact of the melting glaciers on the local population's belief in mountain deities in Peru's Cusco region. Bolin concludes: "As the snowfields melt due to global climate change, these deities lose their powers" (Bolin 2009: 232) .

But if the deities fail to deliver, then what powers do the villagers believe can provide water in the future and thus secure their survival? In Cabanaconde the Majes channel and the water it supplies to the village has transformed not merely the belief system but also the organization of irrigation in the village. The villagers initially distrusted the state's readiness to help the village and therefore confronted it to make their claims to water from the channel heard, but they now view the state as a trustful ally. In the aftermath of their 1983 action the villagers have replaced the traditional practice of irrigating based on a local belief in the mountain deities and a dual allocation system with a state-dictated system that supplies them with water and uses paid *regidores* as water allocators. Today the majority of the villagers approve of the new irrigation system. Thus the president of one of Cabanaconde's irrigation commissions told me that because of the Majes channel Cabanaconde and the rest of the villages on the left side of the Colca valley are now much better off than they were 25 years ago. He said: "We have much more water now than we used to. The only thing we have to do is to control that they actually provide us with the amount of water we have agreed." Although some villagers think they receive less water from the channel than they actually are entitled to, the village's irrigation commissions report that the water flow most of the time is stable and that they rarely have problems cooperating with the authorities administering the channel. The new image of the state and its role as provider of irrigation water is reflecting in the reaction of an elderly villager when I asked him whether he still considers himself as the "descendant of Mount Hualca Hualca." The man laughed and said: "That was many years ago. Today we live in a modern world."

The village has also experienced a significant increase in economic support from the state, which has made its presence much more visible in Cabanaconde than previously. Particularly, the investments made by the regional government and provincial authorities to improve the road

connecting Cabanaconde to the outside world and to stimulate tourism in the area have had an impact on the economic development of the village. New technologies and modern lifestyles have also been introduced in the village providing the younger villagers with a sense of being part of the wider surrounding society. Climate change, state intervention, and globalization, then, are occurring at the same time generating a breakup of the villagers' cosmology but also generating a new sense of belonging. Rather than locating their origin in a pre-Hispanic past and the nature that surrounds them, the villagers are adopting a new identity as Peruvian citizens.

In their study of global warming and its effect on local life in highland Ecuador, Rhoades et al. report that for the people living at the volcano Cotacachi, the demise of its glacier and its consequences for water availability are "entire new phenomena for Cotacheños" (2008: 223). The authors point out: "In their collective memories, the glacier has always been present and Mama Cotacachi has always supplied abundant water" (ibid.). They conclude: "On the basis of our study, we suggest that local knowledge is inadequate in the face of external global change that produces unprecedented events" (ibid.: 225). As in Ecuador, the cosmologies of Andean people in Peru have failed to provide answers to the growing water scarcity. The mountain deities can no longer deliver and have yielded to the state that now masters the art of managing water in the Andes.

CLOSING REMARKS

Peru is the world's third most vulnerable country to global warming. More than 70 of the planet's tropical glaciers are located in the country and as many of these glaciers are melting in an alarming speed; Andean people are facing new social and political problems (Carey 2010). In the 20th century the major concern of Andean people was their land and the many struggles they engaged in against the big haciendas that tried to encroach on their territories. In the 21st century their biggest challenge is water that constitutes a fundamental resource in terms of irrigating the fields and sustaining the traditional lifestyle in the Andes (Travick 2003; Rasmussen 2009).

As demonstrated in this chapter, the Peruvian state plays an important role in finding solutions to the water problem in the Andes. In recent years it has constructed new water infrastructures and introduced new management systems in some villages to alleviate the effects of global warming and the melting glaciers and provide alternative water sources in places where conventional sources are drying up. However, Cabanaconde and its neighbouring villages are the exceptions rather than the rule in contemporary Peru and in many parts of the Andes the only alternative to climate change and water scarcity is to move to the city and start a new life among the country's many urban poor. Even though Andean people have struggled

for centuries for their rights to their territories, climate change leaves them few other options than to migrate, leaving their land behind. Without water rural life in the Andes is no longer possible. Thus nature, whether in the form of land or water, continues to shape both the evolution of Andean culture and society and the politics the Peruvian state pursues to stimulate the development of Peru's Andean highlands in significant ways.

Indeed, global warming is changing the livelihoods and living conditions of rural people in many developing countries. It has also prompted scholars to revisit conventional notions of development, growth, and equality and to rethink their notions of nature, society, and politics. Turning our eyes to Marx and other classical thinkers reminds us that such concerns are far from new and that it is humans' metabolic exchange with nature and alienation from their environment that is at stake in global warming. The search for new ways of exploiting and consuming natural resources and managing the planet Earth must therefore critically review the nature/society nexus. Andean and other rural precapitalist societies envision humans as the humble servants of nature. In capitalism the hierarchy is reversed proclaiming nature as the slave of humans. To restore equity and social justice the world of tomorrow must predicate a cosmological order that not only reintroduces humans in nature but also recognizes the atmosphere is their sensuous external world and views the 'global commons' as their inorganic external body.

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13 Of Maps and Men
Making Places and People in the Arctic

Kirsten Hastrup

The focus of this chapter is the co-constitution of knowledge, places, and peoples. The argument centres on the Arctic region, as explored, mapped, controlled, and inhabited, with a certain emphasis on the Thule District in North West Greenland. The general idea is to show how both natures and peoples emerge out of motley interests, and how specific concerns—cartographic, ethnographic, political, or scientific—precede and produce established facts.

Etymologically, the word 'Arctic' derives from the Greek word for bear (*arktos*); in classical literature it referred to either the stellar constellation of *Ursa Major* (the Great Bear), prominent on the Northern sky, or to the *Ursa Minor* (the Little Bear), a constellation containing the Polar Star. Already, we sense that as a region, the Arctic may not be as well defined as we tend to think save as a general direction, and this uncertainty is the point of departure for this chapter, wanting to explore the ways in which the Arctic has been fashioned in various knowledge spaces. I refer here to David Turnbull's notion of a 'knowledge space' as an "interactive, contingent assemblage of space and knowledge, sustained and created by social labour" (2003: 4). This points us in a very important direction from the outset, namely towards the realization that all knowledge is *located*. As Turnbull has observed: "It is both situated and situating. It has place and creates space. An assemblage is made up of linked sites, people and activities; in a very important and profound sense, the creation of an assemblage is the creation of a knowledge space" (Ibid.: 19). Knowledge spaces are thus better seen as fields of practices than networks of statements (cf. Rouse quoted in Turnbull 2003: 10).

In the following I shall address different fields of practices by which we have come to know and assemble the Arctic and its people. Within my general interest in the Arctic, my main focus is on the District of Thule in North West Greenland, where I have conducted successive fieldworks over the past six years. The argument is framed in a series of questions that will eventually take us towards tentative answers to some of the issues raised within at the nature/society interface, where places are made and people identified. The discussion proceeds through four moves, reflecting

different historical trajectories and posing each their distinct question. First, the 19th century exploration and mapping of the Arctic leads to the question of accuracy. Second, the early 20th century ethnographic expeditions and the emergence of the typical Eskimo culture entail a question of authenticity. Third, an excursion into Cold War science leads to a general question of control. Fourth, all of these histories conjoin in the final move into present day Thule, where the question of opportunity is raised afresh. The general idea is to show how both natures and peoples emerge out of motley interests, and how particular concerns somehow pre-empt the establishing of facts.

MAPPING THE ARCTIC: THE QUESTION OF ACCURACY

When we think of a map, most often we think of a flat geometrical image, totalizing observations and fixing relationships (de Certeau 1984: 119ff). The practice of mapping, however, is never simply a representational exercise, as we know from Tim Ingold's discussion of the cartographic illusion (2000: 234), and Sarah Whatmore's discussion of the limitations of the grid, given that bodily practices, travels, and writing itself are inscribed on the map (2002). Even if we are now critical of maps as accurate depictions, and are well aware that the territory is not the map, as Bateson emphasized 40 years ago (1972), we might still be implicitly caught up within the theory of the world as embedded in the map. I myself would certainly subscribe to the view that "in a deep professional and intellectual sense, the geographical imagination is one that is historically and personally identified with the cartographic image," as suggested by John Pickles (2004: 9). Geography is always in some sense imaginative, as Edward Said reminded us in his discussion of Orientalism; in drawing upon received images and categories, in geography there is always "something *more* than what appears to be merely positive knowledge" (Said 1979: 55). Space is predicated upon particular images and social conventions; and I would argue that along with the generally accepted Orientalism we find a particular Arctism, comprising more than mere geography and rendering accurate representation in any strict cartographic sense rather doubtful.

As Henri Lefebvre has suggested, given that all spaces are in some sense social, the question becomes how many maps in the descriptive sense we may need to deal exhaustively with a given space, and he provides an answer in suggesting that we are confronted with "a sort of instant infinity" (1991: 85). He explains:

> It is not only the codes—the map's legend, the conventional signs of map-making and map-reading—that are liable to change, but also the objects represented, the lens through which they are viewed, and the scale used. The idea that a small number of maps or even a single (and

> singular) map may be sufficient can only apply in a specialized area of study whose own self-affirmation depends on isolation from its context. (Lefebvre 1991: 85–86)

Here Lefebvre implicitly acknowledges the indefinite nature of scale (Hastrup 2013c), and reminds us that any claim to exhaustive mapping rests on artificial closure.

In the Polar regions of the earth, the instant infinity of mapping comes with the territory, if I may say so. Once the earth had been acknowledged as spherical, the crisis was immanent in mapping; Mercator provided a representational solution in the 16th century, which was singularly well adapted to navigation on the great oceans on mid-Earth while extremely distorting to the image of the Polar regions that could barely be known within the grid, and in the eyes of most were probably not worth knowing anyway. This made room for a great imaginative freedom with regard to the Arctic until the 19th century, when actual exploration of the Northern seas intensified, and when soon afterwards the first ethnographers would describe the social landscapes from within their forbidding environments.

Before that, an ancient set of images pertaining to the Arctic was continuously afloat. I am thinking here of the age-old image of Ultima Thule, a frozen space on the margins of the world, where only barbarians lived, if any (Hastrup 2007). First known from Pytheas c. 300, Thule remained a persistent metaphor for the Northern world beyond the horizon of civilization. It is therefore telling that when Knud Rasmussen, the Danish explorer and ethnographer of the Arctic, established a trade station in North West Greenland in 1910, he gave it the name of Thule, which finally found a fixed place on the geographical map (Hastrup 2006). Maps and metaphors go hand in hand, separating geography from mere nature (Hastrup 2008).

The Arctic was explored and mapped rather late in the European history of exploration. Obviously it was well known by the people living there, but it remained outside of the European interest sphere, partly owing to the bad press inherent in the ancient images, sustained also by newer ones provided by missionaries and other travellers to the North, and partly to sensational reports about vanished expeditions and shipwrecks in the ice. Meanwhile, the European exploits outside of the Arctic were fuelled by what Pratt has called a new planetary consciousness, based on the descriptive practices of natural history (Pratt 1992: 15). She elaborates: "The systematic surface mapping of the globe correlates with an expanding search for commercially exploitable resources, markets, and lands to colonize, just as navigational mapping is linked with the search for trade routes" (Pratt 1992: 30).

This finally brought the Arctic edge of the world into the geographic picture in the 19th century, where the quest for new trade routes impinged itself upon the European mercantile mind. Visions of both a Northeast and a Northwest Passage that would shorten the route to Asia considerably were strong inducements to Arctic exploration. In the first half of the

19th century, the British dominated in this effort, due in part to a huge fleet that had become superfluous after the termination of the Napoleonic wars. Later the Scandinavians and the Americans entered the scene. Of course, trappers and whalers had been around for much longer, and not for entirely different reasons. For all parties, the presumed gains related to trade, either directly through the catch of whales and the selling of blubber, or indirectly by the search for new trade routes to the Asian markets. In the search for the Northwest Passage, European navigators entered into the Davis Strait, between Baffin Island and Greenland, named after the explorer John Davis, leader of three expeditions organized by London Merchants in 1585–1587, hoping for returns in whale oil.

The whalers and navigators of the Davis Strait and further north made contact with hunters in West Greenland, and it was the presence of British, Basque, and Dutch whalers in this sea—and rumours of the returns—that in the 17th century reminded the Danish king Christian IV of this far Northern territory, that was part of the Danish kingdom since 1380, when Norway and the North Atlantic island communities had become incorporated through an act of marriage. Eventually this led to a (rather small-scale) colonization of the (south)western coast in the 18th century and onwards. Only much later did the population of (the not yet named) Thule in the far North come into view. The Scotsman John Ross, who was sent out by the British Admiralty to find the Northwest Passage (which he failed) and map the areas he visited (which he did), was the first to report his encounter with this people (Ross 1819). The account of the encounter with the Eskimos is fascinating and often moving. Captain Ross was quite taken by these people, whom he affectionately referred to as Arctic Highlanders—establishing his own analogy between the foreign and the familiar.

> The origin of the Arctic Highlanders, or inhabitants of Prince Regent's Bay, is a question as yet involved in peculiar obscurity. They exist in a corner of the world by far the most secluded which has yet been discovered, and have no knowledge of anything but what originates, or is found, in their own country; nor have they any tradition how they came to this spot, or from whence they came; having, until the moment of our arrival, believed themselves to be the only inhabitants of the universe, and that all the rest was a mass of ice. (Ross 1819: 123–24)

In this case, the discovery went both ways; Ross and his crew discovered an unknown tribe, and the Eskimos did the same. For both parties, the people from beyond caused wonder and excitement. What we have learned since then is that the Arctic peoples in general knew very well where they were and had a keen sense of geography and mapping (Bravo 1996; Hastrup 2013b). They may not have had cardinal points as known on the European compass, but they had a complex set of terms for both proximate and more distant orientation (Boas 1964 [1888]; Fortescue 1988).

The mappers of the North met with people living there and knowing their landscape from within; the explorers were not particular in their seeking out knowledge that might point them towards their goal, and they often actively sought out so-called native maps. While there is no indication of a longstanding, local mapping tradition in the form of a systematic graphical and totalizing representation of the landscape, 19th century explorers from Europe were impressed by the ease with which the locals were able to draw and discuss the nature of coastlines and places. An early case is that of Captain William Edward Parry (analyzed by Bravo 1996), who was commander of a British expedition set out to search for the Northwest Passage in 1822. He did not find any passage, but in his diaries he related how people on Winter Island, and most prominently a woman informant, were able to render the landscape "with astonishing precision" (Parry 1824: 277, quoted in Bravo 1996: 4). Parry more generally bowed to "the geographical information obtained from the Eskimaux . . . on which I conceived the greatest reliance may be placed" (Parry 1824: 489, quoted in Bravo 1996: 4). Many other cases of shared cartographic reasoning are known, testifying to a success in cross-cultural communication, if not necessarily to an exact commensurability of interests.

The question of accuracy presents itself forcefully in Parry's astonishment over the precision of 'Eskimaux maps'; here precision had a lot to do with the inherent promise of an open Polar coastline depicted by his informant, the accuracy of which he could not ascertain (as yet). It also rested upon the establishment of a truly communicative space featuring as a contact zone in the sense suggested by Pratt, foregrounding "the interactive, improvisational dimensions of colonial encounters so easily ignored or suppressed by diffusionist accounts of conquest and domination. A 'contact' perspective emphasizes how subjects are constituted in and by their relations to each other . . . It treats the relations . . . in terms of co-presence, interaction, interlocking understandings and practices, often within radically asymmetrical relations of power" (Pratt 1992: 6–7). In the Arctic, the asymmetrical relationship often featured the explorers as the less powerful within the forbidding environment.

For some time it remained a point of discussion among European sailors whether the Polar Sea was at all accessible (Bravo 2006). After Ross, many other Arctic expeditions were to be stopped by the ice, either to return or to go down. Among the more spectacular failures was the Franklin Expedition, 1845–1848, which actually came within sight of the Northwest Passage, only to perish due to the ice. The remains of the expedition were found only after several search expeditions, each in their turn contributing new facets to the Arctic map. Some of the sailors were found more or less mummified, or 'frozen in time' as a popular book title goes (Beattie & Geiger 2004). The perceived resistance to penetration of the frozen North accounts for much of the heroic masculinity that adheres to Arctic exploration reaching its high point at the moment in history when the

press developed into a daily news service and could communicate the feats (Bloom 1993; Riffenburgh 1993).

Explorers, whalers, and reporters all had a long-lasting impact on the regional maps, which bear all the marks of success and failure in the Arctic. Just like the frontiersmen and (later) treaty makers in North America affected the Indians, by which they became irrevocably part of a larger vision of a New World (Brody 2002: 48–71), so also for the tiny Arctic populations who were met with both wonder and bewilderment. The impact of the early explorations and the 'discovery' of the Eskimo have unfolded ever since. "In fact, realization of the momentous importance of the discovery of the Americas came only with a whole series of later discoveries—and these may not yet have come to an end" (ibid.: 71).

In the above, we can see how the maps collate "on the same plane heterogeneous places, some *received* from a tradition and others *produced* by observation. But the important thing here is the erasure of the itineraries which, presupposing the first category of places and conditioning the second, makes it possible to move from one to the other" (de Certeau 1984: 121). In other words, geographical representations are always imbued with ancient images, historical trajectories, and not least interests of various kinds—social, cultural, and colonial.

The question of accuracy in mapping is therefore unanswerable in strictly cartographic terms, because it is never simply a question of depiction or geometry but also a question of production, history, and points of view—and particular cartographic practices. The 'more' of Arctic geography relates to ancient images of an indistinct North, where land, sea, and heaven were often indistinguishable, and which resisted penetration and left people frozen in time. Meanwhile, other people had actually made the Arctic their home for thousands of years, and it is to their emergence in the human sciences that we shall now turn.

IDENTIFYING THE ESKIMO: THE QUESTION OF AUTHENTICITY

While geographical space was mapped and knowledge of the Arctic became established in late 19th and early 20th century, the Eskimos were likewise discovered and identified—by geographers, archaeologists, and anthropologists—as a people supremely well suited to the Arctic after a long history of adaptation. The history began when North America was first populated in the later part of the last Ice Age, some 10,000 to 12,000 years ago. It was part of the larger immigration from Asia to the Americas, made possible by the land that connected the two continents while the ice has 'stored' the water that was later to flood the region and open up the Bering Strait. Among the people crossing, some went along (more or less) the Northern coast, and became 'Eskimo', whereas those who steered south

became 'Indian'. Once named by social and human scientists, they took on their distinct lives in assorted imageries. A Danish cultural geographer, H.P. Steensby, suggested that the Eskimo culture grew out of an evolution of the Indian culture's 'winter-side', through its adaptation to the ice of the Polar Sea (Steensby 1905: 199). Culture and climate were seen as two sides of the same coin in the land of the winter-people.

Today, recent studies of ancient DNA suggest that there have been at least two major waves of immigration into the Arctic regions of North Canada, one of which is considerably older than hitherto assumed. Clearly, trappers and whalers, missionaries and traders, not to speak of the neighbouring peoples slightly further south, knew the Eskimo—by various names—all along. But it was only with the dawning ethnographic interest in the region that the Eskimo became transfixed. We already heard how Thule found its place on the map, thus merging with metaphor. It was also to find its place in time, in the name of a prehistoric Thule culture, bestowed upon it by archaeologists as the name of the authentic Eskimo culture. The Thule culture was so named by the Fifth Thule Expedition (1921–1924)—the pinnacle of Knud Rasmussen's ethnographic achievements and including the Danish archaeologist Therkel Mathiassen.

The objective of the Fifth Thule Expedition was to trace the migration routes and links between the various Eskimo groups living in the very thinly populated coastal areas of Northern Canada and Greenland; the total Eskimo population in the Americas was an estimated 10,000 at the time, and it was possible (almost) to meet with them all. The main investigations of the expedition took place among the Central Eskimos, first described by Franz Boas (1964 [1888]). It befell Therkel Mathiassen to undertake the archaeological excavations in order to trace back some of the salient features of these people through digs in the deep-frozen landscape of the Canadian North. It was not an easy task, as we can see from his description:

> Everywhere the greatest difficulty was the frozen ground; even when the summer was at the warmest only two or three centimetres thawed in the course of the day, the result being that one was three or four days in getting through a layer of 10 cm; as an example I might say that it took more than a month to get to the bottom of a house-ruin that was almost levelled to the ground, or to the bottom of a deep refuse heap. But by having a large number of ruins and sections in hand at the same time the work nevertheless proceeded fairly well. (Mathiassen 1927a: 2–3)

What strikes me in this passage is that it provides a general picture of field science, working through layer after layer of meaning by a painstaking process, in this case of digging and thawing—reflecting both human and solar work. By this method a new culture was thawed out of the icy surroundings,

in a curiously inverse process from the ethnographic gesture of narrative freezing. It is safe to claim here that the Thule culture was indeed emergent even if in its own way frozen in time.

During the Second Thule Expedition (1916–1918), the members had briefly assisted Captain Comer who did some digging in the vicinity of the Thule Station in North West Greenland, and along with a midden a certain number of dwellings and tools had been found and registered. When Mathiassen started digging in the area of Naujan in Canada—now inhabited by the Central Eskimos—he recognized some of the tools from Comer's midden, and he says:

> As the first find of this culture was thus found at Thule by members of the Second Thule Expedition and the second find, at Naujan, was made by the Fifth Thule Expedition, I consider it warrantable *to attach the name of Thule to the old Central Eskimo culture as represented by the Naujan find*. (Mathiassen 1927a: 89; emphasis original)

The interesting point in the present connection relates to the backtracking of the Thule culture itself. It is "a highly developed and remarkable Eskimo culture" (Mathiassen 1927b: 6), which, "in many respects, is richer and more developed than that met with among the present day Central Eskimos." The latter were caribou-hunters; apparently caribous could not be part of the typical Eskimo culture in the versant imageries, and consequently the Caribou Eskimos were deemed poorer.

The Thule culture is identified by its main tools, of which 35 are listed and charted. The list is not exhaustive, Mathiassen says, but they are the most characteristic. They allow us to understand how the ancient Eskimo inhabiting the Arctic shores of Canada lived. They were equipped with dog-sledges, kayaks, umiaks, blubber-lamps, igloos, spears, bows and arrows, salmon-spears, ulos, and hand drills; they knew how to make clay-pots and to hollow out soapstone for lamps. In addition to the building of igloos they also knew how to construct houses with whalebones—a surplus gain from the hunting of whale. In short, they were supremely well equipped to life on the coast of the Polar Sea.

Mathiassen's objective was to add sound archaeological evidence to the earlier speculations provided by H.P. Steensby (1905, 1916) on the origin of Eskimo culture. As it happened, Mathiassen did not find any evidence in support of Steensby's suggestion of a paleo-Eskimo culture, but on the basis of excavations of ten places in the region, Mathiassen suggested that while the Thule culture might not be "the original Eskimo culture, "it was still the oldest culture of that particular region: "Everywhere we find at the bottom of the refuse heaps and in the earliest ruins a typical Thule culture, bearing in fact a stronger stamp of marine animal hunting the deeper we go" (Mathiassen 1927b: 200). The earlier, and the more dependent on the big sea-mammals, the more typical the Eskimo culture was seen to be.

Just a few years later, Mathiassen takes a further step, now speaking about the *authentic* Eskimo culture, "which has been called the Thule culture," and he goes on to enumerate the typical tools and artefacts—in the same manner as in the scientific report (1929: 163). Thus, already in 1929, the Thule culture had taken on a life of its own, having been invented (by himself) only a few years before. The Polar people living on the edge of the horizon suddenly had not only a dimly perceived and narrated past but also a prehistory—emerging full-scale from the frozen field. A particular culture had become objectified on the basis of its relationship to nature, and identified on the basis of technologies that connected people to the animal world.

Thus, the Thule culture was not simply a prehistoric culture among others, but the *authentic* Eskimo culture—establishing the prototype of a community of Arctic hunters, relying on sea-mammals. It was not the oldest among the Eskimo cultures, but it was the one most befitting the ancient image of a people living on the edge of the world. The caribou-hunters whom the Fifth Thule Expedition met with in person, so to speak, were no match for this image, and Mathiassen speaks rather lowly about them. Authenticity, then, is very much a token of the application of the general image of Thule to a particular people. Even today, Inuit of Northern Canada are attributed with an ancestry that goes back to the Thule culture (e.g. Wenzel 2009); this is what backs the claim to continuity and indigeneity.

This takes us towards an extended notion of Pratt's contact zone, suggested by Donna Haraway to also incorporate contacts between different species (Haraway 2008: 205ff). As we can see, the authentic Eskimo culture was largely distinguished by the close relationship between humans and marine mammals on the brink of the Polar Sea. And this is where the notion of a pure cultural history breaks down, because it cannot be cut loose from its moorings in nature. With respect to the whales that were retrospectively defined as the primary game for the Eskimo hunters, we note that these were also the animals that attracted the Europeans to the Arctic regions as an almost emblematic resource, underscoring the entanglement of economic and explorative interests in the mapping of the region.

With respect to the authentic Eskimo, as defined by their intimate relations with the marine mammals, we may see these animals as their companion species, to use a term suggested by Haraway for species that co-shape each other. "Companion species is a permanently undecidable category, a category-in-question that insists on *the relation* as the smallest unit of analysis" (Haraway 2008: 165; emphasis added). The concept of 'species' itself is "full of their own others, full of messmates, of companions" in spite of its being framed by a vision of taxonomic order, of logical types, and of watertight conceptual boundaries (Haraway 2008: 165). The notion of companion species therefore in itself points to a hybridity of categories that subverts the Enlightenment vision of the universal natural order.

Haraway's view of companion species actually echoes an observation made by Marcel Mauss (1906), who described the remarkable

intertwinement of natural and social seasons in Eskimo society, and suggested that the twofold culture reflected "a veritable phenomenon of symbiosis that forces the group to live like the animals they hunt " (Mauss 1906: 55). Whoever studied the Eskimo in the past (as did Boas; Mauss; and Rasmussen [1908] among others) or engage with the hunters of the Thule District in the present could not and still cannot know the people apart from their location and their way of living. Thule has become emblematic not only of a far and almost uninhabitable North, it also carries the weight of naming the emblematic Eskimo culture, which today is still found alive and kicking in North West Greenland.

The question of cultural authenticity, which was raised by Mathiassen, and which still surfaces from time to time in anthropology, in practice can only be answered by integrated reference to both people and places—as well as knowledge interests and scientific performance. Different perspectives and scales play a significant part in this, in addition to obvious clusters of artefacts. By the tokens established by Mathiassen and acknowledged by later generations of archaeologists and anthropologists, the people living in the present day Thule District are the last living exemplars of the particular culture, and we shall return to them after considering the mid-20th century scientific development in the Arctic.

GEOPOLITICS OF THE ARCTIC: THE QUESTION OF CONTROL

In prehistoric times, the deep-frozen, narrow strait between Greenland and Ellesmere Island had provided a bridge for shifting groups of Eskimos migrating from the Americas to Greenland in search of new resources during 5,000 years (Gulløv 2004). The closeness of the two continents at this place was essential for the not-yet Greenlanders—as was the *polynya*, a year-round open water where the marine mammals could breathe and provide a constant supply of food for people and their dogs. If the Thule people had been seen as isolated from the rest of Greenland in the early 19th century when first described by Ross, they had not always been so. In late 19th century, their role as cultural bridgeheads was refashioned by their being excellent helpmates for Polar explorers, wanting to get even farther north. Among them was Robert Peary, spending years among them in the period 1891–1909, while exploring the options for getting to the North Pole by way of North Greenland. He offered an ethnographic account including an allegedly complete census with names; in the early 1880s they numbered 253 people according to him (Peary 1898). He was impressed by their skills and attributed a large part of his success in reaching the Pole in 1909 to them (Peary 1917).

If, in colonial times, access to the Arctic was craved for the sake of completing the world map on the one hand, and for accessing the resources on

the other, at Peary's time, and later Knud Rasmussen's, the people were the main interest—either as helpmates or as subjects of ethnographic thirst. This was to shift somewhat during the Cold War, which was also the period of decolonization and emerging new states further south. The landscape having already been mapped, and the whaling having lost momentum, for outsiders the Arctic resources came to be seen mainly in terms of military and scientific gains. Again, the Thule District became central in the efforts to bridge and control the intercontinental relations. Thus, an American air base built in the vicinity of the central settlement at the Thule trade station forced people to relocate in 1953 (Brøsted & Fægteborg 1985). At the time, the entire population of the vast district was c. 300 (Gilberg 1976).

Military and scientific progress was more or less conflated in the launch of the International Geophysical Year 1957–58, a successor to the two previous International Polar Years in 1882–83 and 1932–33. The Polar Years facilitated international collaboration in a range of domains, and important advances were made in Polar biology, meteorology, and geology. The second Polar Year was particularly concentrated on meteorology, which was vital in the establishment of Polar transport routes, the major issue at the time. With the International Geophysical Year (IGY) in 1957–58, the effort of gaining new knowledge was overlaid with Cold War politics. By the end of the Second World War, the geography of the Earth had been defined by national and international boundaries and seven states had even more or less occupied Antarctica (Collis & Dodds 2008: 558ff). After the IGY, an Antarctic Treaty was signed in 1959, in which the parties declared Antarctica a zone of peace and a "continent for science" (ibid.: 563).

In recent studies of Cold War science, it has been abundantly demonstrated how science became an integral part of the military-industrial complex in the period. In the Arctic, the desires of the defence industries and the earth sciences were mutually constituted, and both were fuelled by a renewed political nationalism (Powell 2008: 619, 620). This also very much applied to oceanography, where naval interests in the Northern seas fostered (read: financed) 'pure' scientific research (Oreskes 2003). Both navy and science wanted to find out more about the deep unknown, and in a significant way "military concerns were naturalized, and the extrinsically motivated became the intrinsically interesting" (ibid.: 730). In other and more general words the context of the scientific motivation entered into the constitution of scientific questions.

Meanwhile, scientists had noted that "the Arctic affords a straight line attack to the Eurasian centres of our potential enemy, and because of that if for no other reason, we must give full consideration to the best [scientific] exploitation of the Polar regions" (Geographer Paul Siple, quoted in Collis & Dodds 2008: 566). In the United States, the strategic interests centred on Greenland, situated on the shortest line between the (then) two superpowers, and thus "a likely avenue of approach for untold destruction" (Martin-Nielsen 2012: 69). As Greenland belonged to Denmark, an agreement was

made that allowed the United States to assume "exclusive jurisdiction over so-called defense areas in Greenland" (ibid.: 71). In Greenland, the area around the Thule trading station took the brunt of the effort; an air base was built, and the age-old hunting grounds were declared off limits for the local hunters. Although still a tiny population, it certainly needed a lot of space and freedom of manoeuvring in pursuit of game, so it was not an insignificant infringement on their lives, effectively barring them from the mid-District trading post, which had been at the centre of their social life since 1910.

The military efforts entailed new scientific efforts in the region, spurred by a wish to control the formidable nature, threatening the strategic interests. As so lively described by Janet Martin-Nielsen (2012), the efforts of controlling nature were directed mainly against Polar whiteouts, where clouds, snow, land, sea, and sky become indistinguishable, and which are therefore extremely dangerous for travelling and landing on the ice. This led to a scientific pursuit of weather modification techniques, aimed at dissipating whiteouts by cloud seeding, i.e. by introducing "an agent which undergoes a natural phase change at a suitable temperature (typically below –40°C) into a cloud so as to force the cloud droplets to form ice crystals and precipitate out as snow, thereby creating a clearing in an area which had previously been obscured" (Martin-Nielsen 2012: 75). The point was to dissipate the whiteout, before it reached its full fury; it generally failed, however, partly because the entire environment made cloud seeding flights so hazardous in the first place, and the violent winds prevailing made it difficult to control the cloud seeding procedure (Martin-Nielsen 2012: 76). Another target of the military/scientific interest were the plastic movements of the ice sheet, which endangered the 'city under the ice', at Camp Century, 138 miles east of the Thule Air Base. Being a nuclear-powered military installation, the viscosity of the ice itself was a major hazard (Martin-Nielsen 2012: 76ff). The wish to control nature did not work there either, but it did bring the sciences of snow and ice a big leap forward, also towards a realization that in the High Arctic, there is no way to fight against nature, one must cooperate with it.

The military presence continued, and in 1968, when the weather- and ice-modification experiments had been all but abandoned, the Thule hunters experienced another failure of control, when an American plane crashed on the ice, dropping two nuclear bombs into the sea—after which hunters were employed to clean up the radiation-contaminated snow in the area. This still casts a long shadow into the present, and the ambiguity of the (foreign) military and scientific presence in the area continues to concern the people.

Today, the geopolitical order has changed and security issues have been placed in a new and broader regional and global perspective, "with the most urgent challenges no longer confined to military and defence issues, but rather involving a concern with environmental problems and the need

for viable economic development as well as sound environmental management, conservation and utilization of natural resources" (Dey-Nuttall & Nuttall 2009: 23). While geopolitics now rests on a notion of 'comprehensive security', incorporating environmental and humanitarian issues, the actualities of climate change—and thus the visions of nature—have nevertheless fostered a new race for control, reminiscent both of 19th century exploration and of Cold War concerns. As stated in a new report on the geopolitical challenges:

> Over the last decade, at least three factors have increased and broadened the political concern with the Arctic: A shrinking ice cap that increases accessibility to resources and potential shipping routes; technological developments facilitating extraction of resources (mostly 'petro') from deep seas; and the ratification of UNCLOS, which has allowed countries to extend their sovereign right to harvest resources into the sea, has put the Arctic back on the political map. (Strandsbjerg 2010: 8)

In the sea north of Greenland there has been a number of mapping expeditions, with the purpose of establishing the 'natural boundaries' between sovereign states as defined by the continental shelf (and as stipulated in the UNCLOS, the United Nations Convention on the Law of the Sea—ratified by Denmark in 2003). While scientists have collaborated in the cartographic exercise at the bottom of the Polar Sea, the nationalist political rhetoric in Canada and Russia (in particular) is escalating (Strandsbjerg 2010: 17). Adding to the performed diplomacy between contenders to the Polar Sea, the Inuit Circumpolar Council (ICC) published a declaration of sovereignty in the Arctic in 2009, demanding that their rights be respected, as these were based on thousands and thousands of years of living in the region. The politics of cartography and conquest once again became fully flared.

This is no small issue, given that the perennial ice cover on the Arctic Sea is disappearing, and that according to some estimates one quarter of the fossil energy reserves in the world are to be found in the Arctic, which already has become a major inducement to exploration and appropriation. In the midst of international contest over (potential) resources, Denmark has to balance on a tightrope between claiming supremacy on the one hand and respecting the Greenlandic self-rule government and its wish to make Greenland fully independent in a not-too-distant future on the other. In a new Arctic strategy for the Kingdom of Denmark, including the Faroe Islands and Greenland, launched in September 2011, the quest for control reflects all of these interests, in wildlife and mineral resources, in political cohesion and the avoidance of conflict, in protection of indigenous rights, and in developing maritime security (*Kongeriget Danmarks Strategi for Arktis 2011–2020,* 2011). Possibly the most astonishing point is the emphasis on 'the kingdom' and its position as agent in the Arctic; it is as if the seriousness of the challenges ahead calls for a grandiloquent rhetoric,

anchored solidly in the past, and reminiscent of the 17th century impetus for recolonizing the far North—which had been discovered and settled by Norsemen in the last wave of Viking expansion on the North Atlantic.

What I am suggesting here is that politics both *defines* and is *defined by* perceptions of nature, and of nature's openings and closures so conspicuous in the Arctic. With respect to Denmark's Arctic strategy, we are reminded about Brody's discussion of the treaties made in the previous century between the colonial powers and Indian nations, of which he said:

> These northern treaties do not suggest a direct contradiction or antagonism between different economic forms or different means of production. Their terms do not principally spring from an immediate conflict of economic interest (as they had in the case of the American plains twenty years earlier), but from a wish to protect the white man's frontier (whenever or wherever it might need to be) against possible limitation in the future. (Brody 2002: 64)

The new geopolitics of the Arctic displays a similar wish to protect the frontier against possible limitation in the future, as yet unknown and only partially imaginable. The question of control, as transpiring from the strategic deliberations put forward by various political bodies, is thus based as much upon an anticipation of nature as upon a social or moral imaginary. And again, the proper anticipation of nature is still commissioned from scientists working and defining the Arctic in one and the same move. John Cloud has a point, when he suggests that "all the sciences were mobilized globally for World War II, and they were not demobilized in the 50 years and more that followed" (Cloud 2003: 629); in other words, while the Cold War may have ended, the sciences are still mobilized by extrinsic interests that become naturalized in intrinsic motivation, to return to Oreskes' point above.

What we need to know, when we probe the question of control, now and then, is still how far it is possible to distinguish between science and politics in the Arctic; there seems to be a remarkable epistemic confluence between global science and national interest (cf. Powell 2008: 622). At issue today, when climate change hits the Arctic in so many ways, is also the status of meteorology; if anything this was established as *the* international science during the Cold War (Harper 2003), yet it developed very much on the military-civilian interface, and in the wake of particular interests—also in the Thule District, where the Americans even sought to shift the local weather around to prevent the whiteouts.

The entanglement of politics and weather forecasting in the Thule District and the renewed and crucial cartographic practices in the Polar Sea testify to the scientific underpinning of political control and the distribution of spatial rights. The geopolitical quest for control rests upon a vision of nature as unified and objectively knowable; while in the colonial era, boundaries were often first drawn on a map and then put into practice,

today the identification of sovereignty in the Arctic rests on a detailed, scientific reading of underwater geophysical boundary markers, emerging as such in the wake of international legislation.

ELUSIVE HUNTERS: THE QUESTION OF OPPORTUNITY

Living in the Arctic means living in an animate world, where part of the animation is owed to the massive seasonal changes, while another part is owed to the close relationship to the animal world, as noted above, and which is probably better described as a profound entanglement of natural and social agents. Presently, the agents have become increasingly shifty with the changes in climate, and the concurrent destabilization of places and maps. This further induces us to reconsider our preconceptions about the Arctic, as lived and imagined through the centuries, with a view to probing the question of opportunity in far Northern places, as these open up.

I take a clue from Doreen Massey's claim that place is always an event of configuration. It is "the coming together of the previously unrelated, a constellation of processes rather than a thing. This is place as open and multiple. Not capturable as a slice through time in the sense of an essential section. Not intrinsically coherent" (Massey 2005: 141). In the Arctic, the elusiveness of place is amplified by the fact of the thinning, degrading, or melting sea-ice, which is so much more than a geophysical matter, by being integral to social ontology (see also Bravo 2010: 446). This implies that sea-ice is understood both in terms of its composition, texture, age and structure, and carrying capacity, and in terms of the implicated social relations among people and between people and prey. These relations are formatted along with the changing expanse and solidity of the sea-ice. The complex sociality of the sea-ice points to a knowledge space that is an alternative to geophysics, but neither inferior nor simply traditional—as opposed to scientific. It is just another assemblage of located knowledge produced by social work, and incorporating new experiences of fragility of the ice as well as society—as people in the High Arctic have known it for ages. In view of the manifest changes, both hunters and scientists seek to anticipate nature's course to diminish uncertainty about the future (Hastrup 2013a).

In the far North, and notably in the Thule District—in Greenlandic known as Avanersuaq (The Great North) and centring on the town of Qaanaaq at the Whale Sound with some 700 inhabitants—the hunt for sea-mammals is by far the most important way of making a living. Here, the uncertainties about the future multiply (Hastrup 2009a, 2009c), but so may also eventually the opportunities. The uncertainties are a feature of a changing environment, but also of a changing political system in Greenland (Nuttall 2009); adding to this are new international measures of wildlife protection translated into local quotas on the game, all amounting to a perfect storm. The changing topography and seasonality of the sea-ice

also deeply affect the behaviour of the companion species. When hunters set out for game, they need to orient themselves in relation to a destination that is the epitome of an elusive place, such as the point (in time and space) where one might get a narwhal for instance (Hastrup 2013b). Given the enmeshment of all of these features, navigating the changing ice has become increasingly complicated not only in Avanersuaq, but in Greenland and the Arctic more generally (Krupnik et al. 2010).

Planning difficulties are of course an immanent feature of living by hunting (Bates 2007). For the fieldworker it can be agonizing to wait for a decision of when and where to go; it may seem that there is neither plan nor direction, but of course there is. 'Planning' does not imply setting a firm course or a final destination well in advance of the hunt. Rather, it means sensing, looking, probing, assessing, and conversing about the options, and more generally to engage in a profound anticipatory exercise regarding ice, animals, weather, and wind, not to speak of dogs and other gear that must be ready. In the whaling season in the far North, the entire community, including people who are not hunters, is engaged in an ongoing conversation about the concrete opportunities and more abstract merits of different hunting grounds. People are collectively involved in mapping the prospects for hunting success, upon which the future of the settlement ultimately depends, and thus their collective orientation; anticipation, expectation, and sensing are all elements in this (Nuttall 2010). Opportunities are always identified within particular knowledge spaces, even as these are changing along with the places, and eventually the decision of when and where to go is made on the basis of individual and collective reasoning, as well as a general feeling of the time being 'right' (cf. Brody 2002: 37). While the anthropologist may find the waiting time empty (of action, that is), the hunters are continuously engrossed in an act of assessing the affordances of places that are as elusive as their companion species and prey.

Stressing the dynamic anticipatory practices of the Arctic populations opens up for a refashioning of the still dominant anthropological view of cultural loss due to the dramatic changes in the landscape (e.g. Crate 2008). Vulnerability has been a key point in such descriptions, and local, traditional knowledge has been described as oppositional to scientific knowledge (Smith 2007). While changes are indeed occurring and urgent ethnographies have been made, there is more at stake in the current vulnerability discourse. As suggested by Cameron, the problem "is the equation of Indigeneity and the *human self* with the traditional and the local, and the ways in which such a formulation extends colonial forms of knowledge and practice" (Cameron 2012: 111). Even the most well-meaning ethnographic practice of listening to and recording 'native voices' potentially denies people their place in a global order, climatic, political, moral, and profoundly modern, if this term still holds anywhere.

Knowing people in Avanersuaq I would argue that neither their world nor their knowledge is more traditional or local than anybody's. It is *located*

and enacts a particular knowledge space, but it extends as far as it takes to address a particular issue—be it related to animal behaviour, social relations, global warming, or future possibilities. Their cartographic practices of course relate to present concerns, and their navigational skills unfold in a changing landscape. The result is a dynamic, integrative framework for navigation, which enables the processing of observations and the assembling of knowledge of all kinds and from all available sources. In the High Arctic, a flexible framework for orientation is what has allowed the people to survive changing climates throughout prehistoric and historical time (Wenzel 2009; Sørensen 2012). Mobility has been a key factor in this, but also a readiness to exploit new species. If the map is not the territory in any definitive sense, the inverse may actually have some truth in the Arctic.

I want to recall here the analysis of Indian maps made by Hugh Brody in Northwestern Canada. Brody asked people to draw the maps of their various hunts, reflecting various species, assuming that the Indian mappers, especially older men and women, would draw different maps from different periods of their hunting lives. In spite of noticeable changes in the socio-political environment and in access to particular tracts, all the mappers insisted that the lands they used five years ago are the same as the ones they used thirty years ago.

> Their hunting system, which is based above all on the skilful tracking of animals that live all year round within a general area, requires a comparatively large territory. Hunters may use part of this territory infrequently; some locations they may not have seen for twenty years. But no part is therefore dispensable: dependence is upon the territory as a whole. Successful harvesting of its resources requires knowledge of animal movements over the whole area, including places that are rarely, if ever, visited . . . The land-use maps show a pattern of harvesting that is flexible in details but surprisingly constant and extensive. The Indians say, with their maps, that they continue to use or need, all of their territories. (Brody 2002: 174)

A similar feature goes for Avanersuaq, where one also finds a remarkable consistency in the implicit maps, even if particular place names referring to topographical features are no longer consistent with the occurrence of the ice, for instance. The whole of the Thule District is still the territory, all while the smaller settlements on the fringes dwindle, and people become increasingly caught up with the politics of more centralized communities—offering modern facilities of all kinds. With the melting ice and the opening up of new routes to the Polar Sea, and with the shifting resource basis, the territory stretches even farther and embraces future possibilities in other regions of Greenland and beyond.

In sum, there is no such thing as local knowledge as opposed to scientific knowledge; there are different knowledge spaces, assembling places and

knowledge in actual practice. These knowledge spaces produce different *spatial vernaculars*, to introduce a term suggested by Whatmore, upsetting the geometric habits of conventional cartography, by being "fluid, not flat, unsettling coordinates of distance and proximity; local and global; inside and outside" (Whatmore 2002: 6). The spatial vernaculars of the Arctic are based upon an engagement with natural agents such as sea-ice, walruses, glaciers, seals, and dogs, not to speak of whiteouts, unpredictable winds, and shifty sea-currents. Orientation within the region presupposes serious social and creative work that assemble knowledge from the motley of practices, instrumentation, theories, and people, to once again paraphrase Turnbull's notion of a knowledge space (2003: 38).

This kind of orientation challenges any notion of bounded and local social communities, and forces us to think of 'social resilience' as a feature of social flexibility and a human capacity for *re*orientation and anticipation of future opportunities (see Hastrup 2009b, 2009c). Given the almost unimaginable historical changes, technological advancements, upheavals, and now (once again) climate change the Arctic peoples have faced since they were first described, they make a strong case for the formidable human capability to identify and anticipate new possibilities. As Mark Nuttall has it:

> Inuit have not just adapted to the Arctic environment; they have anticipated the possibilities and conditions for successful engagement with it. In Greenlandic traditional communities, e.g., hunting and fishing involve not merely procurement, but also anticipating, waiting, hoping, pondering, and imagining the movements of seals, narwhals, fish and other animals to be caught, as well as anticipation and apprehension of the return home. (Nuttall 2010: 25)

We may see the age-old migrations across and between North America and Greenland as part of this, but also, significantly, the social patterns of food-distribution and sharing which have levelled out the differences between people with temporary good or bad luck in the Arctic communities (Wenzel 2009). While nature may play tricks on people everywhere, they do not adapt blindly; they respond with a deep sense of sociality based in a constant and pressing assessment of present and future opportunities, and a consistent reasoning about how to place and replace themselves. In that sense, the hunting communities have always been elusive.

CONCLUDING REMARKS

In this chapter, I have focused on the field of practices, by which we have come to know the Arctic at the nature/society interface. In the course of my discussion the distinction between the two has proved untenable, as

have the distinctions between science and politics, modern and traditional, space and knowledge. By unpacking different modalities and histories of knowing the Arctic, I have wanted to show how knowledge about the Arctic is assembled from particular viewpoints, all of which operated beyond the distinction between things natural and things social, and created their own geographical 'more'. What is necessary in anthropology at this precise moment of major environmental change in the Arctic is to admit that all social worlds are emergent, and new histories unfold as people respond to anticipated futures and natures, as much as they react on past experience and traditional knowledge.

I have also wanted to substantiate the claim made by Latour that matters of concern are instrumental in the constitution of matters of fact (Latour 2004). The Arctic has always come to life in images built on particular interests and concerns, while producing the facts. In consequence, I suggest that instead of arguing within a *contradictory space* of natural and social constituents, we might go along with the transformative move to a *differential space*, as suggested by Lefebvre, in which we acknowledge the legitimacy of diverse knowledge interests (1991: 399). Along with this acknowledgement comes an admission of our own perspective and its inherent scaling of our object of study (Hastrup 2013c).

More than anything, I have wanted to show how the particular and the general are intrinsically connected; together they create places and people. The force of anthropology is neither located in particular ethnographic detail nor in sweeping generalization, but in their inevitable entanglement in the anthropological knowledge space—within which nature is already enfolded.

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14 Designing Environments for Life

Tim Ingold

Design is about shaping the future of the world we live in. Yet in many ways it seems a hopeless endeavour, predicated upon the failure of our predecessors. Had they succeeded in shaping a future for us, then we would have nothing left to do save to fall in line with their imperatives. Likewise, were we to succeed in shaping the future of our successors, then they in turn would become mere users, confined to the implementation of designs already made for them. Designs, it seems, *must* fail, if every generation is to be afforded the opportunity to look forward to a future that it can call its own. Indeed the very history of design could be understood as the cumulative record of concerted human attempts to put an end to it: an interminable series of final answers, none of which turns out, in retrospect, to be final after all. Or to adapt a maxim from the architectural writer Stewart Brand: All designs are predictions; all predictions are wrong (Brand 1994: 75).

This does not sound like a formula for sustainable living. Sustainability is not about projections and targets, or about the achievement of a steady state. It is about keeping life going. Yet design seems bent on bringing it to a stop, by specifying moments of completion when the forms of things fall into line with what was initially intended for them. "Form is the end, death," insisted the artist Paul Klee in his notebooks, "Form-giving is movement, action. Form-giving is life" (Klee 1973: 269). By setting ends to things do we not, as Klee intimates, kill them off? If design brings predictability and foreclosure to a life process that is open-ended and improvisatory, then is not design the very antithesis of life? How, following Klee's example, might we shift the emphasis in design from form to form-giving? How, in other words, can we think of design as an aspect of a process of life whose primary characteristic is not that it is heading to a predetermined target but that it *carries on*?

In this chapter I call for such a rethinking. I want to argue that design, far from being the exclusive preserve of a class of professionals tasked with the production of futures for the rest of us to consume, is an aspect of everything we do, insofar as our actions are guided by hopes, dreams and promises. That is to say, rather than setting the parameters for our habitation of the earth, design is part and parcel of the very process of dwelling.

And it is, by the same token, about the ongoing creation of the kinds of environments in which dwelling can occur. This is what I mean by designing environments for life. My aim, then, is to come up with a kind of manifesto for such design. To make a start, however, it is necessary to clear up a certain confusion concerning what we mean by 'environment', and it is to this that I turn first.

THE WORLD AROUND US AND THE GLOBE

We live in an era—or so scientists, policy makers, and statesmen like to tell us—when the environment is under threat in a way that it has never been before. Changes in climate could render large areas of the earth uninhabitable. I do not mean to deny the threat, or to underestimate its scale. I do however want to question whether the so-called 'environment' of scientific and policy discourses is one that human beings or any other creatures have *ever* inhabited. For what these discourses present to us is not the world we know from our everyday experience. Literally, of course, an environment is *all around* the person or organism whose environment it is. It is the phenomenal world that we perceive with our senses, including the earth beneath our feet, the sky arching above our heads, the air we breathe, not to mention the profusion of vegetation, powered by the light of the sun, and all the animals that depend on it, busily absorbed in their own lives as are we in ours.

I would like to take you all outdoors, into the open air, to remind you of this, because as long as we are cooped up in libraries, classrooms, or lecture theatres it seems to be something we can only imagine. It is, moreover, so fragile an imagining that it is readily crushed by the high-powered impact of technologies of data-projection that are designed to sell us things rather than to enhance our awareness or our powers of observation. What these technologies are telling us, in conference rooms around the world—furnished with exactly the same equipment, with blinds drawn to cut out the light, and populated by globetrotting international experts—is that the environment is not at all as I have just described it, or as we might find it were we to take a walk outdoors. It is rather a world whose reality is given quite independently of our experience of it, and that we can know only through the compilation of data-sets drawn from detached observation and measurement, and relayed back in the forms of maps, graphs, and images. It is apprehended as the globe with its atmosphere rather than a manifold of earth and sky, as a catalogue of biodiversity rather than the entangled lifeways of animals and plants, as susceptible to climatic change rather than the vicissitudes of weather.

For most people, the environment of everyday life is understood in the first sense. It is what we tend to call the *world around us*, extending from where we are to the horizon, with the earth below and the sky above. Yet it

is the second that predominates in the discourses of techno-science and policy making. From this latter perspective, the relation between people and the world seems to be turned inside out. When scientists and policy makers speak of the *global environment*, they have in mind a world that we have ourselves surrounded (Ingold 2000: 209–18). Expelled to its outer surface, we have become exhabitants rather than inhabitants. In a world conceived as a globe, as philosopher Martin Heidegger pointed out (in Wolin 1993: 103), there is nowhere for us humans to *be*. The earth affords habitation; the globe does not. While we may accept some responsibility for the global environment, it is not something to which we feel we can belong. How, then, can we respond to the prognostications of science? How can we act to safeguard the future of a globalized world that, in our experience, has already been taken from us?

I do not mean to imply that we should turn a blind eye to the changes, largely induced by human activity, which threaten the continuity of life in many regions of the planet. But I believe that the proper way to address this threat, and to secure the continuity of a world fit for both humans and non-humans to live in, is to close the gap that currently exists between the *experienced* environment of our everyday lives—that is, the world around us—and the *projected* 'environment' of science and policy discourse. At present, it seems to me, the gap is becoming ever wider. And for the discipline of anthropology, caught as it is betwixt these contrary understandings and committed to mediating between them, this poses an acute challenge.

To begin to close the gap, the first step is to bring it out into the open and recognize its existence. And the second is to acknowledge that the environment of lived experience is just as real, if not more so, than the one described by science, and that the wisdom, sensitivity, and judgement of inhabitants offers just as valid a basis for securing the continuity of life as do the models, predictions, and scenarios of scientists. Far from abandoning science, however, or opposing the knowledge of inhabitants to scientific knowledge, we need to find ways in which they can work together. This calls for both a revaluation of the environmental experience and creative interventions of lay practitioners and an acknowledgement that science and technology, too, are grounded in practices of habitation.

INHABITANT KNOWLEDGE AND SCIENCE

At present, with rather rare exceptions, this is not happening. The reasons for the failure are not philosophical; they are political. They lie in the overwhelmingly greater power of the neo-liberal state and corporate industry to enlist institutionalized science in the pursuit of their global interests—interests that, in the language of large corporations, more often than not pass under the rubric of 'sustainable development'. The calculus of sustainability is one that treats entire tracts of the earth's surface and the resources

they harbour as standing reserves for the continuing benefit of a globally distributed humanity, much as one might administer a trust fund for future generations. It is to protect the earth in the same way that the company protects its profits: This is not a question of personal care, based on familiarity and experience, but of book-keeping and rational management, of balancing recruitment and loss in renewables just as one might balance monetary income and expenditure. In short, sustainability is premised upon a perspective of exhabitation.

By and large, the management of sustainability has made it more difficult, not less, for the vast majority of people on the planet—who have access neither to corporate power nor to the wealth that goes with it—to inhabit the earth. Their lands, or their rights to use them, have in many cases been curtailed or confiscated; they have been divested of both the responsibility of care for their environment and the power to exercise it; and their knowledge has been reduced to evidence, answering to systems of governance and regulation not of their own making but imposed from above by more powerful interests. Thus scientific and inhabitant knowledge occupy two poles in a hierarchy of power, with science at the top and inhabitants at the bottom. They are like the two bulbs of an hour-glass, where the flow is unilaterally from the 'top down' rather than the 'bottom up'.

I am not suggesting that we should invert the glass. Today, more than ever, our actions in the world need to be informed by a science of the environment. But we need to put the glass on its side: to give equal weight to the knowledge and wisdom of both practising environmental scientists and inhabitants. For scientists are inhabitants too. Their studies are not just *of* the environment but are carried out *in* an environment. All science depends on observation, and observation depends on the same sensitivity and judgement in relation to the world around us that is key to the practices of inhabitants, be they scientists, farmers, foresters, fishers, hunters, or anyone else whose livelihoods are inextricably bound to the lands and oceans of our one Earth.

This rootedness of scientific inquiry in our habitation of the earth, its general messiness and incoherence, is something to be celebrated, not suppressed. We need to turn the relation between people and environment back again, from inside out to outside in. Only by doing so, by founding a science of the environment upon an ontological foundation that lets us *be* in the world we seek to know and understand, rather than expelling us from it, can scientific knowledge and the wisdom of inhabitants meet in the common project of designing environments for life.

GENEALOGY AND ENTANGLEMENT

Before suggesting how this might be done, a few words are needed about the meaning of life itself. For my contention is that the same logic that has cast humans on the *outside* of a globe has put life on the *inside* of the

creatures that populate its surface. It has come to be identified with an interior principle installed, from the moment of conception, at the heart of every organism, whence it orchestrates that organism's growth and development in an environment. The essence of life, in short, is supposed to lie in the genes. And according to what many students are told is the 'first law of biology', every living thing is the product of an interaction between genes and environment—that is, between a received set of interior specifications and the exterior conditions of existence.

In a celebrated passage of *On the Origin of Species*, Charles Darwin (1950: 64) imagined himself observing "the plants and bushes clothing an entangled bank." It is a compelling image. In the tangled bank, lines of growth issuing from multiple sources become comprehensively bound up with one another, just as do the vines and creepers of a dense patch of tropical forest, or the tangled root systems that you cut through with your spade every time you dig your garden. It was not however in these bindings—in these interweavings of trajectories of growth—that Darwin sought the unity of life. It was rather in the principle of common ancestry. Ever since Darwin, the mainstream scientific conception of the unity of life has been genealogical. It is said that we share our world with other creatures because—or to the extent that—we are related to them along lines of descent from putative common ancestors.

When primatologist Jane Goodall famously shook hands with the chimpanzee David Graybeard, the popular press proclaimed it as "the handshake that spanned five million years" (Goodall 1990). I wonder how many million years you span, quite unremarkably, every time you stroke your cat! The answer, of course, is irrelevant. The degree of relatedness, or genetic connection, has absolutely no bearing upon our material entanglements with fellow inhabitants of the lifeworld, whether human or non-human. Conversely, these entanglements are of no consequence for a calculus of relatedness based on genetic connection. Thus an understanding of the unity of life in terms of genealogical relatedness is bought at the cost of cutting out every single organism from the relational matrix in which it lives and grows. In this understanding, life presents itself to our awareness not as the interlacing of the tangled bank but rather as an immense scheme of classification—nowadays going by the name of 'biodiversity'—in which every individual is assigned to a specific taxon (species, genus) on the basis of virtual attributes that it is deemed to possess by virtue of genetic transmission, independently and in advance of its life in the world.

If the unity of life can be understood in genealogical terms only by treating every living thing as a virtual object, abstracted from the world it inhabits, then how does modern thought understand the unity of the world? I have already suggested the answer. To life excised from the world, the world presents itself not as a ground of habitation but as a surface to be occupied. We owe this conception to Immanuel Kant. "The world," wrote Kant, "is the substratum and the stage on which the play of our skills

proceeds" (Kant 1970: 257). Whereas in a chart of phylogenetic descent, living things are arrayed on the axis of time, on the surface of the world they are arrayed on the co-ordinates of space, the first giving us the opposition between the particular and the general, the second the opposition between the local and the global.

Crucially, Kant supposed that while the mind identifies all possible objects by fitting them within the compartments of an overarching classification, it identifies all possible locations by fitting them into what he called "an extended concept of the whole surface of the earth" that assumes this surface to be *spherical* in form (ibid.: 262). At once continuous and finite in extent, the spherical topology of the earth's surface then comes to stand for the fundamental idea, which the mind is said to bring to experience, of the unity of the natural world. That is why, still today, the phylogenetic tree-diagrams of biological taxonomy readily co-exist with images of the world as a solid globe surrounded by space. In short, the mode of apprehension that would reveal the totality of living things as a catalogue of biodiversity is also one that reveals the world as a globe in the purview of a universal humanity. The tree and the globe are complementary images: Each, indeed, presupposes the other (Ingold 2011: 164). Together, globe and tree make up the two great domains of nature—the inorganic and the organic—upon which humanity is said to have added the superorganic layer of *society*.

SOCIETY AND NATURE

Writing of the concept of society, anthropologist Eric Wolf (1988) reminds us that it is far from a mere label under which we may subsume certain objective groupings, of human beings or creatures of other species, whose members are held to share some common bond. Assertions about the existence of society and the manner of its constitution, Wolf insists, are not simple statements of fact, of the way things are. They are rather *claims*, "advanced and enacted in order to construct a state of affairs that previously was not" (Wolf 1988: 757). Throughout the last few centuries of European and American history, numerous and often conflicting claims have been advanced in the name of society, each however motivated by a vision of future equilibrium that would finally balance the needs and desires of human individuals with their conditions of mutual co-existence.

The ever-changing upshot of the coercive enactment of these claims, alternately murderous and monumental, is the messy world we now live in. It is a world where—rather as in a modern city—structures dating from different periods and driven by different finalities jostle for space while inhabitants pick their way as best they can between them, turning every closure into an opening for the continuation of their own life histories. Of course for as long as people have been carrying on in the company of others, social life has been proceeding. But it has not always proceeded under the rubric

of society. What is perhaps most distinctive about life conducted under this rubric is the experience of having to weave a path through a medley of structures built by others for you to live in, according to designs that answer not to your particular background and circumstances, but to some generalized conception of pan-human needs. For as Wolf (1988: 759) says, the concept of society—wherever and whenever it has been unloosed upon the world (and this has always been at specific times and places)—has been aggressive in its claim to universality, for all times and everywhere.

Now much of what applies to the concept of society applies also to the concept of nature. Indeed the two concepts share a common history in which they have been often paired, whether as analogues or opposites. No more than the concept of society does 'nature' signify the brute facticity of the world, or what is objectively 'out there' regardless of the endeavours and aspirations of those who have resorted to the term. Assertions about the existence and constitution of nature, as of society, are claims, and the aggressive pursuit of these claims by agents with sufficient coercive power to impose their vision can greatly affect the circumstances under which people have to lead their lives. These claims have been many and various, ranging from the original invocation of uncultivated commons as *terra nullius*, which opened the door to the colonial expropriation of the lands of indigenous peoples, to the contemporary appeal of ecological restoration that would see the landscape revert to some image of what it was before humans arrived on the scene.

If there is a difference between claims advanced in the name of nature, and those advanced in the name of society, it is that the former are more retrospective than prospective, more concerned to establish a universal point of origin for humanity than a final destination. In reality, of course, just as people have forever carried on their lives in the fields of their entanglements with others, so also they have always inhabited an environment including manifold non-human as well as human constituents. Social life has always been part and parcel of ecological life, if indeed the two can be sensibly distinguished at all. It is a peculiarity of life lived under the rubric of society, however, that relations with non-humans are construed to lie on the 'far side', in a world of primordial potentialities rather than instituted finalities.

Not only, then, do the inhabitants of society have to find their way through the maze of conclusions that various times have offered to history; they also have to piece together the many alternative presentations of origin that may be glimpsed on the other side, each going by the name of nature and each claiming a timelessness and universality particular to its age and place. All of this goes to show that the concept of nature, like that of society, is inherently and intensely political. It is invariably bound up in a politics of claim and counter-claim whose outcome depends upon the prevailing balance of power. Yet even when configured by the institutions of society, the life of human beings is not carried on in a world of its own, beyond the edge of another world of nature (Ingold 1997) wherein

the lives of all non-humans are contained. Rather, all creatures, human and non-human, are fellow passengers in the one world in which they all live, and through their activities continually create the conditions for each other's existence.

It may be true that throughout the world, humans have decisively influenced the conditions under which other creatures live their lives. But an environment is always work in progress, and among its producers must be included every agent that contributes in one way or another to its formation: human beings certainly, but also animals of virtually every other kind, as well as plants and fungi, the wind and rain, glaciers, rivers and the ocean. Of course their relative contributions vary greatly, both geographically and over time. My point, however, is that an environment that has been prominently shaped by human activity—a garden, say, or a swidden plot or dwelling house—is on that account no more 'artificial', no more of a 'construction', than one that shows no signs of human presence at all. It is just that the principal producers are different in each case.

THE LIFE OF LINES AND THE SURFACED WORLD

Nor, because the process of production did not begin with the arrival of humans and indeed has no discernible point of origin, is one environment any less 'natural' than another. Human social life is therefore not cut out on a separate plane, over and above that of nature, but is part and parcel of a process that is going on throughout the organic world, comprised of the interplay of diverse human and non-human beings in their mutual entanglement (Ingold 2011: 8). But if beings can foster each other's development, they can also act to block it, by removing or subverting the conditions of growth. History brings pain and suffering as well as growth and prosperity. Neither is the monopoly of humans or non-humans. That humans regularly inflict pain and suffering on other humans, not to mention non-humans, is all too obvious. But it is worth bearing in mind that a great deal of the distress of non-humans is attributable to other non-humans, and that humans can suffer at the hands (or teeth or claws) of non-humans too. Perhaps the infliction is less deliberate, but it is no less real in its consequences.

How, then, can we rethink the environment in a way that gives priority to *inhabitation*, in a way that lets humans and other creatures *be*? We could make a start by rethinking the organism itself. Let us take a hint from the Batek people, hunters and gatherers of the Malaysian rainforest. The Batek, according to their ethnographer, Tuck-Po Lye, say that plants walk, just as people do (Lye 1997: 159). This sounds strange to us, but only because we have a different understanding of movement. We accept that animals move, but plants surely stay put, rooted to the earth. For the Batek, however, it is precisely in the roots that the plant's movement is to be found. This movement is not, as we might think of it, the displacement

of an already completed object from location to location, as I might move a chess piece across the board. It is rather an issuing forth along a line of growth. When roots grow, their tips issue forth, leaving a trail behind them. The same happens, in Batek understanding, when people walk along. The wind, too, leaves a trail as it blows, and the sun as it makes its way across the sky. Everything follows its particular path.

Perhaps, then, we should describe the organism not as a self-contained, bounded object but as a line—or better, a whole bundle of lines—that continually overflow any boundaries we might draw around it. Even Darwin, steeped as he was in the traditions and prejudices of Western thought, was not so far from the Batek view in his observation, to which I have already referred, of the entangled bank. But in a tangle of root systems, such as is often exposed along a bend in a river where the current undercuts the wooded bank on one side, how can we possibly draw a line around any tree, so as to separate it from its environment? Indeed the environment might be better understood as a zone of entanglement. Within the tangle of interlaced trails or fibres, continually ravelling here and unravelling there, organisms grow or 'issue forth' along the lines of their relationships (Ingold 2011: 70–71).

In a paper published in 1976, the great Swedish geographer Torsten Hägerstrand imagined every constituent of the environment—including "humans, plants, animals and things all at once"—as having a continuous trajectory or line of becoming. As they move through time and encounter one another, the trajectories of diverse constituents are bundled together. "Seen from within," writes Hägerstrand—or as we would say, from the inhabitant perspective—"one could think of the tips of trajectories as sometimes being pushed forward by forces behind and besides and sometimes having eyes looking around and arms reaching out, at every moment asking 'what shall I do next?'" These trajectories, he continues, are the threads of the "big tapestry of Nature which history is weaving" (Hägerstrand 1976: 332). In much the same vein, Theodosius Dobzhansky, one of the architects of the so-called new synthesis of 20th century evolutionary biology, liked to describe life as a process of 'groping' (Dobzhansky 1965: 214). Literally "pervading everything so as to try everything, and trying everything so as to find everything," life will not be contained within a boundary but rather threads its way through the world along the myriad lines of its relations, probing every crack or crevice that might potentially afford growth and movement. Nothing, it seems, escapes its tentacles (Ingold 2007: 103).

Nevertheless, human history—and above all the history of the Western world—is studded with coercive attempts to suppress the unruly meanderings of inhabitants, both human and non-human, by covering over the tapestry they weave with an infrastructure of hard and impervious surfaces. Engineered roads now criss-cross the lands of the Batek, crushing their trails of life in the name of sustainable forestry. All around the world, governments and corporations have caused banks once entangled with

vegetation to be bulldozed to clear space for highways, airstrips, power lines, and industrial complexes. To an ever-increasing extent, the surfaced world has become—much as Kant and subsequent theorists of modernity imagined it—a solid substratum for the enactment of a global drama. It is a world that can be occupied, but not inhabited. Colonial life, encapsulated in mobile vehicles as genes are in bodies, rolls over this world rather than threading through it.

The effect of hard surfacing is to enforce a rigid separation between the earth below and the air above, a separation long built into science itself in the disciplinary separation of meteorology from terrestrial ecology, and in the global distinction of the biosphere from the atmosphere. It is this separation, as I have shown, that forces scientists to look inside the organism for the impulse of life, and to find it in the genes rather than, say, in the humdrum and well-known reaction of photosynthesis. Yet without photosynthesis, there could be no life on Earth. Nor could there be life without the fungi and bacteria that decompose organic material for recycling as nutrients for further growth. Both reactions bind earth, air, and water across a permeable zone of interpenetration known to experience as the ground. Where interpenetration is blocked by hard surfacing, neither photosynthesis nor decomposition can occur. Indeed, in a fully surfaced world, nothing could grow at all.

MAKING PLANS AND CATCHING DREAMS

Thinking of the environment from the perspective of habitation, as a zone of entanglement which disrupts any boundary we might draw between the interiority of the organism and the exteriority of the world, gives us a way of situating the lived experience of engaging with our surroundings within the dynamics of the more encompassing systems of which these engagements are a part. This is to make a start, at least, in closing the gap between the earth-sky world of our experience and the global environment of techno-science. It is to take the first step in designing environments for life. The second step is to reconsider the meaning of design itself. What can it mean to design things in a world that is perpetually under construction by way of the activities of its inhabitants, who are tasked above all with keeping life going rather than with bringing to completion projects already specified at the outset?

The answer, I suggest, is that design is not so much about *innovation* as about *improvisation*. It is to recognize that the creativity of design is to be found not in the novelty of prefigured solutions to perceived environmental problems but in the capacity of inhabitants to respond with precision to the ever-changing circumstances of their lives. To equate creativity with innovation is to read it backwards, in terms of its outcomes, rather than forwards in terms of the movements that gave rise to them (Ingold &

Hallam 2007: 3). You start from a result in the form of a novel object, and trace it through a sequence of antecedent conditions to an unprecedented idea in the mind of an agent. The idea is then taken to be the 'design' for the object. To equate creativity with improvisation, by contrast, is to read it forwards, following the ways of the world as they unfold rather than seeking to recover a chain of connections from an end-point to a starting point on a route already travelled (Ingold 2011: 216). In this sense, creativity implies growth. And growth, in turn, implies that the materials of which things are made are moving and active, rather than comprising a passive substrate *upon which* given forms are imposed.

Creative improvisation calls for both flexibility and foresight. Flexibility, however, should not be taken to imply reversibility. One cannot, in any living system, go back and undo what has been done already. The essence of flexibility lies in the ability not only to find the grain of the world's becoming—the way it wants to go—but also to bend it to an evolving purpose. It is not, then, merely a matter of going with the flow, for one can give it direction as well. Designing for life is about giving direction rather than specifying end-points. To specify an end-point is to predict; giving direction, by contrast, involves foresight. This distinction between prediction and foresight is critical. It has long been the conceit of planners and policy makers, or of those entrusted with projects of 'development', to suppose that to imagine the future is to conjecture a novel state of affairs, as yet unrealized, and to specify in advance the steps that need to be taken in order to get there. Governments and other agencies demand what they call scenarios: predictions of what the world will look like, say, 20, 50, or 100 years from now. To foresee, however, is to run ahead of things, and to pull them along behind you, rather than to project by extrapolation from the present. Seeking not to speculate *about* but to see *into* the future, it is to improvise a passage, rather than to innovate with representations of the unprecedented. It is to tell how things will go, in a world where everything is not preordained but incipient, forever on the verge of the actual (Ingold 2011: 69). It is about opening up pathways rather than setting targets. And critically, it involves the exercise of imagination.

The process of design could be compared to the act of drawing. Indeed in many European languages, including French, Italian, and Spanish, the words for designing and drawing are one and the same (Maynard 2005: 66–67). Their original synonymy, however, rested on the idea of the drawing as the outline of a mental image, optically projected onto a surface of inscription. Suppose, now, that we retain the synonymy, but think of drawing not as the projection of a ready-made image but as the inscriptive trace of a movement or gesture. Paul Klee (1961: 105) famously described drawing as taking a line for a walk. What if we were to do the same in design? The celebrated Portuguese architect Alvaro Siza (1997: 51) once compared the designer to a novelist who, far from determining the plot, finds that his characters are constantly slipping away from him. It is all he can do to track

them down. As a designer Siza still draws; however, the drawn line does not connect predetermined points but breaks a trail, continually launching forth from its tip—precisely as the geographer Hägerstrand envisaged in his idea of groping life forms looking around, reaching out, and wondering where to go next.

Travelling light, unencumbered by the dead weight of heavy materials, the line of the designer or architect gives chase to the phantasms of a fugitive imagination and reins them in before they can get away, setting them down as signposts in the field of practice that builders or makers can track at their own, more laboured and ponderous pace. The designer, let us say, is a dream-catcher. If there is a distinction between design and making, it is not between projects and their implementation but between the pull of hopes and dreams and the drag of material constraint. It is here, where the reach of the imagination meets the friction of materials, or where the forces of ambition rub up against the hard edges of the world, that human life is lived.

A MANIFESTO FOR DESIGN

The difference between plans and projects on the one hand, and hopes and dreams on the other, is that the former anticipate final outcomes whereas the latter do not. The verbs 'to hope' and 'to dream' are not transitive—like 'to make' or 'to build'—but intransitive—like 'to dwell' and 'to grow'. They denote processes that do not begin here and end there but *carry on through*. I suggest that in designing environments for life we should treat 'to design', too, as an intransitive verb. It is in this sense that design is open-ended. Let me return to Klee's contention, with which I began, that form is death but form-giving is life. In his celebrated *Creative Credo* of 1920, Klee declared that "art does not reproduce the visible but makes visible" (Klee 1961: 76). By this he meant that it does not seek to replicate forms that are already settled, whether as images in the mind or as objects in the world. It rather seeks to join with those very forces that bring form into being.

Thus the drawn line grows from a point set in motion, as the plant grows from its seed. Like drawing, designing is also a process of growth. And like the growing plant, it unfolds within constantly transforming life conditions. Design, in this sense, does not transform the world. It is rather part of the world's transforming itself. This process of self-transformation, however, unfolds along not one but many paths. It is, in essence, a conversation. Like life, conversations carry on; they have no particular beginning point or end-point, no one knows in advance what will come out of them, nor can their conduct be dictated by any one partner. They are truly collective achievements. Let us, then, think of the process of designing environments for life as a conversation, embracing not only human beings but all the other constituents of the lifeworld—from non-human animals of all sorts to things like

trees, rivers, mountains, and the earth. This is a conversation that is not only processual and open-ended but also fundamentally democratic.

I began with the promise that I would come up, by the end of this chapter, with a design manifesto. Here it is, in three clauses:

- Environments are inherently variable; therefore design should enhance the flexibility of inhabitants to respond to these variations with foresight and imagination.
- The impulse of life is to keep on going. Design unfolds within constantly transforming life conditions, and should open up pathways for creative improvisation.
- There is always a tension between hopes and dreams for the future and the material constraints of the present; therefore design should invite people from all walks of life to join a conversation around this tension.

Together, these clauses comprise my manifesto for the design of environments for life. I commend it to you for your consideration.

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