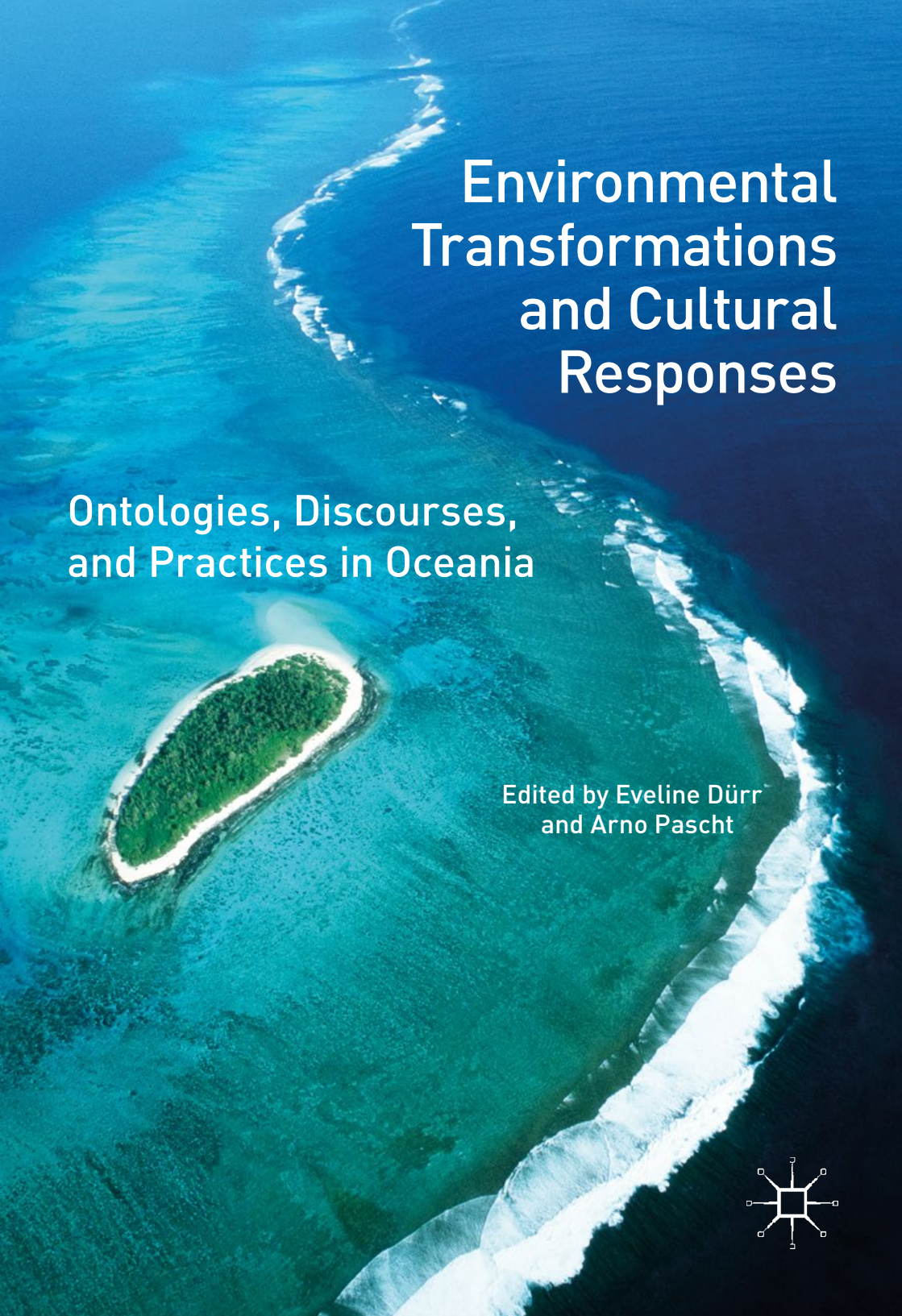
Environmental Transformations and Cultural Responses
Ontologies, Discourses, and Practices in Oceania
Edited by Eveline Dürr and Arno Pascht

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Editors

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The idea to compile this volume arose during the conference of the German Anthropological Association's Regional Research Group "Oceania", held at the Ludwig-Maximilians-Universität in Munich in October 2012. The conference presentations had a strong focus on environmental topics, such as climate change, environmental knowledge and notions of sustainability. The individual presentations drew on a range of approaches to frame their arguments, placing particular emphasis on world views and local conceptions of environmental phenomena while not necessarily referring to a more general approach.

The volume also draws inspiration from the anthropological debate on the ontological turn, which has, so far, stimulated empirical contributions stemming from Lowland South America and other parts of the world. We took the—at times inconclusive—ontological debate as thought-provoking impulse to advance our understanding of how people in Oceania respond to and engage with recent environmental transformations. This volume further contributes to the international literature about this region and to the consideration of ontological dimensions.

The book brings together original work based on recent empirical research from different parts of Oceania. All authors are German scholars and reflect the long-standing German tradition of anthropological research in this region.

We thank foremost our interlocutors who shared their time and knowledge with us and offered us their hospitality. We also thank Brenda Black, Sasha Gora, Oliver Liebig, Hannah Roberson and Samantha Rothbart for their editorial assistance. Finally, we also thank the team from Palgrave Macmillan for their support and patience while putting this volume together.

Contents

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List of Figures

CHAPTER 1

Engaging with Environmental Transformation in Oceania

Arno Pascht and Eveline Dürr

On the 13th and 14th of March 2015, Tropical Cyclone Pam caused severe damage in large parts of Vanuatu. A number of ni-Vanuatu, among them the president of Vanuatu and a staff member of a development organisation, identified climate change as (co-)responsible for this catastrophe. Ni-Vanuatu stated that they actually "saw" climate change—they not only heard about it, but they also experienced and literally sensed it for the very first time. "Climate change" is a topic that has been the subject of much discussion and activity in Vanuatu since the 1990s: Development projects have been started to try to prepare people for adverse impacts of climatic changes, a Ministry of Climate Change and other government institutions were established, and climate change films have been produced and screened, to name just a few manifestations of this discourse.

As an omnipresent problem, climate change is thus becoming more and more part of everyday life in Vanuatu. This example shows that the concept of "climate change", which was coined by scientists in industrialised countries in a different context, is also meaningful for people in Vanuatu and

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impacts their life in various ways. Anthropological research has shown that this is also true for many other parts of Oceania and beyond. Two consequences of the discourse are especially important: First, drawing loosely on scientific ideas, tropical cyclones, along with certain other environmental phenomena, are now seen as primarily caused by climate change. Second, changing laws and projects to adapt to climate change have conveyed new ideas, such as specific methods of crop cultivation and food preservation, but also ideas about environmental issues more broadly.

Newly created discourses and practices are integral parts of each localised phenomenon of climate change. These include not only discourses concerning global warming and a transformation of long-term weather patterns, accompanied by rising sea levels, but also other cultural responses to these ideas and environmental effects, including responses to discourses. We argue that it is important to view these responses not as separate from environmental and discursive transformations, but rather as parts of a single process. The responses are not simply reactive, i.e. ideas or narratives are modified according to existing worldviews, but involve the crafting of new ideas. This is not only the case with regard to climate change but also to environmental transformation in general.

The contributions to this book address a range of different environmental transformations with a particular focus on ontological principles; each author chooses a different perspective to interpret these processes. In this introduction, we first discuss climate change in more detail as one example of an environmental transformation. Subsequently, we sketch out some more recent theoretical approaches that explicitly challenge the distinction between "environment/nature" and "human/culture" by questioning the universality of these dualisms while developing alternative approaches for anthropological research. We then explicate how the ideas presented can be employed for our conceptualisation of "environment(s)" before finally outlining how these ideas are used by each of the contributors to illuminate their case studies.

Researching Climate Change

Climate change and phenomena seen as related to it assume a prominent place in this volume. People in Oceania, as well as many researchers, see it as an urgent topic with far-reaching consequences for the region. Climate change needs to be addressed on various levels; the search for solutions to adverse impacts is not sufficient, for it is only by facilitating further research that we can come to understand the needs and perspectives of those most immediately affected. There have been a number of recent publications

about climate change in Oceania which are important for the themes explored in this volume. We briefly outline some of the main ideas below.

In the following, we use the expression "scientific narrative of climate change" to denote a set of ideas and reasoning developed mainly by natural scientists and various other actors. These focus on causal explanations for environmental changes, predicted effects of global warming, and the idea of a physical phenomenon climate change. We are aware that there are different discourses on and meanings of climate change within science and other realms as well as between them, for example between science and the wider public or within development organisations. There is not *one* scientific discourse but rather numerous variations and appropriations in diverse contexts. We do not view scientific ideas as privileged compared to other ideas, apart from their capacity to travel quickly to diverse localities. In this vein, we follow Ernst Halbmayer (2012: 19) and oppose a separation of ontologies in terms of an antithetical understanding of modern scientific knowledge and indigenous worldviews. Furthermore, we neither assume the "truth" of scientific information nor question it. Rather, we are interested in how people actively engage in the encounter with specific strands of scientific discourses.

Anthropological studies on climate change concentrated initially on local perceptions, knowledge, and responses to the global "environmental" phenomenon of climate change (Crate and Nuttal 2009: 11; Peterson and Broad 2009: 75). Anthropologists as well as geographers have also focused on "adaptation" as a possible response to climate change (Nelson et al. 2009; Orlove 2009) as well as on social resilience (Hastrup 2009). New perspectives have emerged in more recent publications: the geographer Mike Hulme, for example, stresses the impact of the idea of climate change on social relationships, politics, and imaginations (Hulme 2010: 273f). He predicts that the phenomenon of climate change will lead to dissolution of the nature–culture divide, for climate change, he emphasises, cannot be assigned to one or other of the two spheres (Hulme 2010: 269; a similar argument is made in Leduc 2014). Whereas Hulme mainly argues from a perspective that takes ontological principles of "Western" industrialised societies as a starting point, other authors focus instead on local discourses and ontological principles. They also understand climate change as a comprehensive phenomenon that includes not only physical or "natural" aspects but discursive dimensions as well (Diemberger et al. 2012; Gesing et al. 2014; Lipset 2011; Rudiak-Gould 2011, 2013, 2014). These studies stress that plurality, heterogeneity, and mobility are important characteristics of knowledge about climate change and conclude that it is important to conduct research about knowledge production in different places (see also Hulme 2010: 559–563). One focus

of this work is to scrutinise the journey of scientific ideas of climate change and "adaptation" from their contexts of origin in scientific and development institutions to other regions where scientists predict adverse effects of climate change. The emphasis is placed on communication and translation of discourses about climate change and adaptation (see Weisser et al. 2014; de Wit 2011). For example, ideas connected with climate change, such as "adaptation", have been called "travelling ideas" (Czarniawska and Sevón 2005) and thus are co-produced by various actors (Weisser et al. 2014). Adaptations in places other than those where the idea about adaptation was originally developed are thus seen as modifications of this idea and as a result of translation processes. These studies conclude that responses to the idea of adaptation therefore do not necessarily mean homogenisation but can, in fact, result in heterogenisation of adaptation activities because the re-embedding of the original idea in a different context never results in an exact copy.

So-called reception studies can also shed light on the spread and change of climate change ideas in Oceania (Crook and Rudiak-Gould Forthcoming; Rudiak-Gould 2011). Reception in this context means the acquisition of information about climate change "via media, educational, governmental, NGO, or other channels that disseminate the scientific notion of anthropogenic global warming" (Rudiak-Gould 2013: 7) and the processes of interpretation or "local appropriation [...] in terms of a preexisting narrative" (Rudiak-Gould 2014: 365). Recent publications advocate studying the reception of "a globally communicated scientific narrative, a future-oriented discourse of risk, or a wide-ranging prediction that extends far beyond the merely 'environmental'" (Rudiak-Gould 2011: 10). When studying reception, these authors stress, local cosmologies and discourses have to be taken into consideration (Rudiak-Gould 2014: 372). Peter Rudiak-Gould states that reception can be viewed as a "creative transformation" of the notions of climate change developed by natural sciences into subjective, situative, and normative ones (Rudiak-Gould 2013: 10). A key finding of his Micronesian study is that people in the Marshall Islands reinterpret ideas of climate change according to their "core convictions": He shows how Marshall Islanders take up ideas and integrate them into an already existing discourse. While there are few studies that focus on discourses, translation, and reception of scientific narratives of climate change, or the reception of other ideas and narratives arriving in Oceania and on how these processes are connected with local cosmologies, there are even fewer studies that research the ways in which perceived climatic changes impact ontologies (e.g. Jacka 2009).

All these studies show that scientific discourses about anthropogenic climate change need to be included in anthropological research because they in fact—in modified, transformed, reinterpreted, or appropriated form—shape the local discourse in many communities. This reception process may have important consequences. It may, for instance, influence the perception of environmental changes and climate (change) (Rudiak-Gould 2011: 11). It may also be a factor in social dynamics connected with general transformation processes (see the contribution by Hetzel and Pascht in this volume (Chap. 5)) and it may contribute to the establishment of new discourses, as Wolfgang Kempf, for example, shows in his contribution on I-Kiribati (Kempf, this volume (Chap. 2)). The reinterpretations and the new discourses and practices that potentially evolve during reception and translation processes are inseparably linked with local conceptualisations that may be fundamentally different from those often assumed by anthropological research.

Challenging Cartesian Dichotomies

Environmental transformation constitute one of the major issues in Oceania. Media reports of climate change, sea-level rise, floods, and sinking islands are central in the current debate on global environmental challenges, and islands play a prominent role in these globally circulating representations. However, environmental transformation cannot be separated from sociocultural and political change, and, as recent studies have shown, the common distinction between physical and sociocultural environment is obsolete (Casimir 2008: 2; Descola 2009: 147–150). In this vein, a number of studies challenge dichotomies such as nature versus culture as counterproductive to an adequate understanding of peoples in Oceania. This contrasts with research conducted in the 1980s, when authors employed the concepts of "nature" and "culture" when writing about Pacific Islanders' worldviews (e.g. Keesing 1982: 71). While some recent publications on environmental issues in Oceania indicate that the distinction between nature and culture made in "Western" society is not drawn here, or that environment in the sense of "nature" is ontologically integrated with culture and society (Barnett and Campbell 2010; Warrick 2011; Worliczek 2013), these results are in most cases not elaborated further and are not integrated into a wider theoretical framework. An example of a study that regards "environmental" changes and other sociocultural developments in relation to one another is a recent book by Keir Martin (2013). He takes the

radical rupture of a volcanic eruption that devastated a town and a number of villages in East New Britain as a starting point for his enquiry (Martin 2013). He does not interpret this event as a unique factor that initiated new developments, but he rather concentrates on the ways in which core concepts of the Tolai were transformed "in the context of changing patterns of integration with a global political economy for decades" (Martin 2013: 3). Further, he states that "the processes of disruption, relocation and reconstruction that unfolded after the volcano's eruption did lay bare many emerging social trends and tensions" (Martin 2013: 3). Martin sees changes in Tolai society and environmental transformation following the eruption of the volcano as inseparable, but also as linked to globalisation on the one hand and to local sociocultural processes on the other.

In recent decades, a number of postconstructivist and posthumanist scholars, seeking to find new approaches in social research in order to overcome assumptions based on Cartesian dualisms, claim that ontological principles often at work in Western scholarship are far from universal and cannot be taken for granted. They argue that these principles obstruct adequate accounts of ethnographic encounters about people who do not share them. They stress that even approaches criticising Eurocentrism are often based on implicit assumptions that separate "nature" and "culture". This distinction is—like other related dichotomies—connected with specific ontological principles that imply the privileged status of humans in opposition to their "physical" environment and to all other beings (Salmond 2014: 162). The underlying anthropocentrism is not shared by all societies and might obstruct adequate ethnographic accounts. The different approaches of these scholars, sometimes subsumed under the label "ontological turn", emphasise that alterity is not only to be considered on the "cultural", but first and foremost on the "ontological" level. A perspective that is sensitive to ontological dimensions is seen as appropriate for understanding actual alterity because cultural relativism tends to ignore things, beings, and environments that work under different ontological assumptions. Thus, these approaches are more radical than cultural relativism and allow for the possibility of incomparability of concepts of being in the world. However, we argue against essentialist understandings of ontological assumptions as encapsulated and static entities. We rather stress their constant modification, for instance in relation to ideas about climate change.

It is important to note that the ontological turn is not a coherent project. We follow Luiz Costa and Carlos Fausto (2010) and Amiria Salmond (2014: 165) who distinguish three major strands of research that deal

with alterity in different ways: "ontological cartography", "recursive ethnography", and "ecological phenomenology". Sketching out their thoughts on dichotomies such as nature and culture and their understandings of "environment", we highlight the diversity of approaches that are subsumed under the broader label of ontological turn. One main impetus stirring the ontological debate has been theoretical insights that emerged out of the anthropology of lowland South America. This work took issue with notions of universalism and relativism and instead stressed the interactions between humans and other-than-humans in order to decentre Western nature–culture divides. Philippe Descola and other authors, whose approaches have been designated as "ontological cartography" (Costa and Fausto 2010), work with taxonomies and identify a number of "ontologies" associated with certain geographical regions. Only in one ontology—the one Descola calls "naturalism", which he sees as prevalent in modern "Western" societies—is nature separated from culture and a single unifying nature faces a multiplicity of cultures (Descola 2009: 153). The other three ontologies he postulates are characterised by different principles. For what Descola calls "animism", for example, he identifies a common internal disposition of humans and non-humans (Descola 2009: 151) and thus an integration of entities, which are often associated with the separate realms of "nature" or "culture". In contrast to Descola's work, Viveiros de Castro's "recursive" ethnography (Holbraad 2013: 469) advocates for an ethnographic openness that does not predefine what the subjects of enquiry are. Things classified as "environment" in many ethnographic accounts, such as plants, animals, landscapes, and material goods, can become such subjects because they play "subject-like roles" (Salmond 2014: 167) and are central to social worlds. Viveiros de Castro repeatedly refers to both Roy Wagner and Marilyn Strathern, who developed their ideas in the Pacific (see Viveiros de Castro 2003, 2013). For example, when Viveiros de Castro explains that his notion of radical alterity is about different concepts other people deploy, and that "the world described by these concepts is very different to ours" (Viveiros de Castro 2013: 485), he draws on Strathern's explanation of radical difference between Melanesian modes of descriptions and "our" modes. Other recursivists cite Strathern as one of the main sources of inspiration, because she is seen as one of a number of scholars, like Bruno Latour, Alfred Gell, Eduardo Viveiros de Castro, and Roy Wagner, who shifted "focus from questions of knowledge and epistemology toward those of ontology" (Henare et al. 2007: 7–8).

Viveiros de Castro (2003) and other recursivists also refer to the work of Bruno Latour and the Actor–Network Theory. This approach criticises Cartesian dichotomies as well and places particular emphasis on the relationships between "things" and "humans". They suggest a methodological symmetry of human and other-than-human actors, acknowledging that humans and entities of various kinds may become hybrid actors or "actants" (Belliger and Krieger 2006: 15). In this case, "environment" is not seen as a passive entity but as an actor or "actant" that can cause effects. Signs, humans, institutions, norms, theories, and artefacts constitute techno-social-semiotic hybrids that organise themselves in continuously changing networks (Belliger and Krieger 2006: 23).

The most prominent exponent of "ecological phenomenology", Tim Ingold, shares a number of the concerns outlined earlier (e.g. Ingold 2013) and rejects the assumption of a universal nature–culture distinction. Unlike the recursivists, however, he argues for the dissolution of these dichotomies. For him, science should be inspired by those animistic ontologies and adopt their ontological principles (Salmond 2014). He sees this as a way to resolve the dominant dichotomies of modernity, which he criticises (Ingold 2000: 76). In his view, humans cannot be separated from environment but are part of a totality together with all organisms, as actively engaged in the world, and together with non-humans as "being in the world"—a concept he adopts from phenomenological scholars (Ingold 2000: 76, 168).

There is a growing amount of anthropological research in Oceania that questions the distinction of nature and culture and explicitly refers to the ideas of "ontological" approaches (van Heekeren 2012; Henare 2007; Hviding 1996; Reed 2007; Salmond 2014; Scott 2007). However, it is important to note that, before the ontological turn became prominent in scholarly debate, a range of studies in Oceania considered ontological dimensions *avant la lettre*. For example, in his account of the Morovo in Papua New Guinea, Edvard Hviding uses an approach that is based on a notion of mutualism of person and environment. He draws on Ingold's deliberations (1992), which include some ideas that are later elaborated in his "ecological phenomenology". Hviding mentions that the Morovo stress the importance of actually experiencing their environment in order to obtain knowledge about it. He also reveals that they do not have an equivalent to the concept of "nature" (Hviding 1996: 27), which alludes to the fact that for them there is no separation between "magic" and "real" (Hviding 1996: 370). His approach includes "the meaningful and meaning-making, even social, relationships that exist between people and their surroundings" (Hviding 1996: 371).

Hviding also refers to the Oceanist scholar Marilyn Strathern, who highlighted in her discussion of the Hagen of Papua New Guinea that "there is no such thing as nature or culture. Each is a highly relativized concept whose ultimate signification must be derived from its place within a specific metaphysics" (Strathern 1980: 177). She shows that it makes no sense to use these terms to denote categories of order in Hagen society and stresses the necessity to rather engage with and understand local concepts and distinctions (Strathern 1980: 218).

Environment(s)

Informed by the theoretical lines mentioned earlier, we conceive of the "environment" as a broad category that comprises all aspects of human and other-than-human life and not simply as a "physical" or "natural" environment. By employing such an understanding of "environment", we avoid predetermining ontological distinctions like human versus world, mind versus nature (see Ingold 2000: 19f.), or culture versus nature. Instead, we encourage specifying what is understood as environment in accordance with the particular context and situation. Depending on ontological premises, "environment" may include artefacts, discourses, practices, and social relations. Recent studies show that "environment" may comprise entities that, like humans, are constituted as subjects with specific rights, identities, and essences and are able to communicate with humans as well as among themselves (Descola 2011; Viveiros de Castro 1998). Humans and animals are not the only entities that can have the status of subjects; gods, spirits, ancestors, plants, and artefacts, including meteorological phenomena, can as well (Viveiros de Castro 1998: 470). But, from an emic perspective, the notions of other-than-human or non-human might be misleading: these subjects are conceived as human-like or even as human. Furthermore, we conceptualise environment as a relational category: it is not a fixed and predefined entity, but rather one that is constantly evolving and changing in relation to other agents, for example to organisms (Ingold 2000: 20). Thus, it is mutually constructed by human actors and non-human actors alike (Descola 2005: 13). Accordingly, "environments" are not determined by "physical" conditions alone but also by meanings and emotional attachments (Viveiros de Castro 1998). They are shifting and multilayered, with tangible and intangible dimensions, created and experienced through interactions between human and other subjects. Further, we are sensitive to political conditions and power inequalities that shape the texture of

environments (Blaser 2009; Escobar 1999). As a consequence, the authors of this book stress the plurality, disparity, and fluidity of environments rather than referring to a more static notion of "environment". Instead, we investigate how diverse environments come into existence and evolve. The focus is on the interactions among diverse subjects, and the ways their interacting creates environments, that is, on "becoming" rather than on "being". More specifically, we ask how these environments and their relations become (re)constituted in times of rapid change and transformation on a range of levels. Environmental transformation is thus seen as a continuing process. We use the term transformation in a non-normative and non-linear way, often in connection with a process or an act with transformative power in the context of global environmental change. Transformation means a change to something else, to a new formation, and may include changes to the physical landscape and the sociocultural fabric, such as the repositioning of actors and the generation of a new basis to legitimate power. As shown in the introductory ethnographic vignette, the phenomenon of climate change can, thus, be seen as an environmental transformation in several respects: long-term changes of weather patterns such as more frequent tropical cyclones, but also, simultaneously, and inextricably linked to this, discursive changes regarding how cyclones are explained. These might be influenced by scientists' concepts and models, which are then appropriated, modified, and re-articulated in specific cultural contexts.

When investigating interactions and processes of making and (re)making environments, the contributions in this volume focus on processes of meeting, fusing, and confrontation between diverse discourses as well as practices associated with particular ontological principles. What we described earlier in our example of climate change is also relevant for other phenomena. The concurrency of transformation and response, and the involvement of translocal and "global" processes and actors, such as UN institutions, developmental organisations and scientists, is illuminated in most of the chapters by scrutinising the reception and translation of both ideas and discourses on environmental change in different places and contexts. We, thus, show the various ways in which actors cope with transformation, how they receive ideas, discourses, and practices and create new ones, and how they reshape meanings of already existing discourses and practices. In order to achieve these goals, the authors make use of some ideas developed by anthropologists who intend to contribute to an "ontological turn" in the discipline. We argue that considering ontological dimensions can shed new light on processes of translation and reception as well as on transformations.

By adopting a broad concept of "environment", we also show the insights that can be gained from questioning the dichotomy between environment and culture and from challenging the separation of knowledge and practices—a separation that might dissolve in the process of experiencing the world (Ingold 2000). In this vein, we also take issue with analytically separating "environmental transformation" and "cultural response" and advocate instead for their interrelatedness and mutual constitution.

Structure of the Book

The common point of departure for the contributions to this book is the premise that considering ontological differences can shed new light on environmental transformation in Oceania. The authors seek to better understand environmental transformation by tracing specific conceptualisations of environment(s) in a broad sense. They are thereby informed by different approaches derived from the "ontological turn" in anthropology. This does not mean that the conclusions drawn are identical with the view of their interlocutors. Rather, they are interpretations which emanate from the relationship between anthropologist and interlocutor (Viveiros de Castro 2013: 483). These interpretations should be regarded as a way to investigate environmental transformation from a perspective that encourages thinking about ontological alterity, albeit in a relational and non-essentialist understanding. One possibility is, as Amiria Salmond suggests in her epilogue, to read the chapters in this book as "ethnographic experiments in re-thinking 'climate change' and other environmental and sociocultural transformations" (Salmond, this volume (Chap. 9)).

While investigating environmental transformation in a broad sense, the authors of this volume carve out the ways in which ideas are encountered in specific places and contexts. These interactions may have considerable consequences for people who are dealing with environment and environmental transformation, which, in turn, may even be seen as constituted by encounters with ideas, discourses, practices, and materials originating in various places, scales, and contexts, and based on different assumptions about how the world operates. Further, we also note that these processes are shaped by political interests, inequality, and power relations that create uneven frameworks for people we engage within our research.

When investigating interactions and encounters, the authors of this book explicitly or implicitly use the ideas of "translation" or "reception" theorised in recent publications about climate change, as sketched out earlier. They

view translation and reception processes as a creative act during which new, and sometimes unexpected, ideas and "environments", comprised of discourses, practices, humans, and other subjects, emerge.

We use the term "Oceania" to refer to the regions that are still mostly denoted as "Melanesia", "Polynesia", and "Micronesia" in anthropology. In this book, we aim to overcome these divisions and rather point to the manifold entanglements in political, economic, and social terms that bind the regions and Australia together. We pay special attention to equal treatment of different perspectives and therefore present, for example, Indigenous concepts, in regular font, so as to make it as clear as possible that we reject any scientific "othering". Furthermore, we point to the fact that concepts such as climate change or sea-level rise encompass different meanings depending on respective contexts. We do not indicate this with quotation marks.

The first two contributions refer to ideas derived from Actor–Network Theory. They both look at the phenomenon of climate change and stress the importance of the discursive level when dealing with it. In order to illuminate translation processes, Wolfgang Kempf considers climate change and "sea-level rise" as hybrid actors and scrutinises how actants are associated with local collectivities. He looks at how these processes are influencing local narratives shaping counter discourses in Tuvalu, Kiribati, and the Marshall Islands. He focuses on the story of Noah, as described in the Old Testament, as a potent actant. This perspective enables him to conceptualise the agency unfolded by the Noah story as the product of its reticulation with human and non-human actants. The Noah story is a core component in Kiribati's political praxis: It is employed by the parliamentary opposition, who argue against the scientific prognoses about climate change and its impacts and the connected ideas of emigration. Wolfgang Kempf turns to Kiribati in order to identify networks of composers, songs, and singing groups as actants that formulate, perpetuate, and modify challenges of climate change and "sea-level rise" as part of a continuing social dialogue. In this way, he reveals processes of appropriation and reworking that aim to harmonise the scientific discourse about climate change with the Noah story.

Elfriede Hermann's contribution on "Climate Change and Worries over Land: Articulations in the Atoll State of Kiribati" looks at how the people of Kiribati have responded to discourses of climate change and projections of an uncertain future. It has given rise to a particular emotional discourse: the worries of the people for the land they inhabit. Drawing on the approach of Bruno Latour, she regards worries as embodied articulations and thus as actants. Employing the theoretical concepts of articulation and social resilience,

she concludes that worry is one element in a network of relationships between human beings and their environments. She understands worries as actants that influence the ways in which human beings maintain relationships with other human beings and non-human entities, and thus stresses the agency of the people of Kiribati in dealing with the phenomenon of climate change.

Discourses about climate change and observations of environmental transformations are the starting points for Rebecca Hofmann's contribution "Experiencing Environmental Dynamics in Chuuk, Micronesia". She makes it clear that Chuukese Islanders are worried about transformations of their way of life in general, rather than climate change alone, and shows that they do not distinguish between "physical aspects of environment" and "social relations". She presents Chuukese's different ways of existing in and knowing the environment and the ways in which it is experienced in times of rapid social change and environmental threat. Both spheres are inextricably linked and thus, so the argument of the author, require new concepts—such as "islanding" as verb—to grasp Chuukese positioning in the world.

In their contribution, "Young ni-Vanuatu Encounter Climate Change: Reception of Knowledge and New Discourses", Desirée Hetzel and Arno Pascht consider the reception of scientific ideas about climate change by young people in the town of Port Vila, Vanuatu. They research mainly new discourses and ideas people create when they encounter scientific knowledge about climate change and associate them with their own concepts. They interpret the (new) meanings and roles which these ideas acquire in the reception process as a result of associating concepts of ni-Vanuatu with scientific knowledge. To employ scientific knowledge with its new meanings is seen by young ni-Vanuatu, they argue, as an inseparable part of the process of transformation in Vanuatu and at the same time as a remedy that will make it possible to (re)establish the connection to a changing environment. This includes the phenomenon of climate change as well as other societal changes and establishes a connection to a wider environment beyond Vanuatu.

Friederike Gesing deals in her chapter "Whose Beach, Which Nature? Coproducing Coastal Naturecultures and Erosion Control in Aotearoa New Zealand" with conflicts about coastal erosion in New Zealand. She advocates seeing beaches and coasts as "naturecultures", in other words, spaces that are co-produced in encounters of humans and their environments where a separation between nature and culture is not possible. Treating them as inseparable is useful, she argues, for understanding environmental conflicts, human feelings for the coast, and the materiality of beaches and their buildings. By pluralising natures, she reframes the

nature–culture relationship as one in which not only many cultures but also many natures exist. She interprets the conflict over a seawall intended to prevent erosion of a beach as a conflict about whose imaginaries and practices of nature-making gain legitimacy.

The following two contributions exemplify the use of the theoretical perspectives in applied anthropology, where it is expected to translate indigenous concepts into other contexts, for example into a state legal system. In his chapter "The 'White Magic' of Modernity: Retracing Indigenous Environmental Knowledge in Settler-Colonialist Australia", Carsten Wergin investigates a conflict situation in which an Indigenous group set out to preserve land from industrial development. He deals with the problem of translation of Indigenous concepts into Western science and law and shows that an attempt to translate a different "world" as an anthropologist in the specific role as mediator between Indigenous people and Western law has fundamental constraints that may result in the disappearance of one "world". He describes what a translation—in this case called "white magic"—does and why. He stresses that the specific relation of the people to their land does not involve a dualism between nature and culture, whereas his translation was expected to take a perspective that is based on this dualism. With his contribution, he pleads for an applied anthropology that works towards a recognition of ontological difference and pluralist worlds by science and law.

Elisabeth Worliczek examines in her contribution "Naturally Occurring Asbestos: The Perception of Rocks in the Mountains of New Caledonia" the classification of rocks by Kanak people of New Caledonia. In her analysis, she refers to general concepts of life and rules of social interaction and health of her interlocutors and considers the connection people make between scientific geological criteria and their own ways of classifying rocks. She concludes that rocks are not dead matter but rather play an active role within society and Kanak well-being.

The book concludes with an epilogue, "Re-building Ships at Sea: Ontological Innovation in Action", by Amiria Salmond, in which she draws on a poem from Kathy Jetnil-Kijner to give voice to Pacific Islanders' articulations on their precarious environmental—and at times existential—conditions. She offers a critical reflection on the book's contributions, but also goes beyond critique by interrogating what anthropology can contribute to environmental transformation associated with the Anthropocene. She advocates for an openness of the discipline to allow for surprises and experiments which might lead to new ways of imagining the future.

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CHAPTER 2

Climate Change, Christian Religion and Songs: Revisiting the Noah Story in the Central Pacific

Wolfgang Kempf

Introduction

The hypothesis of human-induced climate change has passed through a process of ongoing stabilisation in the years since the Intergovernmental Panel on Climate Change (IPCC) first reported back in 1990. In its latest statement—the IPCC Assessment Report (AR5)—it is now deemed "*extremely likely* that human influence has been the dominant cause of the observed warming since the mid-20th century" (IPCC 2013:17, emphasis in original). Given the continuing trend towards anthropogenic global warming, whose roots can be traced all the way back to early industrialisation, significant long-term changes to the earth's climatic regime, resulting in higher sea levels, are now deemed inevitable. Transformations on this scale will have far-reaching, albeit highly variable, consequences for the planet's ecological, social, economic and political systems (Archer and Rahmstorf 2010: 178–190).

Climate, climate change and sea-level rise are abstract scientific concepts, referring to physical processes conceptualised, communicated and visualised as global averages. These global averages are, in turn, themselves

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assemblages, that is the variable outcomes of measurements, mathematical models, computer simulations, theoretical categorisations and specific modes of representation. However, climate, climate change and sea-level rise refer to more than the physical side of things; they are also discursive constructions playing a key role in social and political life. The efficacy of these discursive constructions derives from the process of being disseminated, connected, reworked and actualised both within and between social groups. Thus, for example, Mike Hulme (2009: XXVI, 245–246) conceptualises climate change not only as a physical process, but also as a scientific narrative or idea that has expanded beyond its origins in the sciences; indeed, it has now gained entry into the heterogeneous terrain of social and cultural formations via the global media. Hulme takes the view that, depending on the sociocultural frame of reference, the reception, interpretation and articulation of the scientific idea generate a gamut of diverging perspectives, narratives, images and practices which, in turn, establish and foster the multivocality and disagreement observed in respect of the object climate change (Hulme 2009: 245).

In Hulme's perspective, climate change has two aspects: it is both an objective physical reality and a sociocultural construct (Hulme 2009: XXV, 329). Advocates of actor–network theory (ANT) go a step further, seeking expressly to dissolve the line of demarcation between subject and object, nature and culture, technology and society (Latour 1993, 2005). Within this theoretical universe, entities such as climate, climate change and sea-level rise (Latour 2014: 32–38)—akin to the ozone hole (Latour 1993: 1)—are rendered as quasi-objects or hybrids. In the latter case, we have to deal with networks consisting of human and other-than-human actors, such as can no longer be unequivocally assigned to the social, natural or technological domains. The efficacy of any of these networks results from it being anchored—at one and the same time—in these previously separated spheres and in the multifaceted linkages between them. The guiding principle in this ontological landscape is the symmetrical relationship between humans and non-humans, with the latter encompassing such diverse entities as organisms, technologies, materials, things, artefacts and signs (Callon 1986, 1991; Latour 1988: 9–12, 1993: 103–106, 135, 2005: 76; see Belliger and Krieger 2006: 15; Blok and Elgaard Jensen 2011: 48).

The fractal nature of actant networks means that, through stabilisation and routinisation, the hybrids themselves take on the role of actants and enter into connections within networks (Belliger and Krieger 2006: 43). In terms of our present case of climate, climate change and sea-level rise, we have to deal with consolidated actant networks (such as emissions, sea water, ice masses, scientists, measuring instruments, graphics, computer

simulations, IPCC reports and political decision-makers) *qua* hybrid actors. The advantage of adopting this perspective would seem to me that of redirecting our analytical focus to the joint ability human and other-than-human operators have to exert influence and produce effects. Similar perspectives are not unknown outside the discursive context of ANT. When Hulme (2009, 2010), for instance, argues that anthropogenic climate change modifies not only the natural and physical but also the social world, he is conceding to the idea of "climate change" the power to effect real changes in our collective lives. In ANT, the expanded reference frame of reciprocities linking and influencing human beings, things, artefacts and signs alike has the consequence that agency is distributed among the actants of a certain network or assemblage (Bennett 2010: 31). The systematically applied relationality of this model is able to elucidate both the relevance and efficacy of non-human actors within a social constellation.

Critics have objected that the maxim of a symmetric distribution of agency negates intentionality, which is perceived as an important criterion for distinguishing human from non-human acting (Sismondo 2010: 89–90). In this vein, Theodore Schatzki (2002: 117) argues for a differentiated reading of agency. He is perfectly willing to accept that non-human entities play a constitutive role in social orders, one whose incorporation, significance and efficacy is, however, dependent on human praxis. The extent to which even in the domain of new ontological approaches Cartesian dualism is still detectable has been shown by Eduardo Kohn (2013: 40–41) in terms of the systematic praxis of attributing the capacity for representation, intentionality and developing a future perspective solely and exclusively to the human mind, thus demarcating it from the non-human world. To the contrary, Kohn has argued for an enlarged concept of representation, one that concedes to all (human *and* non-human) living selves the capacity "[to] do things for the sake of a future by re-presenting it in the present" (Kohn 2013: 41).

Within the framework of this ontology, agency is the preserve of living selves, human and non-human: "Selves, not things, qualify as agents. Resistance is not the same as agency" (Kohn 2013: 92). Such claims can, however, in my view, be no more than partial truths. The division between living selves as actors on the one side and passive things (objects, artefacts, etc.) on the other severely constricts our analytic perspective, since such a division can only exclude the efficacy (however produced) of entire worlds of organic and inorganic matter. And while resistance may not be synonymous with agency, it does represent a core aspect. Nor, for that matter, can living selves and their representations survive at all without the

heterogeneous assemblages and discrepant agencies of humans and non-humans that enable, constrain and permeate them. Unimpressed by the spectres of dualism, I believe, contra Kohn (2013: 40, 92) that Jane Bennett (2010) has offered valuable insights into the agentic capacity of human and non-human confederations. In the course of exploring what she calls the "vitality of matter," this author has analysed the capacity of materiality to cause effects, processes and trajectories. The reticulations between this vibrant materiality and human actors require, for Bennett, a decentralised notion of agency, one that construes the ability to act as the outcome of a heterogeneous assemblage of human and non-human actants (Bennett 2010: 21–24, 31–32). This concept of a distributive agency "... does not deny the existence of that thrust called intentionality, but it does see it as less definitive of outcomes" (Bennett 2010: 32).

Climate change and sea-level rise are, in effect, hybrids—or assemblages—in motion. Hulme and Latour have directed our attention (each, to be sure, in his own way) to the extension of hybrid actors within Westernised industrial societies. In Latour's case especially, this preference can be traced back to the distinction the author draws between the latter and so-called premodern societies, that is those thought to have remained untouched by external influences—a division stemming from his theoretical commitment to exposing the procedures of separating nature and culture in our modern social order (Latour 1993: 10–15). Paradoxically, Philippe Descola's (1996) study on the Achuar—a group living in the Amazonian basin—which Latour cites in this connection, is itself the result of a purification process. Thus, the ostensively pristine archaic world of the Achuar is based, for the most part, on a systematic exclusion of modern influences.[1] Yet it is a fact that such so-called non-Western societies are anything but static, nor can they be said to constitute closed or pristine entities. Nor, for that matter, do hybrid actors cease at the margins of the Western sphere of influence. For that reason, it is worth taking a closer look at the ongoing proliferation of hybrids into the globally entwined, post-colonial *Lebenswelten* of non-Western societies and Indigenous groups.

In what follows, therefore, I include the effects of the dissemination of two hybrid actors in the Central Pacific, namely climate change and sea-level rise; in my explorations, I look at processes of association (at once historical and culturally specific) between the respective actants and local collectivities, processes that are increasingly influencing the discourses and practices of Pacific Islanders. A key segment of these processes of association and translation is the praxis in various Christian quarters of contesting the discourse on climate change and its consequences. This counterdiscourse,

as we may call it, is prevalent among the inhabitants of the atoll states of Tuvalu, Kiribati and the Marshall Islands (Rudiak-Gould 2009: 73). Scientific projections and political statements forecasting the inundation of low-lying islands and the permanent displacement of the majority of the inhabitants of the aforementioned island states are among its likely causes. Among the most potent actants advanced by the Indigenous side against today's scenarios of hopelessness is the story of Noah, as described in the Old Testament Book of Genesis. After the flood, according to the Biblical narrative, God promised never again to lay waste the earth with water. As a visible sign of the covenant concluded with Noah, his descendants and all of the earth's creatures, God sent a rainbow.[2] A minority of Christians in the atoll states has now taken to arguing that this divine commitment had lost none of its force, even in an age of anthropogenic global warming. Any future flooding of low-lying Pacific islands as a result of sea-level rise can, therefore, be ruled out.

The inhabitants of the Pacific atoll states have, through their praxis of connecting Christian narratives and rationales with scientific findings and projections, created a potent assemblage that is also a challenge. Social scientists who have noted this linkage usually dismiss it as an illicit *mélange* of elements best left separate. In the following section, I first address the discursive categorisation of the Noah Story as presented and discussed by social-scientific studies of the consequences of climate change for the Pacific atoll states. Many of these studies have interpreted the Noah Story as a local manifestation of a climate scepticism rooted in Christian teaching, pointing to an underlying problematic of poor scientific understanding and/or lack of access to accurate information. Calls—thus inspired—for improved education and awareness campaigns on the effects of climate change, clearly setting out the findings of climate science, are designed to accomplish two things. One is to counter any religious positioning of this kind, perceived more often than not as a fundamentalist extravagance; the other is to argue that recourse to the Christian religion limits the agency of Pacific Islanders in respect to adaptation (Kuruppu and Liverman 2011; McAdam 2011; Paton and Fairbairn-Dunlop 2010; Rudiak-Gould 2009).

In contrast to this standard explanatory model, I will pursue a rather different track and ask to what extent adopting a relational ontology helps us do justice to the emic perspective of this minority of Pacific Islanders. What terrain would reveal itself, if we abandoned the attempt to purify such linkages of scientific projections and religious understandings, of climate change and Biblical metaphors, by way of marginalisation, separation and

exclusion? What insights might be gained were not our analytic lens primarily directed by the twin dichotomies of nature/natural science and culture/religion, as well as by their paradigmatic subcategories of objective/physical and subjective/social? What knowledge might we accrue if we were to accord greater weight to first taking seriously and then rigorously investigating the reticulations, functions and efficacies of climate change and the Noah Story, as manifested within the societies of the Pacific atoll states?

In this chapter, I argue that the perspective of a relational ontology opens up the possibility of conceptualising the agency unfolded by the Noah Story as the product of its reticulation with human and non-human actants. Based on my own researches in Kiribati, I will construe the Noah Story not only as an actant that functions as a religious-political counternarrative, but also as a diagnostic instrument for the hegemonic efficacy of the actants climate change and sea-level rise. The act of associating this Biblical artefact with scientific findings on the dangerous consequences of sea-level rise for atoll inhabitants cannot, I submit, be reduced to a purely religious phenomenon. Christianity and politics are, at all times, closely linked in Oceania (Tomlinson and McDougall 2013: 2). This holds no less for Kiribati. The instrumentalisation that the Noah Story has undergone in Kiribati's political arena is arguably best seen in that light. In this connection, I propose to demonstrate that the Noah Story is a core component in a political praxis devised by the parliamentary opposition, whose goal it is to deny legitimacy to scenarios of climate change, inundation and emigration proclaimed by non-Indigenous outsiders.

Songs, which in the culture of the I-Kiribati are best seen as nodes around which local discourses crystallise, combine and cooperate with the Noah Story, Western science, future flooding and local actors to form yet another effective assemblage. I turn to this genre of the performing arts in order to stress the importance of conceiving, and taking seriously, the religious-political debates and actions generated by the Noah Story as an ongoing process of translation and dialogic positioning on the local scene. It makes sense to construe the Noah Story as an operating counternarrative and actant within a network because the narrative has been revisited, reworked and endowed with new associations—one of the aims pursued being to place it in the service of acceptance of a future threat to this atoll state from climate change and sea-level rise. Both forms of the Noah Story—as a counternarrative and as a sign of acceptance—attest to the considerable efforts Pacific Islanders are now making, driven by the hybrids of climate

change and sea-level rise, to recapture power over the meaning and shaping of their future in respect to land, people, nature, society and nation.

Social Science Representations of the Noah Story

The critical response mounted to hegemonic constructions of an intrinsic vulnerability and powerlessness by Pacific island states to climate change has led to justified calls by social scientists for the resilience, agency, knowledge and problem awareness shown by local populations to be factored into the scientific process of data gathering and made available for the effective implementation of adaptation projects (Barnett and Campbell 2010; Farbotko 2005; Lazrus 2009, 2012). Climate-sceptical attitudes among local populations are usually not covered by this approach, predicated as it is on facticity, participation and problem solving and directed to assuring adaptability and survivability for these islands and their inhabitants over the short-to-medium term. Here absolute priority has been accorded to the natural scientific-objective reality of climate change and its consequences, to the point of excluding or subordinating the latter's social reality. In addition, the far-reaching influence exerted by the Christian religion on the social and cultural life of Pacific societies is rarely given systematic consideration, at least not in the context of anthropological research into climate change (Kempf 2012).[3] If, as in the case of the Noah Story, a climate-sceptical attitude is justified and routinised in terms of a religious rationale, what we often find in social-scientific accounts are constructions of marginalisation, containment and exclusion. These discursive constitutings of incompatibility, dissociation and control may take diverse forms and manifest different intensities, but their basic thrust is invariably the same, namely to restrict and police the Noah Story by referencing it against the current scientific picture of sea-level rise.

I first turn to the case of the atoll state of Tuvalu, and consider how the Noah Story is currently being presented in the social sciences. In a case study report on migration from Tuvalu to New Zealand that was written for the project "Environmental Change and Forced Migration Scenarios" (EACH-FOR), Francois Gemenne and Shawn Shen (2009) examined, among other things, the attitudes found in Tuvalu's population towards the linkage of climate change and emigration. These authors dwelt briefly with the religious counternarrative prevalent among those Tuvaluans not wishing to leave their island home:

> A small, religious minority remained convinced that a divine intervention would save Tuvalu, because God had made the promise to Noah that there would be no more flood on Earth. The Church is now considering the problem seriously, and has started raising awareness about the problem, as well [as] dismissing Noah's story as a metaphorical legend, not to be taken literally. (Gemenne and Shen 2009: 14)

These migration researchers see such religious convictions, deriving divine protection for Tuvalu from the Noah Story, as a "problem," but they do not explicitly mention what it is they find problematic. Their representation that Tuvalu's official church is now taking "the problem" seriously implies that this is a deviation from the normative system which needs to be corrected, as will any other literal interpretation of the Bible. With their discourse of marginalising and excluding the Noah Story, the authors evoke the existence of an objective truth, one—it seems—that the majority of the church's members in Tuvalu now share: an inevitable future in which Tuvalu is threatened by climate change and sea-level rise. In this discursive order of true versus false, what was originally a specific interpretation of the Noah Story by a religious minority is revealed as a problem of understanding the scientific facts or of gaining access to factual knowledge.

Kathryn Paton and Peggy Fairbairn-Dunlop (2010) have analysed the perception of climate change and sea-level rise among Tuvaluans living in New Zealand, Fiji and Tuvalu. Their account of the Noah Story is based on interviews with participants from the local population in Tuvalu[4]:

> When probed for their understanding of climate change, many saw climate change as being synonymous with sea level rise, despite the fact that this is only one possible consequence scientists have identified for Tuvalu. An analysis of the data showed that this perception correlated negatively with whether or not participants said they believed in climate change (that is, those who equated climate change with sea level rise were less likely to believe in it). A significant number of participants likened scientific reports of sea level rise to the great flood. Furthermore, they did not believe that a great flood would come because in the flood narrative (Genesis 6–9), God made a covenant that he would never again destroy all living beings and the earth by a flood. By way of contrast, a small group believed that the scriptures supported the idea of climate change. They pointed to God's warnings to Noah and drew parallels with the situation today. In their view, God was sending warnings to Tuvalu through the scientists, the researchers and the media that are visiting Tuvalu (...) There is a clear urgency in ensuring a more widespread dissemination of

> accurate information about climate change and ensuring chances to discuss differences in scientific and spiritual beliefs exist. This is a necessary basis for any future planning. (Paton and Fairbairn-Dunlop 2010: 691–692)

This description draws attention to the widespread Tuvaluan practice of equating climate change with rising sea levels. Indeed, making this equation is a necessary step for metaphorically linking the scientific term "sea-level rise" to the Biblical narrative of the flood. The authors mention the climate-sceptical version, but then direct our attention to another variant of the Noah Story, this time one affirming climate change, which seems to have been developed by members of Tuvalu's church elite (Paton and Fairbairn-Dunlop 2010: 692). The conclusions of Paton and Fairbairn-Dunlop are congruent with the discursive formation mentioned earlier. Therefore, they demand that what they see as a real deficit of information on climate change should be remedied by providing access to reliable factual knowledge. They combine this with a recommendation that scientific and religious areas be kept firmly apart. Clearly, the authors regard *both* variants of the Noah Story as obstacles to the real task of securing Indigenous participation in deciding, developing and implementing measures against impending climate change and sea-level rise. Yet the prevalence of two variants seems to be something of an exception. What we usually find is that the climate-sceptical interpretation of the Noah Story preponderates, when highlighting the negative consequences of combining scientific and religious perspectives for understanding the practice and adaptive capacities of the inhabitants of Tuvalu.

Other authors follow a strategy of representation with regard to the Noah Story that I shall call "indirect exclusion." The chief feature of this strategy is the absence of any direct recommendation that the scientific domain be kept separate from the religious one (as, for instance, in Paton and Fairbairn-Dunlop); referred to are instead pertinent views held by the Indigenous elites. This approach can be discerned in Gemenne and Shen (2009) (see, for instance, the passage cited earlier), but it is equally present in other accounts offered of the Noah Story in Tuvalu (see Farbotko 2005: 282). Turning to Colette Mortreux and Jon Barnett (2009), we read, for example, the following:

> Despite efforts to challenge existing interpretations of religious text [sic] by some religious leaders, faith that God will protect Tuvalu is such a strong belief within the community that some officials identified religion as a barrier

> to awareness of and adaptation to climate change. (Mortreux and Barnett 2009: 110)

This form of social-scientific representation allows proponents to distance themselves from the Noah Story, albeit without being forced to question the basic claim that the local population should participate in decision-making processes over adaptive measures to counter climate change and sea-level rise. The reference to the critical attitude adopted by significant parts of the Indigenous elite towards the Noah Story stresses the emic perspective. At the same time, the selective nature of the approach makes clear the preference such social-scientific accounts show for a partial truth, which, in the final analysis, is surely tantamount to indirectly excluding the Noah Story.

Social-scientific accounts addressing the presence and effects of the Noah Story in the atoll state of Kiribati confirm the image drawn thus far. Hence, Western social scientists, for example Jane McAdam and Maryanne Loughry, commenting on explanations invoking the Christian religion generally and the Noah Story in particular, have identified a need on the part of Pacific Islanders to counter a sense of unease instilled by scientific explanations of climate change:

> Some believe that the current changes and water surges are signs of God punishing wrongdoing. Others believe that the future of Kiribati, though grim, is assured because God promised in the Book of Genesis that there would never again be a flood like the one experienced by Noah. Both explanations restrict the people of Kiribati's sense that they can be active in addressing the climate changes they are experiencing. (Loughry and McAdam 2008: 51)

These authors argue that the Noah Story is symptomatic of an attitude born of religious convictions and complacency; when further compounded by a lack of knowledge, this attitude has led to a mistaken assessment of environmental problems and their bearing on climate change, which can only strengthen passivity and constrain Indigenous agency (McAdam 2011: 114; McAdam and Loughry 2009).[5] Ultimately, this reading implies the necessity of normalising all those subjects who by differing in their beliefs and attitudes remain ignorant and passive.

Comparable insights are offered by another study, this time on the impact cognitive processes are having on the I-Kiribati and the latter's

ability to assess and implement adaptive measures (Kuruppu and Liverman 2011). According to this account, religious convictions, such as in the Noah Story, were cited by approximately twenty per cent of I-Kiribati respondents in justification of their indifferent reaction to possible negative fallout from climate change. Natasha Kuruppu and Diana Liverman (2011) interpret their respondents' belief in God as an avoidance praxis, not only helping the latter cope with a growing sense of hopelessness and dread, but also restricting them in the perception and deployment of their own agency. Based on their particular theoretical orientation and in combination with a claim that the analysis of cognitive processes could contribute to enhancing the adaptive capacity of the inhabitants of Kiribati, the authors interpret this recourse to religion as what they call (borrowing from another author) "avoidant maladaptation" (Kuruppu and Liverman 2011: 659, 666–667).

Peter Rudiak-Gould (2009, 2013) is one of the few authors to have studied the linkages between the Noah Story and climate change in a broader social framework. Based on many years of fieldwork in the Marshall Islands, he points out that while the local population there makes sense of climate change as a phenomenon through the reception of scientific findings and the observation of environmental changes, it also does so through Biblical exegesis (Rudiak-Gould 2013: 8, 41). According to him, the majority of Marshall Islanders accept the reality of climate change and the threat posed. This he traces back to an Indigenous conception—"modernity the trickster"—which combines the striving for progress with the decline of local culture and local lifestyle (Rudiak-Gould 2013: 6, 30, 89, 92–93, 114–115).

The explicitly formulated goal of this author, which is to document and explain the broad acceptance of climate change in the Marshall Islands, largely conditions his representations of the Noah Story (Rudiak-Gould 2013: 60, 92). In particular, he lists the multiplicity of local positions, which either rebut the Noah Story as a sceptical counternarrative or else reinterpret it in terms of recognising the reality of climate change (Rudiak-Gould 2009: 73, 119–120, 2013: 58–61). In this way he makes clear that the version of the Noah Story that rejects climate change, which in any case only finds articulation in a small minority, has already been reinterpreted (and so contained) not only by the majority, but also especially by the local elite (Rudiak-Gould 2009: 77, 2013: 41, 60–61). Besides this indirect exclusion, Rudiak-Gould at times subscribes to the abovementioned social-scientific discourse of distancing and demarcation, as when he associates the sceptical variant of the Noah Story with complacence, inaction,

maladaptivity and psychological defence mechanisms (Rudiak-Gould 2009: 99–100, 117–120, 2013: 133, 191n 9). But for the most part the focus is on the dominant discourse of affirming climate change found in Marshall society, which encompasses and realises the broad-based marginalisation and subordination of the subversive Noah Story by the Indigenous side.

The striking homogeneity of the Christian counterdiscourse, based on the Biblical Book of Genesis, which has long been circulated by minorities within the neighbouring island states of Tuvalu, Kiribati and the Marshall Islands, has, to be sure, occasionally found mention in the social-scientific literature (see McAdam 2011:114; Rudiak-Gould 2009: 73, 2013: 92, 190n8), but never has it been accorded systematic treatment. The potential roots and routes of the climate-sceptical Noah Story as a travelling story and as a transnational actant have so far remained unstudied. The social-scientific representations discussed earlier focused only on the incidence and spread of this counternarrative within a specific atoll state. Here the discursive constructions in the social-scientific studies point to a dispositive, designed to isolate (and so control) the counterversion of the Noah Story as a local "problem,"—the idea being to postulate (directly or indirectly) the incompatibility of Biblical narrative and climate change, religion and science, culture and nature. The primary concern is to constitute a hierarchy of knowledge, understanding and argumentation, permitting the Noah Story to occupy the inferior pole of Christian-inspired deviation, ignorance, passivity and maladaptivity. Such a hierarchy, once put in place, serves to restore and perpetuate the relevance, truth, rationality and dominance of the scientific discourse about the reality of climate change, along with the adaptive measures taken to counter its possible effects.

The Noah Story in Kiribati's Political Arena

The problem with containing and controlling the climate-sceptical Noah Story in order to reconstitute the reality of anthropogenic climate change as an absolute truth, is that doing so omits the political dimension of the production and circulation of truth. If we view climate change, sea-level rise and the Noah Story as actants, which become active in various assemblages, then the distinction between true and false is simply a product of the respective connections, translations and stabilisations. Dominant actors, whether these be scientific institutions, the media, international organisations (Barnett and Campbell 2010: 2), or even Christian churches, endow truths with power, lend weight to the latter, and control the processes of

distribution. The history of an assemblage (Bennett 2010: 24) comprises, then, not only the production of truths, but also confrontations between truths—a game of truth in which dominant truths are exposed to the challenges and destabilisations posed by oppositional truths (Foucault 1980: 131–133, 1988: 15–16). The widespread mistrust entertained by the "global South" against the climate science of the "global North," with its claim to power-political neutrality and universal validity, points to the existence of such power constellations and oppositions (Lahsen 2014).

The contesting—by means of the Noah Story—of the hybrids climate change and sea-level rise within the networks of the Pacific atoll states points, however, to alternative ways of constituting truth. In what follows, I focus on sections of the political establishment in Kiribati; my aim is to take issue with an assumption often implied in the literature, namely that the climate-sceptical variant of the Noah Story is particularly common among simple, largely uneducated people, whereas the national elites, being better educated, recognise the reality of climate change as objective truth (Gemenne and Shen 2009: 14; McAdam 2011: 114; Mortreux and Barnett 2009: 110; Rudiak-Gould 2009: 77, 119–120, 2013: 41, 60–61).

In Kiribati several opposition politicians have, in fact, turned to the counternarrative from the Book of Genesis, enlisting and mobilising it for purposes of critiquing measures, campaigns, plans and scenarios devised by the government, during President Anote Tong's time in office, in response to the projected consequences of climate change. Adopting and co-opting the Noah Story, representatives of the political opposition use it as a platform for establishing concrete linkages between the Biblical narrative and the official discourses currently in circulation—focused on sea-level rise, shrinking coastlines, short- and medium-term adaptive measures, long-term future scenarios, and even the possible relocation of an entire island nation. What we have here is a process of translation, to be sure, but it is no less a record of *Wechselwirkungen* operating between opposition politicians and the Noah Story. Whereas the political actors continue to strengthen the Noah Story as a counternarrative by effecting new linkages, the narrative itself, seen now as an actant within this relational constellation, has led these same opposition politicians to integrate the Noah Story into their political praxis and bring it before the Parliament of the Republic of Kiribati.

Under President Anote Tong, Kiribati's government has prioritised all issues relating to how best to adapt to climate change and sea-level rise over the short, medium and long term. The island state, with its approximate 100,000 inhabitants, consists predominantly of atolls and coral reef islands.

With the exception of Banaba, none of these islands are more than three metres above sea level; on account of this fact and given the modest size of the islands involved, there is no option of retreating inland to higher ground, which might otherwise make sense as a means of countering coastal flooding. Aware of the future perils facing the country, the president and his government set up two major—and still ongoing—projects back in 2003. One is the Kiribati Adaptation Program, the chief goal of which is to reduce Kiribati's vulnerability.[6] The second project is known by its motto: Migration with Dignity.[7] Given that all, or most, of the low-lying islands could be rendered uninhabitable over the long run by climate change and rising sea levels, the government has been promoting emigration as a long-term solution; it has also enacted measures to equip younger generations with the skills they will need abroad. The authorities argue that it makes more sense to initiate a managed process of worker migration now, well in advance of need, than to wait until catastrophe strikes at some point down the road—in fifty or sixty years, say—causing the whole population to flee without a back-up plan.

However, it is precisely this official migration policy—premised on a future scenario that paints the relocation of almost the entire population as a long-term inevitability—that has prompted hefty reactions in the political arena from the opposition. In the back and forth of public debate, the Christian religion, and with it the Noah Story, has repeatedly featured as an argumentative device. This is well illustrated by a segment of a parliamentary debate from December 19, 2007. I single out words spoken by a leading opposition figure, Dr. Harry Tong, who sharply attacked his younger brother and winner of the (then) last parliamentary election, Anote Tong. The opposition politician accused the head of government of adopting the discourse of sea-level rise and telling the world that the land of Kiribati might well have disappeared in around fifty years. Such views could only be asserted, he assured his listeners, by someone who had turned his back on the Lord. After all, "God had spoken to Noah that the world will not be flooded again and he created the rainbow as the sign."[8] This opposition figure went on to stress what he saw as a matter of principle: the importance of relying on the Bible for wisdom and truth. And since that was so, he refused to countenance any talk of the long-term resettlement of Kiribati's people:

> That's why I take issue with the present government, Mr. Speaker, which has announced its intention to look for a [new] place before the flood comes.

> Well, Mr. Speaker, I do not agree with such a justification [that the flood will come]. And that is the real demand I append to my motion today. You must do the very best you can for your people and for your land of Kiribati. This is a challenge, since what will happen in future, Mr. Speaker, this lies in the hands of the Lord, according to His creation and according to His will, Mr. Speaker. This we cannot alter and as for me, I have not the slightest doubt that this idea of the scientists – that the seas will rise up – that this idea of the scientists serves no other purpose but to intimidate small countries like ours, so that we cannot develop independently but will, instead, need to take whatever they, the other side, wishes to offer, Mr. Speaker. I, for my part, in no way consent to this. I refuse my consent, Mr. Speaker. And that is why, Mr. Speaker, I stand fully and wholly behind this motion, for it is a call for our government to stop threatening us with a rising tide and to waste no more time sending such a message out into the world. What we are saying is that our people belong to Kiribati and that this land of Kiribati is our land, Mr. Speaker. Instead of abandoning it, we should be developing it, Mr. Speaker, so that we can handle any changes that may come. What comes tomorrow, and in time to come, that we will leave to the Lord, Mr. Speaker (Parliament of Kiribati 2007).

Hence, it was that Dr. Harry Tong, in the full glare of parliamentary debate, fell back on the Christian religion, mobilising it to disavow the policy of the current government on climate change, sea-level rise and migration. He construed the Noah Story as a Christian counternarrative, one that could now be wielded to cast doubt not only on the integrity of the head of government, but also on his public stance vis-à-vis sea-level rise, the relocation issue, and Kiribati's very future. This instrumentalising of Christianity by a leading member of the opposition also (and especially) has to be seen against a background where almost all I-Kiribati are Christians. By referring to the country's Christian beliefs, values and truths and by inserting this rhetorical strategy into the parliamentary debate, he gave legitimacy to his own political claim to speak for the majority of the population. The association of this opposition politician with the Noah Story and his resultant contestations of scientific discourses, sea-level rise, inundation scenarios, governmental action and resettlement plans should, indeed, be understood as a move in an ongoing political praxis of organising a majority and wielding political power.

The Noah Story would remain, in the following years, a shaping element in the political relational matrix of this atoll state, despite the fact that not all actors drawing on this narrative, and making it their own, were prepared to go all the way and categorically deny the reality of climate change. The

leading opposition politician (and former president) Teburoro Tito, for example, is reported as having taken such a stance in an online article published on February 16, 2011 (Reed 2010). The title was "Climate Change and Faith Collide in Kiribati":

> 'I'm not easily taken by global scientists prophesizing the future,' says Teburoro Tito, the country's former president and now a Member of Parliament. Tito says he believes in the biblical account of Noah's ark. In that story, after God devastates the world with a flood, he makes a covenant with Noah that he will never send another . . . So while Tito does acknowledge that global warming is affecting the planet and that he has noticed some impacts, he says rising sea levels are not as serious a threat as [President] Tong and others are making them out to be. 'Saying we're going to be under the water, that I don't believe,' Tito says. 'Because people belong to God, and God is not so silly to allow people to perish just like that.' (Reed 2010, 2011)

The fact that this opposition politician does not expressly rule out the possibility of anthropogenic climate change, but merely contents himself with playing down the risk posed thereby, points, I suggest, to a gradual stabilising of the climate change discourse in Kiribati, a pattern which is also apparent in other social contexts (Kempf and Hermann 2014: 204–207). So what we have is a situation where the association of political actors and the Noah Story within the network is being readjusted to maintain the efficacy with which contestations are mobilised and routinised. Consequently, central elements of the Christian-inspired counterdiscourse remain active players in the political arena: When scientists make statements about the fatal consequences of future sea-level rise, they are likely to be greeted by references to the Noah Story and God's protective hand—a riposte meted out equally to the discourses, projects, and perspectives of the current government. The point of opposition politicians associating themselves with the Noah Story is to counter the power of such concatenations of actors who reject any continued existence for Kiribati and its people—as a land, as a society, as a culture, as a way of life, as a national identity—which is tantamount to denying any future prospects at all to the atoll state. What the opposition politicians are doing by thus instrumentalising the Christian religion is to bring into the picture a higher authority, a step that allows them to redefine the future, not as discontinuous and as breaking with the past, but as marked by continuity and stability.

Mobilising the Noah Story in Songs

Politicians carrying the Christian religion, especially the Noah Story, into the political arena, in order to contest scientific statements about the consequences of climate change and the necessity for future relocation, reproduce a discourse long known to, and variously anchored in, the population of Kiribati. One way to approach this discourse, I suggest, is through locally composed songs. For the I-Kiribati songs, but also dances and dramatic pieces, represent powerful actants. The contemporary landscape of composing in Kiribati is extremely heterogeneous. The point to note is that the power of such songs derives from the words that composers (mostly male, but sometimes female) think up or receive with the help of ritual power-knowledge (Bataua 1985; Kempf 2003; Kirion 1985; Lawson 1989). Words have the power to make something happen. The wording of the songs organises the composers' intentions and anticipate the future realisation of the defined intentions and goals. Those who compose songs with Christian themes are no less committed to the power of words than celebrated composers, who may further enhance potency with ritual power-knowledge.

The anticipatory power of songs is currently finding the same confirmation in songs that I-Kiribati composers created decades ago (on various occasions and for a variety of reasons), songs now recast as local articulations having foretold climate change and sea-level rise. This recent repositioning of songs combines the power of older compositions to point to the future with an ability to identify alternatives to the scenarios of inundation and disappearance imported into Kirabati, the better to regain tomorrow by one's own efforts.[9] I concentrate, however, on locally composed songs that have been recently written in reaction to the present dominant discourse on climate change and its possible consequences for Kiribati. Foregrounded are the only two songs I know of from Kiribati to link the Biblical Noah Story to the idea of climate change.

The first song mobilises the Noah Story as a counternarrative to the scientific discourse on the projected impact of climate change. It became known through the singing group of the Kiribati Uniting Church named "Bitibiti" (which means something like "strong" or "powerful"). The group is based on South Tarawa, the most densely settled part of Kiribati. More precisely, its members hail from the section of Takoronga in the suburb of Betio. The song is called "Taekan Rabakau" (Scientific Knowledge) and is the work of the late Kourataake Tekiata and Tibwere Bobo

stemming from around 2000. Tibwere Bobo, whom I was able to interview in September 2009, had this to say about the circumstances of the song's composition:

> That time when this global warming and sea level rise was first introduced here, you know, the message – when it was related to here, well, the people were confused. And for our part – I am also involved in composing songs for church groups, you know. And that old man [Kourataake Tekiata] was my mentor. He taught me how to compose these songs . . . Most of the songs are related to Christian values. About living a good life, believing in Jesus Christ, how to love friends and all your neighbours, you know. That is what we normally do. But this one [the song "Taekan Rabakau"] came in at the time that this issue is coming up – about ten years back, I think. This was when our people became confused about this topic. They asked: 'Is it true that the flooding is coming?' Floods, you know, when God made a covenant that there were no more floods coming. That was their question. And we tried to put their minds and the discussions at peace and [tell them]: 'Relax and try to balance that – forget about it.' And so we made that song.

My interlocutor attributed the song's creation to the fact that the spread of information on sea-level rise and what this meant for the people of Kiribati had, at the time, caused considerable unrest among the local population: "The people were confused whether they would survive if it happened" (September 14, 2009). The general unease, agitation and mood of protest were partly ascribed by the composer to an imprecise information policy pursued by the then government. In this situation, he and his teacher had decided that a new song might help them reach their immediate circle of friends and the congregation: "We thought we could contribute something useful to the people and put their minds at ease, tell them to relax and think about other things rather than about this tragedy" (September 14, 2009). They decided to rework the Noah Story as a counternarrative. Playing on God's Biblical promise to send no more floods, they composed lyrics whose central message was that the efficacy and might of a Christian God is above such things as (Western) science and the statements of its representatives.

"Taekan Rabakau"	*Scientific knowledge*
1)	
Ai kamimira taekan rabakau	We were amazed when a strange scientific theory

(*continued*)

*"*Taekan Rabakau*"*	*Scientific knowledge*
Ake a tataekinaki	Was announced with predictions
Ba ena iekaki aonabara	That our world will again be flooded
Ni korakoran te iabuti	By the rising of the high tide
Chorus	
Bon te Atua ae karika aonaba	It was God alone who created the earth
Ma kanoana ni bane	As well as all that is on it
Ao e tautaeka iaoni baa i nako	And He alone rules everything
Akea riki n te aonnaba	No one else can do so in this world
2)	
Taekan rabakau ake a roko	The scientific theory which came to the public's notice
A kariki nanououa	Unsettled us deeply
Ni maiuia botannaomata	About what will happen to the people living here
Ake ana bane rotaki iai	All those affected [by the flood]
3)	
Ngkana tao nanon te Atua	If it is God's will
Ba e na toki te ieka	That the flood will cease
Ao antai te tia rabakau	Who other than He who knows all [in Heaven]
Ae na kona n atai baikai	Could predict these things?

"Taekan Rabakau" is, according to Tibwere Bobo, a popular song that continues to be sung not just on urban Tarawa itself, but also on many of the country's outer islands. In the course of our conversation, however, he also explained that some things had changed since the time of composition. Many I-Kiribati were now better informed about the causes of global warming and the projected consequences of climate change and sea-level rise, despite the fact that, in the end, they were powerless to reverse this development. Against this background, my interlocutor emphasised that their song, properly understood, was far from a general denial of sea-level rise: "We don't want to convey the message to them that there is no sea level rise. Because we don't know. Maybe there is, maybe there is not. What we have – we stick to our faith and believe that something is alright" (May 14, 2009). However, the specific linking of flooding, sea-level rise, science and the power of the Christian Creator evokes a closeness to the Noah Story that is shared by many I-Kiribati who continue to associate it with adopting the counterposition to climate change and sea-level rise.

At the same time, the contemporary reception of "Taekan Rabakau" reveals allusions to a process of translation that—in the years since the late 1990s—has had the effect of modifying its position and efficacy within the assemblage of song, science and religion. Thus, for example, a singing group of (male) I-Kiribati students at the University of the South Pacific in Fiji,

which had included "Taekan Rabakau" in their repertoire, also saw the song primarily as a "challenge to climate change." However, the members of this singing group with whom I was able to speak in August 2014 insisted that their regular performances of the song had nothing to do with expressing climate change scepticism. Indeed, some of their members were either focusing in their studies on issues connected with climate change and its effects or working in associated fields. What mattered most for them were their shared ties with their country of origin and, more particularly, with their home suburb of Betio in South Tarawa, as well as their membership to a Christian congregation there. Linkage with the Noah Story and the underlying climate-sceptical basic tone of the song were but secondary considerations compared with its performative effect as well as its demonstrated agency for instilling ethnic identity, a sense of home and Christian togetherness in the diaspora.

The second song presents an affirmative version of the Noah Story. It is the work of the late Nenem Kourabi (1946–2014), with whom I had the honour of collaborating over many years (Kempf 2003, 2014). In 2009, he introduced me to a kava group[10] in South Tarawa of which he was himself a member (Fig. 2.1). In the course of our discussions regarding the likely consequences for Kiribati of climate change and sea-level rise, two members of the group who taught at a local high school offered to draw up questions on the topic and to distribute them to students in a science class. It took several days for the full process to be completed in view of the fact that the teachers had allowed the students to take the questionnaires home and return them filled out. The final result was that twenty-five out of some seventy questionnaires distributed were completed and handed in. Of the completed questionnaires, no fewer than fifteen contained (in part) extremely detailed accounts of the causes of global warming and the possible consequences of climate change for Kiribati or Pacific island states generally. At the same time, it became repeatedly apparent from the students' comments just how seriously they viewed the prospect of Kiribati's existence being called into question by rising sea levels. Another five students (of both genders) expressed massive doubts about the reality of climate change and sea-level rise, citing the fact that they could see no evidence of this happening in their own immediate environment.

In another five questionnaires, students justified their sceptical attitude towards global warming and/or climate change by linking this directly to the Noah Story (Kempf 2014: 77–78). It was these questionnaires, above all, that became the object of intense discussion within our group. My

Fig. 2.1 Members of the kava group in South Tarawa with the song composer (*right*) (Photo: Wolfgang Kempf 2009)

interlocutors explained the popularity of the Noah Story in terms of the great importance of the Christian religion to the population. Firmly anchored in the national mindset, as central as the love felt for the land of their forebears (contribution by Hermann in this volume (Chap. 3)), was the conviction that God would not let the people of Kiribati down in their hour of need. Therefore, it was understandable, I was told, that some of the students surveyed were deploying an argumentative resource that many of Kiribati's Christians had already mobilised against the forecast threat to the nation's existence from climate change and sea-level rise. At the same time, the conviction became widespread within the group that, for the sake of the younger generation, a way had to be found between the twin poles of religious and scientific perspectives.

And so Nenem Kourabi thought he would compose a song of his own (Fig. 2.2). In it he took aim at the Noah Story, reinterpreting it though in a new way in light of climate change and sea-level rise. Had not Noah—he argued in the lyrics—been warned by God and had he not, as a result, been able to make due preparation to survive the flood when it came? The composer stressed his hope that this new song would stir people up and

Fig. 2.2 Nenem Kourabi (1946–2014), the composer of "Ai kamira kanoan te bong" (Photo: Wolfgang Kempf 2009)

get them to take scientific predictions of what would happen in the wake of climate change not only as a salutary warning—but also as an opportunity to assume responsibility and take whatever steps were needed.

Ai kamira kanoan te bong	*How amazing events are day by day*
1)	
Ai kamira kanoan te bong	How amazing events are day by day
Bibitakin te aonaba	The global changes
Rikiraken iabutin taari	The rising of the sea level
E rotaki Kiribati iai	Is affecting Kiribati
Chorus	
Ao ngkana tao	If it is going
Bon te koaua aei	To really happen
Ao e eara ba	Why don't
Tiaki katauroi	We get prepared?
Te ieka n ana tai Noa	The flood in Noah's time
E karekea te katauraoi	Acted as a warning
E aokaburake Nei Wirara	The rainbow appearing in the sky
Ba kaotan te berita ni kamaeu	Was the sign of salvation

(*continued*)

Ai kamira kanoan te bong	*How amazing events are day by day*
2)	
Banaan te taeka n rabakau	Listening to scientific advice
Boni kawain te maeu	Is a way to salvation
Tera tibangara ae riai	What are our responsibilities?
Tina baina te tauraoi	We have to be prepared

Nenem told me: "What I had in mind, what I was getting at [in this song], is contained in the words 'be prepared.' … Noah was given adequate warning … And now, in our time, scientific prediction is a sign or warning given to us … 'Get prepared before it happens!'" (September 12, 2009). Songs mainly owe their effect to the power of words. For that reason, it was necessary to choose them carefully. New associations and translations had to be created, so that the Noah Story could accord with scientific predictions concerning the consequences of climate change and sea-level rise. Warning, preparation, salvation—the Biblical account shows the path that has to be trodden, in view of the scientific projections.[11] The composition of its elements makes the song an actant, which is directed at anticipating and realising the population's will to resilience and adaption (see Hermann, this volume (Chap. 3)).

The song "Ai kamira kanoan te bong" has yet to attract the same amount of attention in Kiribati that has been bestowed on "Taekan Rabakau," put on by the Protestant singing group from South Tarawa. The career of "Taekan Rabakau" makes clear that the relevance and efficacy of the Noah Story as a counternarrative to climate change and sea-level rise is never less than the changeable result of its reticulations and performances. At a certain point, the composers thought the time was ripe for a song on the link of the Noah Story to climate change. In each of the songs, the composers were seeking to convey agency and perspective to local people—whether by attempting to affirm trust in the Creator (rather than in scientific predictions) or by deriving from the respective narratives (Biblical and scientific) a model for adapted behaviour patterns vis-à-vis the impending threat of climate change. Now, songs are conceived by the I-Kiribati as stable actants. They can last for some time, without necessarily having to be often performed. Their importance and efficacy is, however, codetermined by the distributive agency of other actants within a given assemblage.

Conclusion

The dissemination of the actants climate change and sea-level rise caused many of the inhabitants of the Pacific atoll states Tuvalu, Kiribati and the Marshall Islands to associate their Christian convictions—in particular, the Biblical Noah Story—with the presence and potentiality of these hybrids. These new associations enabled Pacific Islanders to contest the dominance of the scientific projections and truths by invoking the higher instance of divine authority. But as a counternarrative the Noah Story also inspired affirmative versions, in which the Western climate narrative was co-opted on the basis of Biblical exegesis. These two elemental expressions of the Noah Story were further activated, constrained and assessed in an ongoing process of reciprocal influencing and constituting. The multiply documented parallels in respect to this development not only point to the spread, agency and modification of the Biblical narrative within the individual countries; they also point to the possibility that the Noah Story as a transnational actant may have been active in the cross-border zones between the three atoll states.

Social-scientific studies, to the extent they have addressed this specific assemblage of Christian religion and Western science in Pacific societies at all, chose to prioritise the Noah Story as a counternarrative to climate change. It was—seen from the outside—the mixing of religious and scientific perspectives that drew attention and challenged the reconstituting of a Western-rational *cum* natural order of things. The focus was placed on the local contestings of climate change and Western science, together with their representatives, by a Christian-inspired narrative from the Book of Genesis, seeking to invalidate global sea-level rise via the power of the rainbow. Moreover, convictions of this kind circulated primarily in the same Pacific island states whose low-lying atolls and populations made them especially vulnerable to the risks and dangers from global warming. The affirmative version of the Noah Story could be rendered anthropologically fruitful only as a local way out of the valley of negation. The subversive variant, however, shook at the defining power of Western-continental climate science, a defining power that had to be consolidated in view of the real consequences of global warming for the atoll states. By way of responding, the associations with natural-scientific axioms and projections were accentuated, implicitly or explicitly, with a view to distancing and so containing the Biblical counternarrative and the local actors. The price for such purification was a constituting of the other via ascriptions of marginality, ignorance, passivity and maladaptivity.

A relational ontology, by contrast, opens a fundamentally new perspective. The symmetric ordering of human and non-human entities turns the Noah Story into an actant within a network. The agency of this assemblage, comprising as it does global warming, sea-level rise, the Christian inhabitants of the Pacific atoll states and the Biblical Noah Story, results from the interaction of the elements of this specific formation. It is important to note the capacity of the Noah Story—to be sure, in association with the other actants—to become effective and to achieve outcomes. A relational ontology which conceptualises the agency of actants because of their multiple and diverse associations helps us to better understand (and, by implication, to more accurately represent) the emic perspective. Only thus can the sociopolitical efficacy of the Noah Story, viewed both as a counternarrative and component in a dialogic process, be addressed in an analytically adequate manner.

This holds, first of all, for the political arena. The assemblage woven together from the Biblical narrative, political actors from the opposition, parliamentary structures, debates about sea-level rise and migration seeks to transform the future *qua* caesura into a future of continuities, the better to contest and deflect the dominant trajectory of inundations, loss and displacement. Moreover, it now becomes possible to identify networks of composers, songs and singing groups as actants that formulate, perpetuate and also modify Christian-derived contestations of climate change and sea-level rise as part of a continuing social dialogue. In this way, we can also clarify the processes of appropriation and reworking, where the aim is to align, to harmonise, the Noah Story with the prevailing scientific discourse on the consequences of climate change and sea-level rise. It is important to bear in mind that pointing to a translational and transformational process, one that places the Noah Story in the service of accepting scientific findings on sea-level rise, should not be understood as a final synthesis or the endpoint of a development. The modification and repositioning of the Biblical narrative is but one further result of negotiations, displacements and new combinations in an open-ended historical process of translations and reticulations. Such insights confirm the need to take the Christian religion seriously as both praxis and politics in the context of climate change, sea-level rise and migration. A relational ontology contributes importantly on the analytic level to advancing this goal.

Notes

1. See Descola regarding this (1996: 7, 26–35). Against the background of a radical empiricism and systematic implementation of processual reticulations of actants, such as is proclaimed by Latour, Descola's essentialising study of an autochthonous world of Otherness turns out to be more of an outmoded form of a modern ethnographic representation than a description of a premodern world.
2. When God decided on His covenant, it was not just with Noah and his children and his children's children; it was with all the creatures who would one day walk the earth—hence, the rainbow stands for an ontological formation wherein all living creatures are, as a matter of basic principle, assured of a place within the social world (see Genesis 9: 8–17).
3. Among the exceptions here are Mortreux and Barnett (2009: 109–110) and Rudiak-Gould (2009, 2013).
4. Paton and Fairbairn-Dunlop's article is silent on whether the Noah Story has spread beyond Tuvalu and whether it is has reached the New Zealand or Fijian diasporas. The issue of whether—and if so, how—the counternarrative is being spread within the diasporic dependencies of atoll states remains generally unclarified, especially in studies dealing with the Noah Story.
5. The better to justify such views, Jane McAdam (2011: 114), especially, refers to interviews she conducted with members of Kiribati and Tuvalu's political and ecclesiastical elite. Thus, her appraisal of the Noah Story is chiefly based on a strategy of indirect exclusion.
6. Top priorities are alerting the population to the full extent of the problem, protecting the country's freshwater resources and coastal zones, and consolidating the local infrastructure. See http://www.climate.gov.ki/category/action/adaptation/kiribati-adaptation-program/, accessed April 12, 2013.
7. See http://www.climate.gov.ki/category/action/relocation/, accessed April 12, 2013.
8. This quotation and the following cited passage were rendered collaboratively into English from the Kiribati language by the author and an I-Kiribati field assistant. It is taken from a speech Dr. Harry Tong gave before the Parliament of the Republic of Kiribati on December

19, 2007 (see www.parliament.gov.ki/hansard/Wed19Dec07.doc, p. 377; accessed December 17, 2009).

9. For a detailed account of the culture of composition, as well as the associations that have recently been established between a song known in Kiribati for decades and the much younger threat to this atoll state posed by climate change and sea-level rise, see Hermann and Kempf (Forthcoming).
10. The kava beverage is made from the dried und pulverised roots of the kava plant (*Piper methysticum*). The sedative and relaxing effects of this psychoactive substance are well attested. In earlier times the consumption of kava was unknown in Kiribati, but over the past thirty years or so, it has gained ground to the point where it is now an established part of island life. Since kava cannot be grown in this atoll state, it has to be imported in the form of dried powder from Fiji, Vanuatu and the Solomon Islands (see Pollock 2009: 280–281). Evening kava gatherings are social events that often involve the singing of songs.
11. Striking are the parallels to documented statements by several Marshall Islanders and Tuvaluans, as cited in both Rudiak-Gould (2013: 175) and Paton and Fairbairn-Dunlop (2010: 691–692; see Lusama 2007: 14–16). In both cases, the Noah Story is likewise associated with the thematic categories of warning and preparation in the face of the current problematic of sea-level rise. It remains an open question as to how far such interpretations of the Biblical narrative should be read as travelling stories negotiated across (and beyond) national borders. The composer Nenem was silent on this issue.

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CHAPTER 3

Climate Change and Worries over Land: Articulations in the Atoll State of Kiribati

Elfriede Hermann

Introduction

Pacific Islanders know their environment. They know that it is changeable and they know how it was formed by a plurality of forces in the past and present. Change is something they are well used to. However, the pattern in recent years is for them to be confronted with discourses of climate change projecting an uncertain future; in all likelihood, they must now reckon, so they are told, with stronger environmental changes than they have ever experienced before. Scientific projections concur that the impact of climate change—rising sea levels, for example—will be especially harsh on atolls. Atolls are coral islands, often enclosing a lagoon and rising only a few metres above the surrounding ocean (Barnett and Adger 2003). Pacific Islanders living on atolls, in recent years, have had to deal with discourses relating to climate change, discourses that refer to scientific sources and transmit information in a simplified, but at times dramatic way.[1] Atoll inhabitants react to news of this kind by developing emotional discourses about the land and its people. Among these emotional discourses a specific one turning on worries may be found—worries Pacific Islanders have not just for themselves and their families but also for the land they inhabit.

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Worry can be seen as a specific manifestation of emotions that merit serious attention, especially for cultural and social scientists delving into local reactions to climate change and expected environmental changes (Hermann 2011a). Emotions feature only marginally in current social-scientific research on the cultural reception of climate change in the Pacific region. Thus, for example, the voices of Pacific ambassadors to the United Nations have been documented, who have alluded in interviews to their fear of climate change and the sadness of those they represent at the thought of impending consequences of climate change (cited in McNamara and Gibson 2009: 479–480). For information about worries felt by the Marshall Islanders at the prospect of climate change we are indebted to Rudiak-Gould, who noted of the inhabitants of this atoll state "concern is impressively high" (Rudiak-Gould 2013: 92). Similar worries on the part of their southern neighbours, the people of Kiribati—likewise an atoll state—were cited by Kuruppu and Liverman (2011: 664–665), who explicitly asked their respondents "whether or not they were worried about climate change and their reasons for [un]concern" (Kuruppu and Liverman 2011: 664). These mentions aside, there is still a paucity of informed studies on emotions of local populations as a response to talk of climate change. In view of this, I suggest that emotions should be moved closer to the centre of research attention because they have much to tell us about how people cope with challenges of the kind posed by the real possibility of climate-induced transformation of the environment.

In this chapter, I examine how worries are articulated by the I-Kiribati, that is the inhabitants of Kiribati, arguing that worries indicate a will for social resilience in the face of projections of how climate change will likely affect their islands. In cognising their worries, I am indebted to a perspective on emotions that first emerged in the field of ethnopsychological studies. As Catherine Lutz (1985: 36) has explained, ethnopsychology sets itself the task of exploring the ways in which members of a cultural community conceptualise, observe, and discuss their own and others' psychic processes, concomitant behaviour patterns, and relationships. As a cultural system of knowledge open to the interpretation of self and others (Lutz 1985: 39), the ethnopsychology of any community is never static but constantly transforming in a historical trajectory (Hermann 1995: 56). Emotions form an integral part of any culturally specific ethnopsychology (Lutz 1988; White 1992). One particular basic assumption of ethnopsychological research that I have drawn on is found in the work of Michelle Z. Rosaldo (1984: 137), who has enunciated a concept of emotions as "embodied thoughts." Related to this is the insight that "affect is culturally ordered"

(Rosaldo 1984: 137) or, as Birgitt Röttger-Rössler has put it, that emotions are culturally modelled (Hermann and Röttger-Rössler 2003: 9; Röttger-Rössler 2004). Particularly important for my own perspective is the discursive-analytic approach as developed by Lila Abu-Lughod and Catherine Lutz (1990: 10, 12), turning on the conceptualisation of "discourses on emotion" and "emotional discourses." Abu-Lughod and Lutz draw on Michel Foucault's premise that discourses are "practices that systematically form the objects of which they speak" (Foucault 1972: 49)—discourses that are situated within specific power relationships and hence yield real-world effects.

Building on the research of these authors, I propose an approach that sees emotions as reciprocally linked to historicity (Hermann 1995, 2005). Emotions, in my take, are influenced by historical processes and by historical awareness, a relationship that is, however, no less true in the reverse direction. Accordingly, I suggest, worries—like other emotions—can be understood as embodied statements linked to historicity, statements that are social practices, deal with social relationships and may have to do with political interests and even strategies. If, as in the case study I offer, worries refer not only to people but also to the land itself, they are connected to knowledge about the reciprocal relationships between human beings and other-than human beings. In light of such interconnections, I conceptualise worry using the theoretical construct of "articulation" in the sense originally developed by Jean Comaroff (1985: 153–154) and Stuart Hall (1986: 53–55)—that is to say, in the dual sense of an act of "giving expression to" and an act of "linking." In this particular sense, worries are embodied articulations comprising thoughts and social practices, linking people with people—but also with the land and other points of reference in the environment—and giving expression to these linkages.

For my study of the articulations and effects of worries, I also draw on the concept of "social resilience," which has in recent years increasingly gained entry to the literature on the cultural reception of climate change (Kempf 2012a: 232–234). I rely on definitions equating social resilience with the capacity of communities to come to terms with external disruptions and stress (Adger 2000: 347, 361; Hastrup 2009: 20; Bollig 2014: 264). Following Neil Adger (2000), I see social resilience and ecological resilience[2] as interlinked. Kirsten Hastrup (2009), shows that social resilience is inherent in agency, and I adopt this as the focus of this chapter. Hastrup construes social resilience "as a process of reorientation within local horizons of expectation and senses of being in the world," and concludes

that "resilience is an aspect of agency – and thus thoroughly social" (Hastrup 2009: 28).

I cannot presuppose that any worries already afflicting Pacific Islanders at the present are due to perceptible consequences of climate change. What does strike me though is that the intrusion of discourses on the likely inroads of climate change already constitutes a stress factor that must be dealt with. Here, as elsewhere, climate change is as much a social phenomenon as a physical one (Hulme 2009). Adopting a discursive-analytic perspective based on Foucault (1972, 1990) what I see at work are discourses in which knowledge and power intermesh. With Foucault (1980: 118), I assume that the effects of truth are generated in discourses. Discourses about climate change that are of external provenance, as well as those circulating within individual countries, may be said to transmit knowledge and produce power. In the field of social-scientific study of climate change, Jon Barnett and John Campbell (2010) have especially researched the production of such discourses and the concomitant power relationships. In light of what they call "small island developing states," Barnett and Campbell (2010: 2) note that hegemonic discourses often depict the consequences of climate change for the environment as constituting a fact against which nothing can be done on the local level. But what such discourses overlook, they argue, is that social factors can contribute to adaptation. Moreover, these discourses deny local actors the possibility of agency (Barnett and Campbell 2010: 2). However, from an anthropological perspective, it has to be emphasised that Pacific Islanders do have social potentials of their own, potentials that can be activated to master and adapt to the inroads of climate change (cf. Lazrus 2012). If, then, I choose to inquire into the role worries play in the formation of social resilience, it is with the aim of revealing an aspect of these potentials. Hence, I examine discourses relating to worries about land in the Pacific island nation of Kiribati. Certainly, the potentials of Pacific Islanders like the I-Kiribati are to be seen in terms of how they network with the potentials of other people and environmental entities particularly implicated in the context of discourses on climatic change. Such entities may be seen from the perspective of the actor–network theory as "actants," or "participants in the course of action" (Latour 2005: 70). Among these are both the land and ocean, which are now connected with global warming and climate change. Following Bruno Latour (1993: 50), all of these entities may be called "hybrids" (see Kempf this volume (Chap. 2)). When worries as embodied articulations (just like other emotions) form important parts of a particular

network they can likewise be seen as actants. This perspective, I suggest, offers further insights into culturally specific ontologies. If worries point to reciprocities between social beings, they can also alert us to the degree to which not just human but also non-human entities—which are the subject of such worries—contain (from a culturally specific perspective) social dimensions. Another advantage of viewing worries through this analytic lens is that we can better grasp the extent to which such emotions (this time from an ontological perspective) are caused by other actants in the network.

The data analysed below are taken from ongoing anthropological field studies of mine in Kiribati. Since 2009, I have spent about a month each year doing research in Kiribati, chiefly on the islands of Tarawa, Nonouti, and Onotoa. My interlocutors and respondents have hailed from different places: a great number of them from the various Kiribati atolls and many of them from the transnational Banaban Community, whose geographic reach extends from the ancestral island of Banaba to Tarawa and all the way to Fiji (Hermann 2003; Kempf 2004; Kempf n.d).[3] The manner in which I proceed with my field studies is strongly influenced by a method I call "observing partial participation in discourses." Assuming, with Foucault, that all of social life is marked by historically shaped discourses requires "deep listening" to local discourses and taking careful note of meanings assigned to concepts, discursive formations, and ways of acting. This we should do to the fullest extent possible, if we are serious about performing adequately in the field and conducting research with the people there in a cooperative spirit. Such participation in discourses can, by its very nature, only be partial[4] and must go hand in hand with systematic participant observation as well as methodological self-reflection. My interviews would begin with a topic previously agreed with the interlocutors; this phase would be followed by the latter's narrations (these would be focused on certain objects and often include biographic elements). The final phase would contain (although not invariably) semi-structured elements bearing on the thematic focus. I also make use—in the sense of structured interviewing—of questionnaires with four open-ended questions (in English and in the Kiribati language), to which my respondents are invited to reply in their own words.[5] My face-to-face communication has been continued per email with several interlocutors following my return from the field. Also, my research involves the analysis of diverse sources (from private archives, governmental organisations, non-governmental organisations (NGOs), and the media).

Kiribati, Land, and Climate Change

Kiribati is one of those Pacific states that merit the appellation "atoll state." It comprises thirty-three islands, of which thirty-two are low-lying atolls or reef islands and one (Banaba) is an elevated phosphate-bearing island (Neemia and Thaman 1993: 288; Storey and Hunter 2010: 168). The atolls and reef islands rise to a maximum of around three metres above sea level (Neemia and Thaman 1993: 288). The state stretches for some three million square kilometres in the Central Pacific. A glance at Kiribati's history shows that its islands have long been integrated in global history. The missionisation of the I-Kiribati goes back to the mid-nineteenth century (Etekiera 1984). The bulk of the islands that now form this state belonged after 1892, together with those that now comprise the neighbouring state of Tuvalu, to a British protectorate and, after 1916, to the so-called British Gilbert and Ellice Islands Colony. In 1979, Kiribati gained political independence from Great Britain and became a sovereign state. In the early colonial period, the British had their protectorate headquarters on Banaba (also known as Ocean Island), on which phosphate was discovered in 1900 (Macdonald 1982: 75, 92, 100). The rich phosphate reserves were worked by the phosphate industry until the end of 1979. During this period of intensive mining, Banaba was transformed into a cosmopolitan place (Silverman 1971: 160), where Australians, New Zealanders, Japanese, Chinese, as well as Gilbert Islanders, Ellice Islanders, and Banabans worked side by side for a number of years (Shlomowitz and Munro 1992). After the Japanese occupation of Banaba during the Second World War and its subsequent return to British rule, the Banabans were resettled on the island of Rabi in the British colony of Fiji (Maude 1946; Silverman 1971; Teaiwa, T. 1997; Hermann 2003, 2004; Kempf 2003, 2004; Kempf and Hermann 2005; Teaiwa, K. 2015). Later, the British colonial administration relocated to the atoll of Tarawa, where today's government has had its seat since independence (Macdonald 1982: 163). South Tarawa acquired an urban character as a result of its infrastructure, a growing economy, and, not least, an influx of islanders from the more remote outer islands (van Trease 1993).

Land is for the inhabitants of Kiribati, the I-Kiribati, of fundamental importance and integral to their way of being. In the ontology of the I-Kiribati land is the fundament on which their very existence rests; therefore, it has unique status. In the traditional mythologies it was created by Nareau (Beiabure et al. 1984), whereas Christian understandings of God hold that He created the land. Either Nareau or God—or else both of them,

for the combination of mythic and Christian versions has yielded a notion of the two deities either co-existing separately or blending together—gave the land to the people so that, surrounded by a wide ocean, they might settle down and live. Common to all these versions is that land is not so much matter as the material manifestation of divine power. As such, land is seen in relation to other non-human entities like ocean and waves, winds and clouds, rain and water, sun, lightning and thunder, but also the sky, moon, and stars. The existential importance of land derives from its also including those who live there, the people on the land. In fact, land and people are inseparably linked in the cultural logic of the I-Kiribati, a logic reflected in the Kiribati vernacular by there being a single term for both: te aba (land/people). This network between land and those living on it—what we might call the land as a living presence—possesses for these islanders historical depth. Referring to the past, they point out that their ancestors once fought for the land they now live on and shed blood for their native soil (cf. Tito et al. 1979: 21–23). Even now, the I-Kiribati bury their dead in close proximity to their dwellings—that is to say, they inter them on their land. Thus, the plot of land belonging to a particular family contains social dimensions of the dead relatives. But a plot of land also contains a further social component, which is that of living relatives, either of the paternal or maternal side. These relatives are included in the social fabric and entwined with the land, whether or not they actually inhabit their family plot. This conception of land/people is not, however, restricted to the level of descent. That is but a fraction of what is signified. Thus, aba can also stand for an island as well as the community living there from which a person stems. In the frequent event that genealogical lines derive from a number of island societies, aba can mean all of them too. Furthermore, the term te aba (the land/people) has, in recent years, acquired the meaning of national territory and the nation to which one belongs. Thus, the I-Kiribati frequently refer to their nation using the expression abara ae Kiribati, in the sense of "our national community/land that is Kiribati."

I-Kiribati know which island/community they stem from, and they are familiar with the land as a living presence, linking the people on it to the ancestors. Discourses about belonging prompt them to identify strongly with the land/people nexus on a variety of levels: family, regional, and national. As a result of internal and international migrations, but also intermarriage between members of societies with divergent cultural understandings, many of today's I-Kiribati unite multiple identifications in their own persons. Many came to know, due to mobility between different

Kiribati islands, places of special significance for themselves; many have journeyed further to other Pacific states, or even beyond the Pacific, and are acquainted with a wider world. Such people can make comparisons between the places where they grew up and the places where they now reside. The relationships they have developed with the various places and societies they know, or have come to know, are of variable intensity and are variably stressed depending on context. On those Kiribati islands where I-Kiribati have been living for a long span of time, they have developed a sense of place, cultivating a deep familiarity with a landscape they have helped to shape. They have developed an intense awareness of coastal zones, the atoll's lagoon, causeways linking tiny islands, sea walls, and the maritime landscape they inhabit, including the local flora and fauna and the intensity of the sun's radiation. Nor has it escaped the attention of many that building causeways between the small islands has altered the coastal zone; the currents are different from what they once were. Sand has been washed away in many places and has accumulated in others. I-Kiribati identify not only with the (changing) places, but also with the ways of life they have fashioned within their families, within their island communities, on the national level, and even in the wider world. Thus, the islanders have long perceived their environment as subject to change. But such networks of land, places, and identifications, all of them products of movement, are now encountering discourses on anthropogenic climate change, discourses that have slowly grown in intensity in the first and second decades of the new millennium (Kempf and Hermann 2014).

Climate change discourses—both those coming from outside and those circulating within Kiribati itself—all concur on one point: global warming will almost certainly have serious consequences for Kiribati (cf. Neemia and Thaman 1993: 295). Such discourses have, in recent years, created a truth of their own; in this discursive context, all it takes is a prolonged period of great heat, or storms with unusually high waves, or some other freak weather phenomenon, for climate change to be evoked by way of explanation. In some I-Kiribati (and other) circles that are informed about the relevant scientific studies, one hears that not one but a number of outcomes are projected: chiefly mentioned are rising sea levels, an increase in the annual mean air temperature, and an increasing frequency of extreme weather events with consequences for the availability of drinking water. Many I-Kiribati, who owe what they know of climate change to local radio or government representatives, churches, or NGOs, have come to associate it with stronger solar radiation, manifesting itself in higher

temperatures (cf. MacKenzie 2004). But the consequence of climate change that has undoubtedly most captured the public imagination by now is that of sea-level rise. Popular versions of discourses paint a picture of beaches disappearing under water, with the ocean penetrating far inland and occupying low-lying necks of land. Sometimes people spell out what is otherwise left implicit: eroding shorelines, further reducing the small amount of available land. This is how one young man from the island of Maiana forcefully put it:

> Ao ngkai te moan kanganga ae kanga e ataaki ngkai keeraken iabutin taari are tia kona n nooria ngkai n aron ae e kanakinako taabo tabeua (coastal Erosion). Tiaki ti ngaia ann ma bon riki aio man bibitakin kanoan boong.
>
> (The first problem now known is the rising of the sea – like even now we can see some places being eaten away (coastal erosion). Not only that, it's all due to climate change.)[6] (September 16, 2010)[7]

In the Kiribati vernacular the word for erosion is kanakinako or "eaten away." The ocean that eats away at the land is, and has always been, an animate and powerful entity in the lives of these islanders; however, in the context of climate change, the ocean is now being ascribed more power. In the terminology of actor–network theory, the ocean is an "actant" that can wreak destruction on the land. The ocean combines with other actants like wind and waves, similarly seeking a forceful outlet. And for some I-Kiribati familiar with myths, winds, and waves combine with the power of spirits.

The prospect of many more sections of shoreline vanishing in the future is associated by the inhabitants of Kiribati's islands with severe flooding, like they have already experienced during extreme storms involving massive precipitation. And envisaging a worst-case scenario, I-Kiribati sometimes say, earnestly and sadly, that Kiribati itself is doomed. Those I-Kiribati voicing this sentiment frequently use the words "e na bua abara ae Kiribati," meaning that "our land Kiribati will disappear." One result of climate change discourses in recent years has been that the I-Kiribati now see their land and its future prospects vastly differently. Land, in this discursive connection, is no longer just an entity that has in the past protected their ancestors and continues to bestow stability and shelter for today's I-Kiribati; rather, it appears now as threatened by the ocean. If Kiribati was, in pre-climate change narratives, portrayed in a mythological light as located at the centre of the world, it is now, in a continuation of colonial ascriptions, increasingly seen in today's context of endangerment from climate change

as merely "small" and "narrow"—in other words peripheral. It therefore seems to its inhabitants as very much in need of assistance from the "big" nations—a word often heard in this context, to which the attribute "powerful" is usually added.

Reacting to the projected consequences of global warming, Kiribati's government, especially after 2003 under President Anote Tong, has sought international financial backing for the raft of adaptive measures likely to be needed. One of these is the Kiribati Adaptation Program (KAP); up and running since 2003, this initiative focuses on reducing the vulnerability of the land, protecting the coastline, improving the availability of drinking water, and consolidating the infrastructure.[8] Not only the Ministry of Environment, but also NGOs and action groups, like Catholic Youth, have launched campaigns to protect the environment. Around 2010, Catholic Youth began holding workshops for those inhabiting selected outer islands; the goal was to instil a general awareness of climate change and, in particular, push the idea that the best way to counteract coastal erosion was to plant mangroves. Recently, the government has intensified their efforts to bring the protective function of mangroves to the attention of local populations on individual islands and to instruct them in planting the right kind of scrub.[9] But it will still take some time before most islanders (inhabiting, after all, no less than thirty-three islands) can absorb what is currently known in Kiribati about how best to protect their land—which they invest with diverse emotions—from the inroads of erosion and other perils.

Emotions Relating to the Land

The I-Kiribati have, in the course of their history, developed discourses on emotion in relation to the land as a living presence. What is happening—given the trend of more and more information, relating to the projected consequences of climate change, reaching first government circles, experts and the educated elite, and only then (rather more gradually) the general public—is that these discourses on emotions are linked to discourses on climate change. In order to understand a given emotion—say worry—in this context, it is important, from an analytic perspective, to heed three aspects: The first is that emotion concepts are part and parcel of an ethnopsychology; therefore, as with the ethnopsychological knowledge system of a cultural community, they have been shaped historically by many discourses—among these were not just local psychological, social,

economic, and political ones, but there were also Christian discourses by missionaries that were adopted into indigenous religion and exerted influence. The second aspect is rooted in the ethnopsychology of the I-Kiribati, which stipulates that thinking is not to be separated from feeling. The third is the concept that a particular emotion cannot be grasped in isolation, but has to be seen in its relationality to other emotion concepts. Chief among emotions relevant to the context of climate change and land issues are love, pity, fear, sadness, but also anger (Hermann 2011a). It is to these other emotions that I now turn, before proceeding to an examination of culturally specific concepts of worry.

One emotion that plays a central and causal role in the worries harboured by the I-Kiribati is their love for the land. The vernacular term for love used in relation to land is tangira. And it is a striking fact about tangira that it can also stand for the love between people. Tangira is both a noun and verb, and refers to the living out of an emotion of intense realignment towards another person and attraction to that person, an emotion that constitutes a close social bond. Not only that, but tangira also carries the allusion of a desire to possess. It is to be noted that tangira can apply equally to a subject or to an object. On the moral plane, for the I-Kiribati love can be associated too with responsibility for a specific subject or object. In Kiribati love, thus construed, is frequently expressed as being for the land itself. Locutions such as ti bon tangira abara (we truly love our land) and abara ae tangiraki ae Kiribati (our beloved land of Kiribati) are used on many occasions, not only in speeches and in prayers but also in countless songs that are often sung in daily life or on festive occasions.[10] Nor is this love restricted to individual islands, though these are invariably named in such cases, but it can also embrace Kiribati in its entirety, as a single country. Thus, the citizens of Kiribati internalise, from earliest years onward, the love they feel for the land—their land—in all its manifold dimensions, which include the material, the social (living relatives, ancestors), the economic, and also the religious. And because they love it, when they hear the news of possible threats to its well-being they are worried about its fate, about what the future holds in store for it. They worry about particular islands, and they worry too about their islands in their entirety.

At the idea that their home islands might suffer from the inroads of global warming, the emotion repeatedly voiced by the I-Kiribati is feeling pity for te aba—pity not only for the people on it but also for the land itself. In thus articulating this emotion, they go beyond mere concern: what they are evoking is that the subject (or object) is worthy of pity, is in need of

assistance. In their vernacular, the I-Kiribati use two words for pity: one is e kawa, literally: "he/she/it deserves to be pitied"; the other is nanoanga, which can be used as both a noun and verb. The locution e kawa te aba! (literally: "they deserve to be pitied, the land/people") recurs again and again in everyday life, and is heard too in the context of climate change discourses. It designates that the speaker has recognised the regrettable situation that merits pity and has aligned him or herself with that situation. The semantic components of alignment with the other comes out even more clearly in the term nanoanga, itself a compound of nano (heart/inside/feelings) and anga (give). Both of these vernacular terms are, however, also addressed to the speaker's fellow human beings, with the aim of evoking their empathy (Hermann 2011b).

Confronted with representations of dramatic consequences flowing from global warming and sea-level rise, some I-Kiribati have taken to not only voicing worry but also downright fear. While fear is certainly linked to worry, it is an emotion that points, in this context, rather more strongly to the power emanating from the phenomenon that evokes it. Whenever fear is articulated, one seems most exposed to the power evoking it. I-Kiribati who articulate this emotion have recourse to the vernacular term maku, which is used in other contexts having to do with subjectively perceived existential matters. Fear thus construed also carries the allusion, albeit implicit for the most part, that the speaker does not stand alone, but confronts this power together with his or her entire social network—and indeed the land itself.

Another emotion connected with worry is sadness felt for the land. The term for such sadness is nanokawaki. The implication is that sadness felt in one's nano (heart) is what touches people in their very inmost being. This is also the case when an I-Kiribati, attempting to articulate his or her feelings about the expected impact of climate change, says: na bon nanokawaki, which means literally: "[Then] I will really feel sad." Usually such utterances are accompanied by an earnest facial expression. Many islanders—men and women, old and young—also have tears in their eyes when they imagine the worst-case scenario of Kiribati disappearing entirely beneath the waves.

Although voiced far less often than love, pity, fear, and sadness by my I-Kiribati interlocutors, anger can indeed also be evoked by the threat facing their land. The kind of anger—un—that is relevant here is associated with a moral discourse, which articulates that one strongly resents, and will resist, a perceived injustice. In conversations on the inroads of climate change, the interlocutors voicing anger are invariably people who are well informed about the role of emissions in industrialised nations and the inadequate

countermeasures taken by those same nations. They do this in the context of arguing that they—the I-Kiribati and other Pacific Islanders—have played almost no part in creating these emissions, despite being in the front line if the grave consequences projected should ever come to pass. Anger can be communicated either vehemently or reticently, and at times it goes hand in hand with worry.

Articulating Worries about the Land

In the midst of this emotional landscape, we now find worries being articulated about what climate change may hold in store for the state of Kiribati and its islands (Hermann 2011a, 2014; Kuruppu and Liverman 2011: 664–665). In the vernacular, there are two terms for what in English is rendered as "worry": tabeaianga and raraoma. Tabeaianga is used as both a noun and verb: respectively, "worry" and "to have worry" (or "to be worried about").[11] "When you are tabeaianga, you are thinking of other things, you don't settle down properly because you have other things in mind," a woman told me (September 19, 2010), placing one hand on her upper breast te nano, the seat of the feelings, in order to show how it feels when one is in a state of tabeaianga and is preoccupied.[12] The term raraoma is likewise both a noun and verb. It is sometimes used as a catchall expression for other emotions as well.[13] Raraoma, however, also expresses a specific emotional concept that takes in the notions of worry, insecurity, and uncertainty. When such connotations are present in articulations of this emotion—and they frequently are in the context of conversations about the inroads of climate change—it is apparent that reference is being made not simply to the present, but also to an uncertain future in terms of belonging to the land and its people (Kempf and Hermann 2014: 206).

In the context of climate change, worries are attributed to Kiribati's people in general but also to the personal and collective self in particular. With regard to the former, let me cite the words of a young man from the southern island of Nikunau.[14] Asked what climate change meant for him, he answered as follows:

> Climate change is the climate or seasons changing in a particular country over a period of time. This is one of the main concerns of the people of Kiribati, what they are worried about, that the sea level is rising. (September 28, 2012)

Of interest here is that, in providing a general definition of climate change, my respondent fixed on "concern" and "worry" as characterising the reactions of his fellow I-Kiribati, conveying the precise emotion by resorting to both the aforementioned terms. In referring to sea-level rise, he was implying that the land itself would bear the brunt of this development. Asked the same question about what climate change meant for him, a young man from the island of Arorae also referred to worries; this time, however, the formulation was from the "we" perspective. After giving the definition of climate change he continued:

> ao I kakoaua bwa ae bon rangin korakora te bitaki, ao riki bon kereken naba iabutin taari are ti a moanna n tatabeaianga iai ngaira kaain Kiribati.
>
> (And I believe the change is really very strong, and on top of that, there are rising seas that we I-Kiribati are beginning to worry about.) (September 14, 2010)

In including himself within the community of worriers, this young man had recourse to a highly stressed locution: "ngaira kaain Kiribati," or "we, the people of Kiribati." To articulate just how closely he felt tied to the land, he continued by having recourse to another locution: "abara ae tangiraki ae Kiribati," or "our beloved land of Kiribati." In another case, a young woman living in heavily populated Betio, a town on Tarawa, spoke of the land being affected in highly specific terms. In defining climate change, she explained that she and other I-Kiribati knew that rising temperatures would cause the destruction of many fruit trees in Kiribati. Thus she answered the question, "if Kiribati is going to be affected by climate change, how do you feel about it and what can you do?" as follows:

> I feel worried and I also feel uncomfortable about it because our food crops will soon be extinct and people will suffer from hunger. (September 28, 2012)

After beginning with the "I" perspective and expressing her current worries in such terms, she then switched to the collective stance in anticipation of future suffering. Especially informative in this regard is the way she couples two aspects: feeling "worried" and feeling "uncomfortable." Such coupling stresses just how affected she is. Feeling "uncomfortable" is expressed in the vernacular by mwebuaka, a compound of mwenga (dwelling place) and buaka (bad or rough). That is, she has articulated her worries by referring to a place where, owing to the anticipated inroads of climate

Fig. 3.1 A water pipeline was exposed by coastal erosion following a storm in early 2014. The coastal erosion was seen by many citizens of Kiribati as a consequence of climate change, causing them to worry over their land (Photo: Elfriede Hermann 2014)

change, it would no longer be pleasant to inhabit. As for what the future held in store for this place, in a further connotation it was clear: living peacefully was out of the question. This association, suggested by feeling mwebuaka or "uncomfortable" as the case may be, occurs likewise in other statements on the prospects of climate change, either standing alone or occurring in combination with other emotions. All the above-mentioned statements suggest that the worries invoked are best seen as articulations linking subjects, collectivities, and land, and also giving expression to such linkages (Fig. 3.1).

Worries and the Will to Protect the Land

In this second decade of the second millennium, an increasing tendency is evident for islanders to do more than just worry about the future. What seems to be happening is that their attachment to and their worries over land and country are sparking a will to act, to do whatever is possible to protect these bedrocks of their existence. A number of islanders benefit, in

forming this will to act, from knowledge they have gained from government representatives, from NGOs or religiously motivated initiatives, from radio or other islanders. It is in this discursive context that statements are to be read coupling worries with speculation about what may be done to keep the consequences of climate change at bay in Kiribati, both in the present and the near future. We get a sense of such possible measures in remarks made by a schoolgirl aged seventeen from Tarawa who responded to the question "If Kiribati will be affected by climate change, how will you feel about it and what might you do?":

> Ngkana e a rotaki Kiribati ni Bibitakin kanoan boong ao ti na bon namakina te raraoma kioina ngkai e nang korakora te kabuebue ao tiaki naba ti ngaia ma te ran e na kona naba karika te kananokawaki bwa ea tarika, ma atii kona n toki aikai man aki kabonganan te kauraura ao a bati riki ake a kona ni karika te kanganga nakon abara.
>
> (If Kiribati is affected by climate change we will feel worry since already now the heat is very strong and also the water will sadden us because then it is salty, but all will be prevented if there's no burning [of fuel] and many more things which will cause trouble to our land.) (September 28, 2012)

The young woman began with the changes that would most cause her raraoma, that is to say worries, listing two: rising temperatures and salty drinking water. In referring to the great heat she used the present tense, implying that in this form the first consequences of global warming had already arrived. In the same breath, she directly associated this with salification of the drinking water, of which some I-Kiribati have already detected the initial stages. She then went on to express her hope that this and other consequences of climate change could be kept at bay by measures to reduce emissions of greenhouse gases.

Aside from statements referring to discourses on the need for global (and local) efforts to reduce future emissions, there are others naming concrete measures that might be undertaken on the local level. Thus, a schoolboy aged eighteen from the island of Nikunau associated climate change first of all with great worries: "Bibitakin kanoan boong, bon te bwai ae karika te kararaoma irouia kaain abara." ("Climate change is indeed something that causes worries to our people.") Asked what might be done if Kiribati was adversely affected by climate change, he gave the following answer:

> Te bwai ae tina riai ni karaoi, a bon mwaiti n aron teuana unikakin tenaan mangroves ke teuana riki, tina riai n ongotaeka nakon taan te otabwanin ao a mwaiti riki.
>
> (There are many things we have to do: like one is we have to plant a lot of mangroves and another is we will have to obey the rules set by the people from the Ministry of Environment, and much more.) (September 14, 2010)

In combination with kararaoma (the worries) caused by climate change that he shared with his fellow I-Kiribati, the young man also stressed the need for measures protecting the coast and environment. Evidently, he had acquired his knowledge of these measures from diverse discourses. His words make clear that adopting these measures is an absolute necessity. But what in his formulation is left implicit—that such measures are designed to protect land and people alike—is explicitly addressed in other statements. Let me, in this context, cite another young man, also aged eighteen, from the island of Marakei, who had this to say:

> I think what I will do then is prepare things which support [what is there] and oppose climate changes ... and I will take care that change does not come to our islands. (September 14, 2010)

If, then, the young people cited here, with their worries articulated a will to put in place, or support, measures designed to protect their islands, this attests to a shared sense of responsibility for their native land. In this respect they resemble islanders in the middle and later years of life, who also see it as their duty to stand up for their land (Fig. 3.2). In addition, I-Kiribati of all ages and generations repeatedly stressed to me their wish to appeal to the big nations for help in saving the land that is theirs.

Conclusion: Articulating Worry and the Will for Social Resilience

Statements about worries that are simultaneously expressions of a determination to save the land from the impending threat of climate change and sea-level rise are indicative of a will on the part of the citizens of Kiribati for social resilience. There is no doubt that external as well as internal discourses on climate change and a changing environment—which are now being diagnosed against this discursive background as first signs of climatic change—represent a disturbance to, and a source of stress for these

Fig. 3.2 To protect the land from erosion, this woman's husband planted a small tree inside an enclosure (see *centre*) (Photo: Elfriede Hermann 2014)

islanders. The worries overtaking the I-Kiribati, which cause them to seek ways and means to protect the land and its people, attest to the fact that they are beginning to reorient themselves in accordance with their sense of being in the world as well as face up to these disturbances in emotional terms. Their worries should be seen as social practices that are aligned to, and take their cue from, political interests. Thus, the atoll inhabitants operate on the assumption that articulating their worries might conceivably make a difference. And if the I-Kiribati are willing to be mobilised by their worries, they are equally prepared, in the context of the given power relationships, to exert influence on the projected consequences of climate change for the land and its people. This shows, in turn, that they repose trust in their own agency, in which their will for social resilience inheres. If, then, worries (to be sure, in interplay with other emotions) result in the formation of social resilience and in effective protective measures, this would allow us to conclude that worries too can contribute to ecological resilience. Such measures are being taken, whether in Kiribati itself (e.g. planting mangroves under an initiative launched by the KAP, backed by the government and I-Kiribati action groups) or on the international level (the government's

climate change policy is not merely designed for domestic consumption, but seeks to enlist help from the outside world).

Articulations of worry, such as are discernible in I-Kiribati vis-à-vis discourses on climate change, are to be read as statements of how people bond with their land and, additionally, how they relate to the wider, changing environment in a physical and social sense. As discursive formations containing the more general vernacular term for worry raraoma clearly show, the I-Kiribati are now increasingly confronted by uncertainties of belonging in respect to their land (see Kempf and Hermann 2014: 204–206). Their emotions—including the worries they feel—all, however, point to one conclusion: in the face of the projected threats, the I-Kiribati have reacted by stressing rather more than less the fact of their belonging to Kiribati as land and nation. We have a scenario where first external discourses on climate change, then their local counterparts, have created a truth of their own, whereby many Pacific Islanders now detect signs of climate change happening in their home islands (cf. Rudiak-Gould 2013: 58 for the Marshall Islands). Yet even when many inhabitants of atolls accept this truth, they do not simply subject themselves to discourses that would deny these atolls, and those living on them, any future prospects. Instead, they have developed their own emotional discourses, repudiating those powerful rival discourses that insist that the loss of their land is certain. In thus articulating their worries, therefore, they convey their determination not to sit idly as the ocean gradually devours their beloved land. Many islanders are aware of the fact that their state has very limited economic resources at its disposal, and cannot alone rise to the challenges posed by the inroads of climate change. But in this connection they do not see themselves as isolated from the world; rather they appeal to other nations and states, hoping to be helped by them. By thus articulating their worries, they are able to readjust their position, which they see as peripheral to world affairs and move towards the centre, thus gaining the wider world's attention. Worries, then, can serve as mediators, building or consolidating links with others. They are importantly implicated not only on the local level, but also in the global network of relationships between human beings and their environment(s).

Worry, therefore, represents a dimension of social potential that can be seen as an effective component in a network of relationships between human beings and their environment. Consequently, emotions such as worry can be understood as actants influencing the manner in which human beings maintain relationships with other human beings and

non-human entities, while simultaneously being themselves exposed to the effects thereof. Such relationships in fact contain reciprocities, as when actants like climate change, ocean and water touch off worries, and worries, in turn, relate to the land and induce reflections on how best to protect it. Worries in particular and emotions in general, when seen as actants, decentre the analytic perspective, with its primary focus on human beings, and expand our horizons to take in the complex terrain where they are active as social practices. Thus, an understanding of emotions as actants conduces to the analysis of culturally specific ontologies, into which climate change has been incorporated as a discursive and physical phenomenon.

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Notes

1. For the Marshall Islands see e.g. Rudiak-Gould (2013: 41–47); and Hermann and Kempf (forthcoming: 2–3) for Kiribati.
2. Adger defines ecological resilience as "a characteristic of ecosystems to maintain themselves in the face of disturbance" (Adger 2000: 347).
3. I have been working with members of the Banaban Community since 1996 and am much indebted to them for teaching me to understand their emotions (Hermann 2004, 2005; Hermann and Tebitaki Kokoria 2005; Hermann 2011b).
4. Participation in culturally specific discourses can only be partial, since (a) it will certainly be the case that the cultural community will impose restrictions on what areas are off-limits for participation and what not, and (b) the field worker will herself want to decide whether, and to what extent, she wants to participate in these areas.
5. The use of questionnaires was a suggestion made by friends from Kiribati. Many islanders had previous experience filling out

questionnaires distributed to them by representatives of ministries, church groups, NGOs, international projects, schoolteachers, and so on. The questions I asked were formulated jointly with my friends. While the forms were being filled out, I was always on hand and could, on more than one occasion, after collecting the completed questionnaires, record conversations or conduct interviews with respondents or moderators (e.g. teachers).

6. This and the following vernacular quotations were jointly translated into English by the author and native speakers of the Kiribati language. All quotations have been lightly edited in the interest of correct English. If quotations are given in English only this is because the respondent communicated in this language. English was introduced during the British colonial era, is used like a second official language and taught in schools.
7. The young man mentioned this in his response to one of the questions in the questionnaire, namely whether he thought Kiribati might be affected by climate change.
8. See Kempf (2012b: 247–250) on the KAP and the involvement of Christian churches in Kiribati's climate policy.
9. See "Mangrove education and planting on its way to four more islands, 3 Islands complete | Climate Change." Accessed August 13, 2013. http://www.climate.gov.ki/2013/07/25/mangrove-education-and-planting-on-its-way-to-four-more-islands-3-islands-complete.
10. For example, see the song "Aio banan te enviromenta" (This is the voice of the environment) used in a drama on climate change and sea-level rise commissioned by the KAP phase II (Kempf 2012b: 249); in this song the locution "abara ae tangiraki" (our beloved land) figures prominently.
11. See Stephen Trussel, A Combined Kiribati-English Dictionary. Accessed February 18, 2014. http://www.trussel.com/kir/dic/dic_a.htm.
12. We had been talking about the worries occasioned in the I-Kiribati by climate change. When I said I knew the word raraoma, but not tabeaianga, she volunteered the above-cited explanation.
13. Trussel also lists as instances of raraoma, alongside worry, anxiety, anguish, regret, repentance, and remorse.
14. This quotation and the following ones are taken from questionnaire responses.

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CHAPTER 4

Experiencing Environmental Dynamics in Chuuk, Micronesia

Rebecca Hofmann

Nikowpwuupw fénú, the Bearer of Islands (Goodenough and Sugita 1980: 237, 242), lived at the bottom of the Western Pacific. She piled volcanic rocks onto her back and arms until they broke the surface, creating high islands in the Caroline Archipelago (Bollig 1927: 78–79), which the islands' inhabitants called Chuuk, meaning mountain in the local vernacular. To protect the 17 islands, Nikowpwuupw fénú placed a ring of coral around them, building a massive lagoon of calm waters (Flood et al. 2002: 98–99). This lagoon is slightly larger than the three German city-states of Berlin, Bremen and Hamburg combined, accommodating a little less than 60 km^2 of dry land (Goodenough 2002: 17; Harp et al. 2004: 4). Outside the main lagoon, at distances of a few hours to a couple of days by ship, several atoll groups, the fenáppi, or sandy lands, represent the low-lying outer islands of Chuuk, now one of the four Federated States of Micronesia.

Dwelling in the middle of the world's largest body of water on volatile structures made of easily eroded volcanic rocks or coralline sand means that people have had to learn how to face the vagaries of waves, winds and rains; how to survive extreme events such as typhoons; and how to respond to long-term environmental transformations. Sea levels, for example, are and always have been an influential factor in island life. During the Little Ice Age (AD 1350–1800), sea levels fell drastically, exposing reefs, which destroyed

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their bio-productivity and eventually induced food crisis, social unrest and human settlement movement—this process is also known as the AD 1300 Event (Nunn 2007). At the end of the Little Ice Age, sea levels began to rise again. Since the early 1990s they have been rising at rates that make a rise of another 1.2 meters by 2100 seem likely, which will inundate or markedly reduce the islands' surface area (Nunn 2013: 143). The fastest rates for the 1993–2010 period were measured in the tropical Western Pacific, thus around Chuuk (Becker et al. 2012: 91).

With climate change, the high ground that Nikowpwuupw supplied her people with to keep them safe is under unprecedented pressure from rising seas as well as from more frequent, more intense extreme weather events and other impacts, posing new challenges to the people's life-worlds. Already, Pacific Islands have become iconic of the deep transformations of the natural world and the human relationship to it that climate change will bring. With respect to climate change in particular, these transformations include physical experiences as well as discourses and practices in regard to the environment, which become meaningful in different ways and depending on a people's ontology. The topic of climate change is intriguing, as anthropologists (e.g. Crate and Nuttall 2009; Tsing 2005; Milton 1996), sociologists (e.g. Beck 2010), geographers (e.g. Farbotko and McGregor 2010; Hulme 2010) and literary scholars (e.g. Heise 2008) point out, because it has engendered a sense of a global nature that connects people and places through its risks, represented for example in General Circulation Models of air and water (Tsing 2005: 101).

Models, however, are a mere abstraction of the global climate, generalising and reducing the diversity and complexity of its local ramifications. Yet, Tsing (2005) and others (e.g. Heise 2008: 61) argue that they give the impression of the global climate as one entity that the eco-cosmopolitan society can understand and control. For Western society, the Pacific Islands have themselves become a model that stands as a representative of what the world can expect from climate change. The topos of "sinking" islands thereby curiously dilutes rational and emotional spaces (Farbotko and McGregor 2010). Nourished by Western writings, paintings and films (cf. Mückler 2009), Oceania's tropical islands have become the perfect representation of a secluded Garden of Eden. Climate change, however, turns this utopia into a dystopia that no longer serves as a counter-narrative to Western reality but rather unmasks the consequences of its high-emission and resource-intensive lifestyle for the tropical paradise. In this scenario, the islands are portrayed as small and isolated, as prone to catastrophes, as vulnerable pockets of sand that leave their inhabitants no

alternative but to leave (ABC News 2005). Treating islands as mere geographic objects, pushing islanders into a victim narrative, however, devalues the dignity and agency of the individuals who have called these places their homes for millennia and who have established certain ways of accommodating to the specificities of Oceania's island-scape.

Island state governments try to counter this imagery, actively appearing on global stage, seeking the right balance between attracting attention and funds to their gloomy future prospects and retaining authority in the discourse. At the same time, however, the concept of climate change is only just reaching the islands of Chuuk. People who do not work in government offices that directly deal with questions of the environment generally remain unaware of scientific explanations and projections. A questionnaire conducted in a village in one of Chuuk's high islands in January 2016 revealed that, although the majority had heard of climate change, few understood the physical processes behind it (MAFA 2016),[1] confirming my own findings from 2011/2012. Until recently, most had not even heard about it, as a middle-aged man confirmed with his experiences in the early 2000s, when he had just returned from the US West Coast:

> The first time, I ever heard about global warming was in the United States. I wanted to follow up what our president is saying and so I heard him talking about global warming mostly with the UN. Whenever I followed the FSM [Federated States of Micronesia] president, he was talking about it! So I thought it must be something big. While all other states are talking about security and economy, he was just talking about climate change, saying that it will badly affect our islands. But once I came back here, no one knew about it and nothing is ever done about it!

In 2011/2012, talking about the environmental transformations that Western science attributes to climate change in Chuuk resulted in multivocal responses that ranged from inattention to frustration and denial to acceptance or activism, depending on where someone lived and worked, and on gender, age, economic and cultural position, migratory experience and lifestyle practices. In this knowledge-scape, the idea of climate change is most strongly present on Wééné, the municipal island where media, politicians and foreign scientists arrive. From there, the idea—as a whole or in part—travels to the other islands, where it meets local perceptions, epistemologies and understandings of how the world works, and is subject to reception and appropriation as much as to rejection and modification. This way, local experiences of environmental transformations and outside

information on climate change blend, merge or become separated, resulting in multi-voiced and contextual reactions.

One specific aspect of these reactions ultimately motivates and guides this chapter—an idea that my interlocutors again and again either mentioned directly or that was reminiscent in their responses to my question about "meet aa siiwin nóón éereniyen Chuuk?" ("What has changed in Chuuk's environment?" in its broadest conception, translated by R.H.). The question elicited lengthy remarks about generational differences and changing attitudes or the breakdown of cultural values such as sharing or paying respect to others, demonstrating that environmental change is of less importance compared to sociocultural change, which ostensibly causes worries amongst the majority of Chuukese islanders, as this teacher alluded to: "The change and loss of our culture here and there is very worrisome to me. Cultural change, climate change. . .we have a lot of changes". Noticeably, he named climate change as merely one amongst many other changes, a view that was in line with those of many other Chuuk islanders across age and gender that I have spoken to.

In the context of my research, I agree with Anna Tsing (2005: x) who points out that anthropologists have fewer and fewer analytical tools to describe the conundrum of the natural and social landscape the deeper they proceed into it (Tsing 2005: 172). Viveiros de Castro (2013: 478) goes even further and criticises the fact that the anthropologist "knows too much about the native: he predefines and circumscribes the possible worlds expressed by this other, radically separating the other's alterity from his capacity to induce difference". I thus object to the idea that islanders perceive current environmental transformations necessarily as the ultimate threat to their life-worlds. I scrutinise instead the explanation of a young Chuukese woman that they are "worried for the way we live", but because of sociocultural dynamics, not environmental or climate change.

In order to explore this statement in regard to what shapes the chóón Chuuk's (the people of Chuuk) experience of environmental dynamics, I focus on land as the most important natural asset in the island-scape. Therefore, the relationship the Chuukese have to their land, and how this relationship persists in, and is completed by, mobility, is explored more deeply, before I present and discuss how the Chuukese describe and understand their environment.

Four foreign powers (Spain, Germany, Japan and the United States) have increasingly interfered with local societal and environmental affairs for the better part of four centuries. Despite this, many aspects of the

human–nature relationship still testify to a particular understanding of the environment that deviates from the ideas of the environment that colonisers, missionaries, tradesmen and travellers have brought. Therefore, ethnographic records of pre-Christian cosmology complement this. Hence, even if it is often not communicated openly or directly, the Chuukese people's specific appraisal of current environmental changes is embedded in an interplay of pre- and post-contact ideas and practices. They are reflected in the communication, the perception and hence the explanation of environmental transformations that are outlined afterwards, before the chapter closes with a discussion of the material presented in regard to anthropological reflexivity.

My analysis is based on 11 months of field research in 2011 and 2012, of which I spent most of the time on the island of Toon in the western part of the main lagoon. Regular trips to Wééné, the municipal centre, occasional visits to other islands in the lagoon, and a short stay on Nómwiin Atoll, Paafeng Islands (literally lying to the north, known also as Hall Islands) complemented my data collection. I further conducted interviews and obtained material from archival and literature sources on Guam and some from Saipan, both northwest of Chuuk.

My analysis begins with the description of an episode where people note and talk about a shift in their environmental experience. This not only exemplifies current environmental changes, but also opens a window onto a more detailed assessment of how the chóón Chuuk see, experience and understand their world.

Kúún ennefen: "The High Tides Come More Often Now"

In November and December of 2011, in Chukiyénú, a village on the island of Toon, coastal houses and the path that connects the compounds with each other as well as with the church and the school were flooded several times by exceptionally high tides (caused by unusually strong La Niña action, as was verified later). In general, seasonal high tides are locally known as kúún ennefen (trade or, literally, north wind season, in Chuuk, meaning a time of little breadfruit and high waters), when the body of water is pushed toward the shores with greater might during the windy months. Every now and then, floods have been extraordinarily high, but the interval between such events seems to be reduced and "the high tides come more often now", as a Chukiyénú elder stated.[2] Recent flood events confuse and challenge the people, as their extent and frequency exceed previous

experiences. The people who continue to cultivate cultural knowledge and ideas are deeply worried. The intrusion of salt water affects fresh water supplies and, in combination with airborne salt spray, kills off plants. None of the main staples, such as taro, yams, breadfruit, banana and coconut, are salt resistant. The taro plants in particular react sensitively to salt water. Leaves turn yellow and die and will not regrow until most of the salt has leached out from the taro swamps—a process that usually takes about two years—aggravating food stress, but also bereaving the people of culturally important food.

When the water comes in, the path made of stones and coral gravel becomes a slippery sequence of mud holes and puddles, and prevents children from going to school as the journey becomes too risky and burdensome. The water also inundates the open cooking houses called fanang where firewood and food are stored, where meals are prepared, and where gossip, stories and knowledge are exchanged. According to the people, these places, along with the assembly houses (wuut), are focal points for social gathering and an important space to realise their membership of the Chuukese society through practice. Subsequently, their inundation was particularly disturbing, although not quite as disconcerting as the inundation of the ancestors' graves which are found on the family compound. Graves are visible markers for the deep connection the chóón Chuuk have with their land, to which they feel related in a physical and non-physical way—a connection that plays out in Chuuk as well as in the transnational Chuukese community. I follow this connection across material and national borders in order to retrace those connections that constitute the frame in which the Chuuk islanders see their place in the world.

The chóón Chuuk's Place in the World

To the anthropologists Kay Milton (1996) and Hugh Raffles (2002), the environment is constitutive of people's perception, practice and experience and reflects these back onto them. People, for example, not only make places meaningful, but also themselves become meaningful through places. In matrilineal Chuuk societies, the relationship to land is especially crucial for people's notion of belonging. This relationship encompasses material, sociocultural, political, spiritual and emotional aspects. In transferring her land to her daughters, for example, a mother not only passes on the plots on which ancestors were born, lived and died, but she also hands down genealogies, knowledge, stories and songs. In this way, she reinforces the

family's legacy, testified to visibly by her grave. The legacy originates in the ancestors' journeys that ended on the lands their descendants inhabit until this day. They thus mark the beginning of local cosmology and history, passed on in myths such as the creation story of Nikowpwuupw fénú cited above. Property is not demarcated by territorial boundaries, but through the identification process along ancestral genealogies. The important female relationship to land finds linguistic expression in the Chuukese term feefinitiw, literally meaning "women down on ground". It is part of a specific ontology of space that is found in variations throughout Oceania and that associates women mostly with the land while men belong to the sea (cf. Bonnemaison 1985; Petersen 2009).

Reverse, yet complementary to feefinitiw, mwáániinó—"men go away"—bespeaks the mobility of men to fish beyond the reef, to capture resource rights, to execute trade or tribute relations or to reach the téé (uninhabited islands on which food is grown). Sophisticated mobility patterns between islands complemented local resources; provided assistance in times of distress; and constituted regional, political and economic networks (see Peter 2000; Rauchholz 2011). Although airplanes significantly enlarged the distance travelled and destinations now are mostly to the islands' last colonial warden, the United States, Chuukese scholar Joakim Peter (2000) compares current migration practices to pre-contact journeys. Both have the objective of obtaining "life sustaining" resources, which today comprise healthcare, education and jobs.

Today, the chóón Chuuk on- and off-island weave a thick network made up of visits back and forth, of instant messages in chats, of shared pictures on Facebook, of songs on YouTube, of discussions on all sorts of issues on digital fora, of parcels sent. Identity and belonging, the chóón Chuuk taught me, is found in their relation to kin and land, across regional, national and geographical borders. Food parcels from one's own land serve as compensatory mediators and attend to what Milton (2002) carves out in her book as an ecological approach to emotion. She argues that the "understanding of personhood, of ourselves and others as persons, develops within our relationship with our total environment, not just within our relationships with our fellow human beings" (Milton 2002: 47).

The communion of the gendered concepts of feefinitiw and mwáániinó, thus, expresses the Oceanic relational spatiality, in which its moorings are the necessary other to movement, interlocked by traveling people, objects, ideas, images and a deep emotional connection to their islands.[3] Leaving is anchored in what is left behind and aimed towards return. One Chuukese

man who has lived in the United States for several years explains: "You can take this person [a Chuukese, R.H.] as far away as you can from his place, but this place will always remind in the heart. I belong here. You cannot get rid of that (...) and this person will always be mindful of his island". Chóón Chuuk are who they are because of where they are from (Marshall 2004: 135), no matter where in the world they may currently live.

Land is the physical expression of Chuukese relational belonging. Although non-material aspects of land are crucial in regard to people's identity, Micronesian scholar Joakim Peter explains that it also has intrinsic material value. In reference to the Western atoll island in Chuuk State where he is from, he declares that "[w]e need to belong to places, the physical plots, taro fields, coconut groves, sandy beaches, portions of reefs, fishing corals, and the island in general" (Peter 2004: 261). Therefore, even when living off-island, Chuukese maintain their bond to the land. Families leave a custodian behind to guard the land. Kin members send coolers full of local food (taro, breadfruit and salted fish) that travel from the islands to overseas, causing the typical odour you find at Micronesian airports. The relationship to land becomes material not only as it offers food and shelter, but also as a baby's placenta or a deceased person's body are buried in the land, where they slowly decompose and mingle with the island soil, making the relationship between people and land one of kinship (Marshall 2004: 135; Harvey 2005: 127). To maintain this kinship, Chuuk islanders living abroad spend huge amounts of money to transfer the bodies of the deceased to their home island.

Given the material and spiritual importance of land, deterioration or loss of land through salt-water intrusion, flooding, drought or erosion not only leads to economic deprivation, but also compromises family histories and thus collective and individual identities. Where land signifies political, social and economic well-being, becoming bereft of land cuts off an important thread of people's sense of belonging. Particularly for women, an interruption to the matrilineal transmission of land is often traumatic, but land is also meaningful to others. As an elderly Chuukese man was quick to add: "Land is most important, it's where we share life (...) if we don't live on our land, don't get the food from there, don't work on it, we don't connect with it". What he alluded to was not simply the loss of local ecological knowledge as people prefer to buy their food in stores rather than continue with arduous gardening; he spoke to an ontological perspective that unfolded to me only once I learned more about the social relations that are fostered in and by

Chuuk's environment. In the following section, I reflect on what I learned, combining and extending it with ethnographic literature on Chuukese concepts of the environment. This is indispensable, because although people often avoided direct allusions to these pre-Christian perceptions in my presence, the descriptions of how they experience and interpret environmental transformations prompted me to return to ideas of social relations between humans and other-than-humans as described here.

Chuuk's Other-than-Human World

While sitting one rainy afternoon with a 29-year-old man from Nómwiin in the Paafeng Islands who had come to Chuuk Lagoon for school, I came to realise yet another facet of people's relationship to land and the island environment. At some point, the conversation touched on the potential flooding of his home atoll:

R.H.: Would you be sad about Nómwiin?
He: Woah, very sad!
R.H.: Why?
He: Woah, because my island is beautiful! The trees, the music!
R.H.: What music?
He: The music of the beach! The wind in the palm trees, the birds singing and the young children singing!

At this moment, another young man from the Mortlock Islands (atolls southeast of Chuuk Lagoon) dropped in and laughed at what he had heard. A competitive verbal exchange followed, trying to determine which was the more beautiful island and the better reef. The dispute intriguingly pointed to the young men's affective and particular relations to humans, other-than-humans, plants, rivers and rocks, of which I uncovered more and more aspects throughout my time on the islands. Together with biblical teachings and Western forms of knowledge, the Chuukese human–nature relationship is a complex experience that is further ramified by subjective, individual as well as collective propensities. The celebration in 2011 of Chuuk's first cultural day illustrates this subtle dynamism: opened and closed with Christian prayers, traditional dances were performed and traditional knowledge

holders explained the meaning of certain plants and animals, even disclosing parts of the secret language and its associated knowledge called itang. While some celebrated this event as an emerging cultural self-esteem, freeing itself from the impact of colonisation, for others it provoked an unpleasant feeling. One pastor assumed that this development took place "not because the missionaries left, but because it's Satan's doing. He is in nature". This resorts to a human–non-human relation that the chóón Chuuk often refer to directly or indirectly in conversations, explanations or warnings—namely the population of the island-scape with ghosts and spirits,[4] called énú.[5]

Especially dreadful are énússet and chénúkken, named after their preferred habitation, the sea and reefs (Käser 1977: 209, 220, 222). Some mangrove swamps are also known to be the domain of the mangrove spirit. In female shape, an elderly man assured me, one of them regularly haunts him in his house, creeping up on him at night, choking him, and only reluctantly letting go upon his insistent prayers to the biblical God. Notably, the spirit is not targeting him because he is a pastor, but because he moved into a house that is built too close to her realm. Younger men staying in this house also reported being attacked by the mangrove spirit. Such bad spirits are collectively called by the name soope, which elicits a frightful reaction in Chuukese and is translated into English as ghosts. To be bitten (kkú) by a bad spirit was presumed to be the major cause of sickness (Mahony 1969; Goodenough 2002) and people continue to protect themselves by not walking alone and without a light at night. If ghosts become visible, they often take the form of animals with dark fur that are active at night (bats, etc.) or have fluorescent characteristics (insects, but also some lichen and mosses as well as shooting stars). They reveal their presence through the creaking of branches and other noises. They can appear as ugly and malformed humans or as seductively beautiful women, such as the mangrove spirit.

In opposition to the bad spirits are good spirits, of which the largest group are the énúúsootupw, the good spirits of the dead. According to pre-contact Chuukese ontology, the physical side (inis) of all material beings and objects is complemented by "spirit doubles" (ngúún) (Käser 1977: 121). The "quality" of living and non-living things is independent of their "substance", but not vice versa. With food, for example, the disassociation of the qualitative component from the material causes it to rot and decay and no longer nourish the person who eats it (Käser 1977: 133; Goodenough 2002). A person is at risk if alone with her/his bad spirit double. Without protection, bad spirit doubles steer their physical double

into all sorts of potential hazards, for example, being bitten by evil spirits. The good spirit doubles, on the other hand, function as protective spirits, which guide their former relatives to good fishing grounds or fertile soil. The positive effect that good spirits have on enterprises and the like is attributed to their high degree of manaman, the "powerfully efficacious", generally known as "mana" throughout Oceania (Goodenough 2002: 328, footnote 9; cf. Käser 1977: 152–158; cf. Tomlinson and Tengan 2016). Taboos are variedly imposed on places, plants, animals, etc. in order to protect people from the overpowering effect of the positive or, if in the wrong hands, negative consequences of manaman.

After death, the spirit doubles of humans eventually distance themselves from the body. The bad spirit component (ngúnúngngaw) escapes into space to mingle with other evil spirits and ghosts that typically inhabit the physical environment. The good spirit (ngúnúyééch), on the other hand, continues the deceased's personality and remains in the membership of the clan and kin group, close to the land it has lived on. It is linked to the living by ttong, the reciprocal sensation of love, care, sympathy and loyalty (Käser 1977: 169 pp.), which is a main constituent of Chuukese belonging. Good spirits of the dead thus further the islanders' conception of having kinship relations to the land.

Chuuk's environment represents a complex interweaving of material and immaterial components, organised and orchestrated by norms and values, expressed in taboos and behavioural rules. Sticking to rules and practices, such as honouring the ancestors, not walking alone, or respecting taboos, enables people to control the "evil" in the environment. Disregard for the rules causes misfortune. For example, in February of 2012, a pregnant woman had to be taken to hospital on Wééné after catching and eating a "strange-looking fish, long and white, that no-one knows" as a witness recalled. He reported how he shivered when passing her, because to him, her sickness was most likely caused by violating the taboo that prohibits pregnant women from going fishing. Menstruating women and men who have recently had sexual intercourse, to give another example, are specifically at risk when fishing, because evil water spirits are drawn to human odour (which at the same time dispels good spirits).

The conversation with the two young men from the outer atolls triggered discussions with others as well—with young and old, with men and women, with pastors and specialists—and eventually made me see more clearly the extent to which ééreni, Chuuk's environment, encompasses a physical world that is populated by spirit doubles, with spirits of the dead,

and with evil spirits and ghosts who can actively interfere in natural and social processes. Other-than-human actors are ordered into two separate, yet interdependent, spheres: evil spirits and bad doubles roam about and inhabit physical features of the natural environment; good doubles and protective spirits remain in the vicinity of the humans. While in today's Christian society, this pair of opposites is often translated into demons and guardian angels, my Chuukese interlocutors often also explicitly claimed to have been saved from evil spirits by the spirits of their ancestors when walking through the bush.

Ééreni is everything people are accustomed to (cf. Goodenough and Sugita 1980: 64). However, people report, especially in recent years, that what they have been accustomed to is no longer reliable. The blossoming of trees and flowers deviates from the usual seasons, and patterns of rain and wind are said to be shifting. The following describes how the chóón Chuuk receive, reject, translate, appropriate and modify their observations of a transforming environment and how they bring the explanations for these changes that are given to them by the government, media or outside actors into dialogue with constituents of the Chuukese environment that originate in pre-contact, post-contact and recent ideas of the world.

Communicating and Experiencing Environmental Change

Natural variability and long-term trends, such as sea level rise and the natural dynamics of tides or weather and climate, mostly occur over the span of a human lifetime (Strauss and Orlove 2003a). Sea level rise, for example, is a subtle change that happens at a hardly perceptible rate. Therefore, Western science uses statistics and models to seemingly visualise these invisible processes in nature, making them controllable, containing uncertainty and risk. Yet, such models are inadequate, especially for the Pacific Islands as they needed to be downscaled and adjusted to account for regional and local phenomena that influence the regional climate system (Paker and Miller 2012: 109). In general, it is difficult to determine exactly when, where and how global climate change will manifest in local and site-specific ramifications (cf. Keener et al. 2012). Sea level rise, thus, becomes evident erratically, in single events such as storm surges and spring tides, or in seasonal tides such as the previously described kúún ennefen. In the discourse around environmental and climate change, the idea of what is normal and what is not is determined using the past as a benchmark.[6]

Deviation from past experiences unsettled the people in the village of Chukiyénú in November and December of 2011, when floods exceeded the ordinary experience of a seasonal phenomenon. The chief's spokesman from the village emphasised: "This we would not call kúún ennefen. This tide is even higher, so we are scared, we don't know why it happens. Now it's coming over the road, into our houses". As it estranged people from their learned knowledge and their sense of normality, the villagers' discomposure was further increased by official discourse broadcast on the radio and in the local weather forecasts, which, as a Chukiyénú resident noted, announced the exceptional high floods,

> but this time, they pretended it to be something normal. Only one time, a couple of years back, they said it's due to climate change. This time, they didn't say anything. They pretend it's normal, but it's unusual. It normally doesn't flood the dock. And it's going into the second week already!

The (re)negotiation of normality is embedded in people's life practices, knowledge, beliefs and attitudes, in sociocultural norms and rules and in the local discourse. In addition, it is shaped by outside information, as the great Pwolowótese navigator Manny Sikau demonstrated, who admitted to being deeply disconcerted about his ability to forecast the weather. He was worried that he had forgotten something he had learned from his grandfather, as his forecasts were no longer quite as accurate and were sometimes off by one or two days. He also mentioned shifting typhoon patterns, which confused him. It was on a visit to Guam's planetarium in 2000, as he recalled, that he heard about climate change for the first time. Somewhat reassured that he had not forgotten what he had been taught, he spoke to other navigators on Pwolowót and learned that they too had similar concerns. They wondered if the navigators would have to adjust their methods, which developed over millennia of observation, to this now rapidly changing world.

On the other hand, many Chuuk islanders state that they "will only believe the scientists when we see it with our own eyes", as one of them exclaimed. Most of my Chuukese interlocutors have heard about sea level rises from the media, in school or from relatives abroad, yet most of them deny its reality. They claim that scientists have too often been wrong about other predictions, telling me about the landslides on some of the high islands in Chuuk Lagoon from 2002 that were triggered by typhoon Chata'an and in which 43 Chuukese lost their lives. In the days before the

storm hit, they said, warnings were issued of damaging winds, causing villagers to prepare for the gusts. Once Chata'an hit the islands, however, instead of destructive winds, it brought record-level rain, soaking the hillsides, causing landslides in over 250 places (Harp et al. 2004). According to the anthropologists Sherwood Lingenfelter and Marvin Keene Mayers (1986: 72), typhoon warnings come far too often and are too unreliable for people to take them seriously every time and many Micronesians leave the potentiality of threats to be experienced, or not.

In addition, and due to their frequency—historic records suggest that a Micronesian islander experiences an average of five to six typhoons in their lifetime (D'Arcy 2006: 128)—Chuuk society has notably come to accommodate extreme sudden events as a normalised aspect of their environment. Aware of the fact that earlier predictions about "sinking islands" by scientists have not yet become reality, and trusting past experience as well as proven sociocultural strategies for coping with extreme events, an elderly man rejected the prediction that people will have to evacuate the tropical islands—a scenario that has reached Chuuk alongside the Western discourse of climate change:

> No, we will never leave our islands! (…) People here don't care about a typhoon, either. Only when their houses are blown away, will they flee to relatives. That's how it's gonna be like with rising sea levels. We don't think that much about the future and, in the end, we still have our relatives.

Quite explicitly, this Chuuk islander confirms that people will react only once they consider it necessary and that local coping strategies—in this case support from relatives—will then take effect. The debate around possible dislocation due to climate change thus notably offers differentiated dimensions of Chuukese notions of belonging. Many adhere to the sociocultural practice of mobility that always has served as insurance system and that, in the end, is nothing other than a means to stay[7]: through the cultural heritage of mobility, times of stress and hardship are bridged by donations from relatives on other islands, by remittances from kin living and working abroad, or by the possibility of seeking temporary refuge with unaffected relatives. Relatives, hence, are important factors and actors regarding the experience of environmental dynamics. This again has consequences, including of course for the relatives, especially those living off-island, who feel pressured to send home money or to take in relatives.

In addition to the trust in relatives, gender, age and belief mostly dictated someone's reaction to the prospect of having to leave the islands. While young men especially seemed to be more socially orientated and described "home" as the place where their kin was, women were more reluctant to leave. Members of the older generations often stated that they would rather go down with their islands than leave their ancestral land. Many also referred to God as a guardian.

> They say the islands might be under water. But I don't want to think like that. God placed the islands. He placed them where they are and he will take care of them. When I was flying to Kwajalein the first time and a young boy asked his mother what will happen to the islands when there is a typhoon and the mother said: 'Oh, that won't happen. The typhoons originate here and then go away and don't do harm to the island.' See how well God planned? When we wanted to build a house on our island, my grandfather showed me a piece of land where to build it. He said, ever since he can think, this piece of land has never been under water. And he was right!

While downplaying or ignoring both the discourse as well as own observations and experience with regard to climate change can be an avoidance strategy in the face of the unsettling emotions of losing land and home (cf. Norgaard 2011), the quote more prominently speaks to the chóón Chuuk's strong identification as Christians, belonging to various denominations and congregations. Many, according to a pastor, "don't believe in climate change, because God promised Noah not to destroy the earth anymore". Others have told me they are convinced that the islands are safe in God's hands, because the missionaries have proven His greater power compared to local gods and goddesses, for example by being able to break local taboos without being punished (see Müller 1989: 42–43). Hence, when American and German missionaries took up their work on the islands in the late nineteenth and early twentieth centuries, much of the former Chuukese spiritual landscape was eventually consolidated in the worship of the biblical God.

Reactions towards real, perceived or discursive environmental transformations, or more explicitly climate change, reveal that many put the responsibility into God's hands, where previously specialists and local leaders were accountable. A nearly 90-year-old souwpwpwún, a "chief of the soil", much lamented how people on his atoll no longer listen to his advice and thus try in vain to protect their beaches from rising sea levels with partly cemented

seawalls. Although people still meet him with deferential gestures, they devalue his environmental knowledge as derived from ancestor spirits, which are deemed heathen in today's Christian society. Thus, his awareness of the flow and wave regime around the island and his objection to seawalls remain unheard, although inhibiting this dynamic in certain spots only enhances beach loss, further exacerbating today's higher erosion rates caused by shifts in the climate regime. Similar distrust rules against scientists who have shown up on the islands since the 1990s as part of climate change research or awareness building programmes. Many people do not "believe in scientists, because they [scientists] don't believe in the Bible" as a chief's spokesman argues. For at least some others, however, the same argument leads them to assent to what the scientists say, because "God gives it" to them, as a civil service worker conceded. Hence, Christianity and local churches play a crucial role in appreciating knowledge and accepting information.

Thus, people do not simply adopt the Western idea of climate change, but in receiving it, they appropriate it according to their own experience, their life practices and belief systems. Climate change, thereby, offers a name for what people have observed for years and which deviates more and more from their previous experiences. A middle-aged woman working in the Chuuk civil service stated quite matter-of-factly:

> Until a couple of years ago, we thought the changes were just nature. But now we know about global warming. Take the dock downtown. When there is high tide, the water now comes all the way up to the dock. People step right into their boats! In the beginning of April [2011], we were on Palau. We were at a restaurant by the water. At night. And then I heard that noise. I thought, some fish are fighting, but someone said it was the high tide. I'm from the outer islands and people wonder what will happen in the next couple of years.

Nevertheless, to most Chuuk islanders, climate change still constitutes a vague idea at best, remaining a foreign concept that does not connect to their life and concerns. A government worker explains:

> The evidence of climate change is there, but the sense of concern is not there yet. They think the beach will come back. On [the island of] Kútú, a strong wind created a beach. That's nature, it takes away, it gives. (...) But I'm seeing the evidence. Núú [coconut palm trees, R.H.] are moving into the water now, it's just a matter of time! But I haven't given it a thought, yet.

According to him, because normality includes a specific rhythm of change, people on Kútú have not yet realised that current changes are outside the normal range of natural dynamics. This conforms to many other understandings of the physical environs as a dynamic formation. Also, the above illustrated high tides are known to be seasonal and thus are considered normal. In fact, before the tides left their normal range, becoming so high that their advent now is dreaded, people instead looked forward to kúún ennefen with anticipation, as the higher waters bring a certain deep-sea fish closer to the shore, which can thus easily be fished. Hence, what had once been an event associated with good fortune has turned into a misfortune and—alongside efforts to find explanations for the transformations—people have started renegotiating their relationship to the sea, to their environment and with it their sense of being Chuukese.

Explaining Environmental Change

Interviewing and talking to Chuuk islanders about their perceptions and experiences regarding environmental transformations, people's ideas of cause and effect displayed traits of Chuukese pre-contact cosmology, yet these were often carefully circumnavigated in my presence, as a foreign scientist with academic roots. Other Chuukese interview partners positioned themselves in the juxtaposition of pre-Christian and Christian cosmologies, for example by opening and closing with Christian prayers our meeting in which they problematised their relationship to other-than-humans in regard to local spirits and ghosts.

Indicated in the above account of Chuuk's environment was the idea that the human and other-than-human worlds stand in constant reaction to each other. The relationship is one of mutual responsibility, and human action evokes a geological or biological reaction. A Chuukese man thus recounts how the women in his village told him they could no longer find a certain plant he had asked for, because people have stopped eating it. Another two interlocutors reasoned that climate change is taking over, because people have become "disconnected" from their environs. People may "live off nature, but don't really think about it". They do not observe the associated rules and no longer possess the knowledge of how to take care of the resources, thinking that everything is "just there, (...) it just grows". No wonder, they explained in regard to the diminishing practice of gardening, the land is eroding if people stop using it.

While certain plants or other natural resources stop fruiting or vanish altogether if they are no longer valued, used and cared for, some people specifically function as patrons for individual species and stand in a special relationship to them. The breadfruit summoner (sowuyótoomey), for example, sends his good spirit double to the mystic island of Éwúr (someplace in the South) and its ruler Sowuyéwúr (master of breadfruit) in order to bring from him the ngúún (spirit doubles) of the breadfruits, which then generate their material counterpart (Goodenough 2002: 251–252). People are also in exchange with specified places, which are full of manaman and can be activated for certain purposes, for example to generate rain. Specialists and magic, such as weather magic, can even manipulate it, soothing or evoking storms. Yet, most interlocutors pointed out that such practices are either no longer in place or at least not publicly spoken about.

The reverse logic of this human/other-than-human balance contains the fear that breaking rules and taboos results in retaliation from bad spirits. The other-than-human environment, hence, is linked to humans via social relations such as the spirit doubles or good and bad spirits. Causal relations between disobeying behavioural rules and environmental calamity, as well as between environmental practices and environmental transformations, were directly quoted or indirectly implied by many of my interlocutors. Katherine Dernbach's observations from Kútú in the Mortlock atolls are even more explicit. Her example (Dernbach 2005), which Metzgar (1991: 84) describes in a similar way for Lamotrek, Yap, reports how older people hold menstruating women bathing in the lagoon of Kútú responsible for the shrinking of the island. Formerly banning women in the first year of their menstrual cycle from going into the sea anywhere but in one particular area, the associated taboo was abandoned around 1960. The particular part of the sea the women were previously restricted to was believed to be fixed by magic, preventing the sea from coming ashore (Dernbach 2005: 280). When girls today ignore such spatial taboos and aspire to lifestyles not governed by gendered principles such as feefinitiw and mwáániinó, which assign gendered roles in regard to space and behaviour, the spirits of the sea are no longer kept in their limits (ibid. 281).

Hence, to Chuukese islanders, the transgression of sociocultural boundaries also attacks geophysical boundaries. They have given various examples for how "wrong" behaviour leads to fracturing of the human/other-than-human unit, showing in erosion and the loss of biodiversity. Katherine Dernbach (2005: 279, italics in original) attentively concludes, in her

consideration of the interplay between magic, spirit possession and Catholicisms on Kútú in the Mortlocks (Chuuk State), that

> the tides of change that have come with 'modernity', related to such things as Christianity, schooling, hospital medicine, the cash economy, increased migration, and altered family structures and gender relations, may *literally* cause the tides to change.

Environmental dynamics, thus, are directly connected with cultural tensions, resulting from processes which Dernbach discerns as negotiating modernity and which James Clifford ascribes to the formation of "traditional futures" (Clifford 2004), hence to the on-going process of receiving and appropriating new elements such as Christianity or more recently climate change.

This way, also the (re)negotiation of what is normal, what is real, is placed against a society and (colonial) history that continuously merges change into normality, for which the adoption of Christianity is a strong example. Despite this, Chuukese islanders stress how much they orient themselves, literally and metaphorically, based on what is known. In further explicating their thoughts, many referred to strategies of traditional navigation where the islands they know are the fix for their advance into unknown waters. When setting a course, for example, instead of looking ahead to where he is sailing to, the navigator aligns the canoe to the island he is leaving. As a metaphor, this strategy is used to warn people not to forget where they are coming from. Orienting themselves to their islands sets them straight in life. The strong propensity towards the known also continues once they have left behind their home island and thus need a new reference point. In a spatial experience called etak, that is crucially different from Western conceptions of space, sailors take relatively fixed objects such as islands to be mobile while the moving canoe remains the static point of reference (Lewis 1972). One Chuukese interlocutor employed this navigational method figuratively to explain how the Chuukese culture used to be the fixed canoe around which the world was turning. Yet, as their culture "disconnects" at more and more points, he reasoned, the canoe is pulled loose and people are no longer able to stay steady within the dynamics of their world, but drift into a "dark age".

Environmental Change: A "Dark Future"?

Micronesian spatial, temporal and sociocultural orientations concur in their emphasis on what is known (the canoe, the island, the past, "correct" behaviour) as the fix around which the world turns. What consequently frightens them most is to be pasónó (or paselo in outer island dialect), drifting in unfamiliar waters, where no memory, no fix guides their course (Peter 2004: 273). With current dynamics departing from the known, it leaves the Chuukese without adequate memory and they report feeling lost within their own life-worlds. Chuukese islanders today speak of their fear of a "dark age" or "dark future". A Chuukese man from the village of Tóón explained:

> When people ask what will Chuuk be like in the future – where is Chuuk heading to? – it's an unknown place where we are headed and you can only find your direction going in the future if you look into the past. What I'm saying is that, unless we don't see the past, our past, the cultural values of our past, in the future, we will be a skewed, we will just be a very diluted human being. We do not have a very solid culture, we do not have a solid value, everything else will just be diluted.

Intriguingly, to this interview partner, Christianity is an accepted part of today's island life and he even suggested that climate change might be God's plan to resurrect proper Christian behaviour. Other chóón Chuuk, however, remarked that unexpected consequences for the environment became apparent once Christianity broke taboos and opened up specific places and species to public use. One example comes from Nómwuluuk Atoll (Mortlock Islands). A pastor from there recalls a specific pile of coral rocks on the beach that was taboo according to a story. When people lost faith in the story upon converting to Christianity, they took the coral rocks for other uses and soon enough the whole beach was gone. Only then did they realise that the pile protected the beach from erosion.

While the majority of Chuuk islanders are professed Christians, certain pre-Christian ideas and practices are achieving some recognition again, especially as environmental activists from the islands educate people and respectively remind them of how their resources can be managed sustainably, for example through the habit of closing off certain sections of the reef or land, called mechen or pwaaw, to honour a deceased person or to simply

allow the natural resources to replenish, which became disputed for its association with pre-Christian beliefs.

Conclusion

Climate change, as this contribution has illustrated, poses a material, discursive and ideological challenge to the people of Chuuk. Even though rising sea levels have not yet swallowed the islands, some people are concerned that island life has already been deeply disturbed. This chapter was developed around the intriguing preoccupation of many of my interlocutors with social rather than environmental change. Where observed changes in the islands' physicality unsettle people as they deviate from previous experiences, many Chuuk islanders perceive the actual crisis as rooted in sociocultural changes. Investigating the issue further indeed revealed that people directly establish a link between the sociocultural and the geophysical spheres.

The chóón Chuuk's perception is informed by an ontological perspective that significantly defines physical aspects of the environment in terms of social relations between humans and other-than-humans. Ééreni, everything the Chuukese are accustomed to, is an understanding of the world where people are socialised with other-than-human beings. They are directly interdependent, causing reactions in one another. This way, environmental change in fact becomes an indicator of the society's cultural integrity, meaning that social discord and social cohesion are, respectively, directly reflected in the environment. When the society and its cultural values, norms and rules are sound, the environment is intact, too. Hence, when people predominately address sociocultural change as being of concern, they mostly understand environmental transformations as logical consequence of the former.

This *Weltanschauung* is further informed by a distinctive correlation of what should be permanent or static and what is dynamic. Illustrated by the navigational principle of etak, the Chuukese life-world is understood to evolve around a fix. This fix is constituted by sociocultural norms and values that dictate behavioural rules and taboos. The material environment, in contrast, has always been dynamic—at least within certain parameters. If the natural dynamic exceeds "normality", as was the case with the seasonal kúún ennefen in 2011/2012, people start questioning their sociocultural status quo and with it also their sense of belonging. This is framed by relations to land and kin as well as by behavioural attitudes, which inform

their understanding of cause and effect regarding environmental dynamics: for much of my fieldwork, I remained unaware of the distinctive congruence and coherence between environmental conditions and the situation of society in Chuuk. Instead I wondered about the discrepancy between Western discourse, which paints the physical impacts of climate change as the ultimate threat to island life, and the curious preoccupation of the chóón Chuuk with changing values and norms. In retrospect, my ignorance might be attributed to what Martin Holbraad (2009: 83) calls the specificity of anthropological work, namely "data that resists collection (...), because the concepts available to anthropologists for describing them are inadequate".

Studying environmental transformations, in particular climate change, in the Pacific from a Western point of view, Oceania serves for the observing world as barometer of what to expect. In the island world, where space and time are seemingly condensed, the impacts of climate change become tangible and visible within a lifetime. To break the confinements of this island laboratory, Godfrey Baldacchino and Eric Clark (2013) have taken an innovative step. They publicised what Pacific scholar Teresia Teaiwa had suggested earlier: making island a verb, islanding an action. As such, islands as an object, as a laboratory or as "spaces outside modernity" (Farbotko 2010: 52) vanish and become instead performative relations that are constantly reconfigured. Islanding, as a new generic term, does not only transcend the borders of Oceania's geography and trajectory, but also describes how people know, and thus how they come to understand, cultural and environmental transformations. It allows the possibility of exploring the Chuukese experience of environmental dynamics as the fear of losing their culture, expressed by the loss of land and resources. It also offers a new reflexivity to alternative ways of seeing and thinking about climate change in an island setting.

Notes

1. The Micronesian and Australian Friends Association (MAFA) is a student-led group at the ANU Canberra, comprised of students, staff and community members living in Australia. Sponsored by the EU program PACE-Net Plus, they conducted a survey and workshop in Kuchuwa, a village on Tonowas in Chuuk Lagoon on "Indigenous Youth Responses to Water and Waste Management" in January 2016. For more information, see: www.pasifika.anu.edu.au/micronesian-and-australian-friends-association-mafa. Accessed 04.03.2016.

2. He also reported that the last unusually high waters flooded the area about two years earlier and to an even greater extent. Climate variability caused by ENSO (El Niño and La Niña) has a periodicity of between three and seven years. Since the late 1970s, however, El Niño events have become more frequent and now show largely a three- to five-year cycle (D'Aubert and Nunn 2012: 11). While the first decade of the new millennium was characterised by a pronounced La Niña phase (Keener et al. 2012: 15), El Niño is now on the brim again.
3. This is theoretically conceptualised in the "mobilities turn", see e.g. Hannam et al. 2006; Cresswell 2010; Brickell and Datta 2011.
4. Much knowledge about pre-Christian beliefs is lost, yet certain elements endure in more hidden forms. Early descriptions come from the Hamburger South Sea (1908–1910) expedition and from missionaries. Lothar Käser was able to elicit much knowledge from a former island chief and from a former medium. Ward Goodenough (2002) draws heavily on Käser as does Dobbin (2011) with the assistance of Jesuit pater Francis Hezel who was a long-time resident and anthropologist of Chuuk.
5. The village in which the author lived was named Chuukiyénú, because the hilly location was supposed to be home to a multitude of ghosts and spirits. A rock on campus remembers the exorcism of the spirits by the first missionaries who consequently established their Bible school there.
6. Western science pinpoints the deviation of anthropogenic climate change from natural climate variation on the scale of past mean values. The "climatic normal period" from which mean values are derived encompasses thirty years. The current reference period runs from 1961 to 1990. Thirty years is considered to be the minimum necessary to filter out short-term deviations. They are too short, however, to document long-term transformations.
7. Before colonial administrations rearranged the spatial regime of Oceania, elaborate inter-island networks allowed local resources to complement each other and served as security net in times of distress. For example, in the Micronesian sawei tribute system between Yap proper and its outer islands, including some Chuuk atolls, the high island of Yap was considered parent to the atoll children. While the system itself was partly governed by the atoll islanders' fear of Yapese magic causing typhoons, they also knew that in times of need, they could

turn to their "parents" (cf. Alkire 1984; Berg 1993; D'Arcy 2006; Descantes 2005; Lessa 1950).

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CHAPTER 5

Young ni-Vanuatu Encounter Climate Change: Reception of Knowledge and New Discourses

Desirée Hetzel and Arno Pascht

Introduction

> Here in Port Vila most people are hungry for information. They really want to get scientific knowledge of, information about tropical cyclones.[1]

Scientific information on climate change seems to be omnipresent in Port Vila, the capital of Vanuatu. The younger population in town acquire it from various sources, such as foreign development aid organisations, foreign or local NGOs, or from institutions of the Vanuatu government. When we spoke with our interlocutors in Port Vila during our fieldwork, it was obvious that they considered it important for them to acquire this scientific knowledge themselves and also to further distribute it to other inhabitants of Vanuatu. In this chapter, we argue that the reason behind this is not only the potential usefulness of this knowledge in dealing with the adverse impacts of climate change. Their statements and (re)actions reveal that young ni-Vanuatu in town are interested in ways and methods of adaptation, but likewise show interest in an explanation of the causes of climate change. We discuss two interrelated interpretations.

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The first is based on our observation that scientific knowledge is seen by some young ni-Vanuatu as "true," and their conviction that it has to complement and partly even replace "traditional" knowledge when dealing with climate change. We argue that this valuation and interpretation is the result of young ni-Vanuatu's engagement with climate change in associating scientific knowledge with their own ontological principles. In our view, this offers the possibility for them to establish a (new) connection to the transforming environment, an environment in which climate change plays an important role.

A second interpretation is that scientific knowledge about climate change provides young ni-Vanuatu with a key to establishing and maintaining connections to the outside world. A strong orientation towards the world beyond their islands has been described as an important principle of Pacific Islanders (see Hviding 1996). Climate change, together with scientific knowledge, experienced as a phenomenon that has local impacts, reaches Vanuatu from outside of the country. We argue that climate change and related scientific knowledge provide connections to the outside world, and thus is associated with this outside orientation.

Our contribution addresses the encounters of young people living in Vanuatu's capital, Port Vila, with scientific ideas about climate change. In recent anthropological research on climate change, this process has been framed as "reception" (Rudiak-Gould 2011), which has been defined as "the acquisition of climate change information via media, educational, governmental, NGO, or other channels that disseminate the scientific notion of anthropogenic global warming" (Rudiak-Gould 2013:7). This body of research focuses on the (re)interpretation, understanding, adoption, rejection, and utilisation of this information. We follow Rudiak-Gould's definition but draw special attention to a specific aspect, namely *new* discourses people create when they encounter scientific ideas on climate change and when they associate them with own ideas about their environment. We concentrate on the question of how this reception process is connected with specific ontological principles of Pacific Islanders which have been described by anthropologists as important parts of their worldview and, as we argue, can be seen as "concepts" in the sense that Eduardo Viveiros de Castro (2013: 485) outlines. In this ethnographic case study, we show how young ni-Vanuatu (re)interpret scientific knowledge of climate change, the (new) meanings they ascribe to this knowledge, and the processes they create in encounters with this knowledge.

We understand climate change as a broad concept, including discourses as well as political and legal measures (Hulme 2010). By "scientific knowledge of climate change," we mean the basic state-of-the-art, scientific ideas about anthropogenic climate change as currently proposed. This includes

explanations about causes, predicted effects, and possibilities for mitigating climate change and adapting to its impacts.

In the following, we use the term "knowledge" because it was used by our interlocutors as well as in national discourse. We do not, however, think of it as a body of fixed, unchangeable statements. The notion is more adequately expressed by the term "knowing"—"i.e. understanding that is more fluid and flexible in character, how something is known, knowledge in practice" (Keck 1998:10). The expression "traditional knowledge" is frequently used in Vanuatu in discourses regarding the attempt to maintain or revive cultural notions and practices. We use "traditional knowledge" in the emic understanding which it has acquired in Vanuatu.

This chapter is based on five months of fieldwork conducted in 2013 and 2015. We focused primarily on the younger ni-Vanuatu in Port Vila between the ages of 18 and 35, some of whom were members of a group of climate activists. During our stay, we also visited climate change adaptation projects run by different NGOs in Port Vila and in rural areas on the islands of Efate and Espiritu Santo, where we spoke mainly to women and men between the ages of 35 and 70.

Climate Change in Vanuatu

Since the 1990s, the destructive consequences of climate change for the Pacific Islands has received great media attention. Although climate change is regarded as a pressing issue in Vanuatu by international organisations, to this day there is no systematic anthropological study about which environmental changes people in Vanuatu actually observe and interpret as the impacts of climate change. Some references in the scholarly literature, as well as evidence from our interviews, suggest that ni-Vanuatu are not consistent in their statements about observed environmental changes as consequences of climate change in Vanuatu. When we asked ni-Vanuatu about the environmental changes they had observed, both in general and in connection with climate change, we got a variety of answers. Inhabitants of rural coastal areas explained that "the sea is coming closer more often," and that they are witnessing more floods and erosion of beaches. Nearly every person we talked to in the rural areas explained that the leaves of a specific plant (laplap lifs in Bislama; *heliconia indica*) have been sere for some years now, and some reported decreased yields from gardens—several of them for specific plants, like island cabbage. Almost everyone we talked to mentioned a change of seasons—more rain in the dry season and more dry periods during the wet season.

While our interlocutors recognised some environmental changes, they did not mention that they see threats to their livelihoods, such as a shortage of food, as caused by the impacts of climate change at this point. The predictions of international organisations about the impacts of "climate change" in Vanuatu assume a different scenario for the future. They stress the principal vulnerability of Vanuatu "to the effects of natural disasters including climate change" (FAO 2008:44). This statement shows the principal trend of reports of this kind which summarise the scientific statements and predictions of actual and expected environmental changes as consequences of climate change. Vanuatu is classified as a "Small Island Development State" (SIDS) in an international context. Scientific climate models predict that that vulnerability will be intensified by climate change as a consequence of the expected higher temperatures, more frequent dry periods, higher variability of rainfalls, intrusion of salt water, erosion, hurricanes, and other changes. International organisations estimate that higher numbers of extreme weather events mean more stress for agriculture. Additionally, water management will become more difficult (FAO 2008:39; 50f.). This might result in a decline of the yields of food plants and periods of food shortage—especially after hurricanes, dry periods, or floods. Because most of the ni-Vanuatu depend on agriculture and have no economic alternatives, this prediction would impact and threaten their livelihoods immensely.

Accordingly, measures in the sector of agriculture and food security are classified as a priority in Vanuatu's National Adaptation Programme for Action (NAPA), which summarises intended adaptation projects in order to deal with the current and projected adverse impacts of climate change. About 80 per cent of ni-Vanuatu live in rural areas, and subsistence agriculture and some cash crops for export are the economic basis of their livelihood (FAO 2008:34ff). The national economy is characterised by slow growth rates, although there has been a recovery in the last years. Export is mainly based on agriculture; the main products are beef, copra, and fish. Additional economic branches are commercial logging and a small industrial sector in the capital Port Vila. The money economy constitutes only a small part of economic activity in the rural areas. Money is earned here mainly through the sale of copra, cacao, and other cash crops, shells, and handicraft and by granting access to logging firms. In rural communities, we were told that for them the scarcity of possibilities to earn money is a major problem. Often the only possibility is seen as drying coconuts and selling copra. The agricultural sector is thus the most important basis for the

majority of ni-Vanuatu's livelihoods (FAO 2008:34), while the money economy is concentrated in the two urban areas of Port Vila and Luganville. Over 70 per cent of the ni-Vanuatu live on their traditional land, grow their own food, and use resources from forests and the sea for their personal needs and for exchange.

Knowledge, Environment(s), and Worldviews in Oceania

Using the resources of the land and the ocean, ni-Vanuatu experience and produce specific relations to and thereby knowledge about their environments. In order to scrutinise their encounter with scientific ideas about climate change, it is relevant to ask about the principles of thought of ni-Vanuatu concerning their environments. In the following paragraphs we draw on anthropological studies about knowledge, human-environment relations, and worldviews in Oceania, especially in Melanesia and Vanuatu.

When dealing with knowledge and worldviews in Oceania, important ontological principles are impressively shown by Epeli Hau'ofa in his seminal article "Our Sea of Islands" (1994). He argues that the Pacific Islands are not, and never were, isolated dots in a wide ocean but connected by human relations and mobility. He stresses that migration and mobility were and are characteristic of the people of Oceania. They are not only connected with their home islands but are also strongly outward-oriented. One important implication of this is that knowledge travels along with groups and individuals, and is therefore imported and exported. With more and better possibilities for communication and mobility in the last decades, the opportunities for receiving and exporting knowledge are growing.

While Hau'ofa places emphasis on the principle of "outward orientation," a perspective that focuses on connections beyond the local, others conclude that an opposed orientation, towards locality, constitutes a concurrent principle of worldviews in Oceania. Edvard Hviding states in his study of the Marovo people in the Solomon Islands (Hviding 1996) that the orientation towards the local environment constitutes another, complementary, principle of Pacific Islanders' worldviews. Furthermore, he explains that this orientation towards the local environment is characterised by knowledge of and engagement with it. He identifies outward and inward orientation as "twin foundations of Pacific islanders' worldviews":

> The typical approach taken by Pacific Islanders to the island environment, then, is characterized on the one hand by detailed knowledge of and intense

> engagement with the land and its associated reefs and inshore seas, and on the other by a fundamental outwards-looking view of the world as not confined to the home island but connected across the ocean with other natures and cultures. (Hviding 2003:254–255)

Knowing and interacting with local environments can thus be seen as important for maintaining connections to other, more distant environments. We argue that these two orientations, to the local and outwards, play an important role for the process of the reception of scientific knowledge about climate change by young ni-Vanuatu living in Port Vila. In order to understand what is meant by the principle of local environmental "knowledge and engagement" Hviding refers to, it is helpful to also consider other studies about knowledge and meanings of environments for people in Oceania. Publications in recent decades about Melanesia, which focus on knowledge, largely either deal with specific examples of knowledge about plants and animals (Morrison 1994) or focus on secret knowledge (e.g. Barth 1990; Crook 1999). Knowledge in Vanuatu has been discussed by Lamont Lindstrom in his monograph about Tanna (Lindstrom 1990), where he also focuses on knowledge outside of the context of everyday life, which normally is secret knowledge. For Vanuatu, an example where the meaning of environments is a key topic is Carlos Mondragon's article about seasonal environmental practices and climate fluctuations. He states that Torres Islanders conceive their environment as landscape and ocean alike, populated by acting human and other-than-human entities, which are influential for environmental effects (Mondragon 2014:5). Environmental processes are thus seen as influenced by humans and by other-than-human actors. With this finding, he implies that certain ontological principles constitute the basis for human–environmental relations and environmental knowledge in the Torres Islands in Vanuatu.

That environmental processes are influenced or even caused by humans is also the conclusion of Jean-Christophe Galipaud's research about volcanic eruptions in Vanuatu. He states that "people in Vanuatu do not conceive what we consider to be 'natural' disasters in the same way, but think they are humanly caused" (Galipaud 2002:165). In this sense, in "Vanuatu, every natural event must have a rational explanation" (Galipaud 2002:168). The disasters he discusses are seen as "social events" that can be explained, and that "were artificially monitored with the help of magical powers" (Galipaud 2002:170). In one of his examples, a man used "magical powers" to cause a volcanic eruption as revenge for tricking him into an incestuous affair with

his mother. Similarly, Mondragon states that environmental processes such as meteorological phenomena can be influenced by ritual specialists (Mondragon 2014:6).

Interaction—or in Hviding's words—"engagement" with the environment takes place in various contexts in Vanuatu. It can include activities like planting, weather-making, or even causing volcanoes to erupt. These interactions are connected with—or even inseparable from—knowledge, as Mondragon shows when he stresses that complex bodies of environmental knowledge are not organised in a fixed format or system and not taught in formal contexts, but are a result of engagement with the surrounding spaces (Mondragon 2014:14). Like Hviding, he stresses the importance of people interacting with the environment. He equally does not separate knowledge and interaction, but emphasises the close relationship or even inseparability of knowledge and "shared environmental praxis" in the form of food production and ritualised exchange (Mondragon 2014:14).

As already implied by Hviding and Mondragon, we understand "knowledge" or "knowing" in Vanuatu as an environmental praxis, interaction, and engagement. Here we follow Tim Ingold's conclusion for a different ethnographic example that knowledge cannot be distinguished from interaction with environments and does not mean representing the world in the mind. "Knowledge" here is rather inseparably connected with "moving around in their environment, whether in dreams or waking life, by watching, listening and feeling" (Ingold 2000:99). He uses the term "experience" to characterise this process.

The ethnographic studies sketched out so far concentrate on knowledge systems and knowledge production in specific places. Even less research has been conducted about the encounters between different knowledge systems. One recent example is Sabine Hess's research about the Christian idea of the soul in Vanua Lava in Vanuatu. She focuses on processes in connection with the arrival of foreign knowledge in the form of Christian ideas. Hess concludes that members of communities in Vanua Lava "by and large have found a way to integrate Christian beliefs into their cosmology" (Hess 2006:293). She shows that the basic notion of the nature of the soul did not change, but an additional relationship for the soul to engage in had been added—the relationship to God or Christ. In Vanua Lava "kastom" and "church" are seen as being in a complementary relationship and are often described by the individuals as a "married couple" (Hess 2006:287).

Another recent study of how people in Oceania deal with a new topic and along with it knowledge from "outside" is Peter Rudiak-Gould's already

mentioned research about the reception of scientific knowledge about climate change. One of his key conclusions is that the reception of this kind of knowledge from outside is characterised by a reinterpretation of it on the basis of "people's deepest convictions" (Rudiak-Gould 2013:179) so that "it poses no threat to their concepts" but rather strengthens them (Rudiak-Gould 2013:179). Local "moral cosmologies" (Rudiak-Gould 2013:11) about the development of society proved to be so resilient that the Marshallese adapted the new knowledge to their views (Rudiak-Gould 2013:177).

Traditional Knowledge in Vanuatu

When researching "knowledge" in Vanuatu, it is important to consider the concept of traditional knowledge which has gained a special role and meaning in political and societal discourse during the last decades—both generally and in connection with climate change. Vanuatu national policy on climate change promotes traditional knowledge since it plays an important role in dealing with the environment and changes in it (Government of the Republic of Vanuatu 2015:14). Due to this, traditional knowledge is present in today's political discourse, especially when talking about climate change. Traditional (environmental) knowledge is directly related to, and one aspect of, the concept called kastom in Bislama, which includes people's interaction with "their ancestral land, using traditional methods of agriculture and other forms of land and resource utilization" (Regenvanu 2005:41). In Vanuatu, kastom can have two different, but interconnected, meanings: on the one hand, it refers to ways of living in rural areas and on the other it is promoted in political national discourse as part of the "collective identity" of ni-Vanuatu. Kastom became an important part of the national narrative of Vanuatu as an independent state. Thus, the movement for independence was at the same time a movement for kastom (Regenvanu 2005:40).

In the past, knowledge coming from outside through missionaries and the colonial administration was distinguished from local knowledge or customs. To this day, representatives of the Vanuatu Cultural Centre try "to move towards a balance between local knowledge and outside knowledge" in the educational system (Regenvanu 2005:47). Drawing on Tonkinson's research on this topic, Lindstrom describes a "symbiotics of *kastom*" as something that is partly based on aspects that were there before colonialisation and partly on aspects of new ideas coming in. For him, it

represents a creative way to handle the new (Lindstrom 2008:168, 174). Today, the discussion of kastom has entered the global arena and is a way to represent the country to the outside (Lindstrom 2008:174).

Discourses on Climate Change: Actors and Measures

Since the 1990s, a range of measures has been implemented in Vanuatu in order to tackle the predicted problems of climate change. Vanuatu was among the first Pacific Island states that decided to start engaging with issues of climate change. An important step was the preparation of the National Adaptation Programme for Action (NAPA) in 2007. It was intended to pave the way for climate change adaptation measures and to coordinate the realisation of adaptation projects. All planned and realised steps are closely connected with international political and legal discourses and policies—the basis for the NAPA is, for example, Vanuatu's ratification of the UN Framework Convention on climate change in 1993.

One important group of actors consists of state organisations. The Vanuatu government introduced a range of climate change policies and laws, and policies and legal regulations for various topics underwent climate mainstreaming. In 2013, a new ministry of climate change was established. Together with the Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity's (MALFFB), they are responsible for planning the measures and policies for mitigation, adaptation, and disaster risk reduction. Its new 2015 policy brings "resilience" of rural communities, and with it traditional knowledge, to the centre of attention.

The National Advisory Board on Climate Change and Disaster Risk Reduction (NAB), operating under the ministry of climate change, has been set up to coordinate all national action against climate change and is thought of as a communication tool for all national, international, and non-governmental organisations (NGOs).

Other actors involved in the introduction of scientific knowledge about climate change are organisations from other countries,[2] international NGOs,[3] or national NGOs.[4] The main objectives of their programmes are adaptation to climate change and disaster risk reduction; the programmes mostly focus on rural areas across the different islands. The goals are to make communities more resilient to climate change and to connect the rural and national levels. Following a community-based approach, these organisations run a considerable number of projects. Some, for example intend to

introduce solutions for the agriculture sector, such as introducing new varieties of plants and techniques for cultivation and food preservation.

In recent years, Port Vila's population was addressed in so-called climate change awareness workshops. The government organised them in cooperation with NGOs, and they included several events and programmes for young people in particular, such as the National Youth Symposium on Climate Change, the climate march, various panel discussions, and several workshops. The youth-led group of the international organisation "350.org," "350 Vanuatu"[5] who call themselves the "Climate Warriors," was established in 2013 and is jointly responsible for organising these local events to inform their peers about climate change and distributing information. Their main concern is to raise awareness about environmental issues caused by climate change. Furthermore, they advocate for Vanuatu's interests in climate justice outside the country on an international level. The Climate Warriors are well known among young people in Port Vila who refer to them for information, explanations, and methods for dealing with environmental change.

Young ni-Vanuatu in Port Vila

During our fieldwork, some of our interlocutors recommended us to talk to one of the Vanuatu Climate Warriors when we wanted to know something about climate change. Cooperating with the Pacific-wide network and the global "350" network, members of this group communicate between the global and local levels. Members of the Climate Warriors calling for action for climate justice explained that they feel a responsibility to take over the knowledge transfer to other ni-Vanuatu in rural areas. They appreciate the information acquired in town because of its importance to understanding the phenomenon of climate change. One of them describes his motivation to become a member of 350 Vanuatu and to do something for the "community": "So it [climate change] disturbed farmers. Because traditional knowledge is disturbed [...]. Awareness will help them."

In this statement, he clearly contrasts the town with rural areas. "Awareness" for him and other group members means providing information in the form of speeches, workshops, or written material on climate change, new knowledge that is different to traditional knowledge, which is attributed to village life. In order to understand why Port Vila is seen as such a different environment compared to the rest of the country, it is important to look at the development of this town over recent years.

The Town of Port Vila

The urban environment of Port Vila is an important place for the process of the reception of scientific knowledge about climate change. Port Vila is one of the fastest growing areas in Vanuatu. Migration to the town increased after independence in 1980, and progressively more labour migrants settled there permanently; their children are today in their twenties. They and international migrants made Port Vila expand to a town of roughly 45,000 inhabitants (VNSO 2009a:10). Although there are two urban centres in Vanuatu, Luganville, and Port Vila, when talking to ni-Vanuatu in Port Vila, the latter is labelled as the town, or "taon" in Bislama, Vanuatu's lingua franca (Mitchell 2004: 368). It is still a rather small town, but it offers many of the amenities of city life and infrastructure. Today, it constitutes an environment that is changing fast and that provides many opportunities. Over the years, a growing number of jobs, investment, and educational opportunities have become available. For many ni-Vanuatu, living in town provides an alternative way of life to living in a village on "the islands." Jean Mitchell describes the town as a symbol of "modernity," which attracts especially younger ni-Vanuatu. Today's environment of Port Vila is one of mobility, innovation, and transformation (Mitchell 2004:359, 374, 2011). It is a meeting place for different groups and individuals and the gateway between Vanuatu and the outside. Objects, people, ideas, and information are conveyed from here to the different islands. The tourism sector has flourished in recent years; hotels and several high-end resorts are attracting more guests, and with them, more jobs for the local population. However, the tourism sector has not only brought money into the country. Since Vanuatu became known as a tax haven, private investors have been bringing their businesses (Rawlings 1999:84). Mitchell, referring to Tsing (Tsing 2000:336), describes it as a place where "[i]nterconnections created through the intense circulation of commodities, people, and ideas are central to the 'new globalism'" (Mitchell 2004:361). Furthermore, Port Vila is the centre of education,with the University of the South Pacific, the Vanuatu Cultural Centre, and the National Library next to it. Among all of this, one cannot miss the different signs announcing the presence of the many NGOs residing in the capital. This development of a small colonial town into a multifaceted urban space is accompanied by numerous advantages and, at the same time, by manifold challenges.

Experiencing Urban Life

> Urban youth are a new and growing social, cultural, and demographic category, who will shape the future in distinctive ways. (VYPS Research Report 2008:2)

Over the years, a large number of young girls and boys have migrated to this urban area, in search of education, employment, or an urban life (VYPP 2008:4; VNSO 2009a:12). Nowadays, Port Vila's population is young. The National Population and Housing Census from 2009 shows that it is mostly young ni-Vanuatu who migrate to the urban areas. At that time, a total of 13,646 residents between the age of 15 and 24 were counted in the urban areas (VNSO 2009a, 15). When walking along the streets, it becomes apparent how many younger inhabitants live in this town. They constitute the first generation of ni-Vanuatu who grew up in an independent state, born after 1980. Coming from different islands, they speak Bislama, Vanuatu's lingua franca, as a common language, which "has been crucial in linking islanders" (Mitchell 2004:358). Nowadays, as Daniela Kraemer remarks, more and more young ni-Vanuatu either spend a large part of their life in town or are born there. As "taon" becomes their home, they actively negotiate their identity as "man taon" and find ways of "place-making" in town (Kraemer 2013:87). Kraemer describes this as a process of identifying with their environment and negotiating their role in the sociocultural system of the urban area. They continue a ni-Vanuatu way of relating with land and have built up a relationship to it through various activities (Kraemer 2013:37–43, 62). This does not mean that they break connections to the islands. Almost all of them talk to relatives and friends in rural areas on a regular basis, giving updates on the latest political news, or sending goods which are not available on the islands. Our interlocutors used the terms "home islands" or "the communities" to describe the places where their relatives lived. Island life is portrayed in strong contrast to life in town; the village, according to our interlocutors, is a place where one can eat for free, where time does not matter, where there is enough space, and, most importantly, where the youth still show respect towards their elders. Town life is often described by them as a new way of living which is different from life on the islands—with the pressures of the wage economy and living in overcrowded settlements without access to services and land. Subsistence gardening in town is practised substantially less than in rural areas (VNSO 2009b:112). In Port Vila, land belongs to the state or is sold as real estate;

fewer households have gardens in order to plant food crops, and food has to be bought at the market. Thus, in this urban context, young ni-Vanuatu experience the dependency on money in order to support themselves as a burden.

Over the last few decades, discussions about the challenges in Vanuatu's capital have become part of public discourse. A survey by the Vanuatu Cultural Centre's Young People's Project identified employment, education, and money as the main aspects young ni-Vanuatu deal with in relation to life in town (VYPS Research Report 2008). After the documentary *kilem taem* (*killing time*), this movie title became the slogan that defined a whole generation living in town—without jobs and apparently with nothing to do. However, they creatively negotiate their roles in the urban social context, and *kilem taem* is one way of doing so (Mitchell 2004, 2011; Kraemer 2013). When talking to our interlocutors, they told us that they are aware of the negative narratives about life in Port Vila and the pressure of everyday life.

The uncertainty of urban daily life is accompanied by a discourse about the uncertainty that results from future environmental changes and events due to climate change. Climate change, being future-oriented in itself, moves them to look into what is coming. Additionally, different groups and actors directly address the younger generation, asking them to be aware of and act on changes and potential environmental problems. Prognoses of worsening living conditions, storms, and shifting seasons make the future even more unclear and unpredictable. Laura,[6] a girl from one of the wider urban areas of Port Vila, stated her pessimistic views for the future as follows:

> Because I can see it is going to be worse in the future, so it will be our children. We see the changes from the past in the present, so we need to do something that it will be better for the future. Because if we don't act, or we don't do anything, it will be worse.

Although convinced of the negative outlook for the future, sitting back and doing nothing does not seem to be an option for a considerable number of these young people. They not only face this new situation but also try to actively engage with their future. Mitchell makes it clear that this is indeed the "new generation" which creates the context of the town (Mitchell 2004:364). In addition, we argue that they also take on a special role

when dealing with climate change knowledge, which represents just one form of environmental change.

Young people in town that we talked to were extremely interested in knowing more about climate change. Some of them, especially the members of the Climate Warriors, are motivated to gain and distribute information. Living in an urban environment, our interlocutors pointed out the advantage of having access to all the new information that is arriving. They appreciate life in town because of the opportunities it offers that they would not have if they were to stay back on "the islands." Additionally, internet access in town is much better than on the islands, which means our interlocutors get used to browsing for information. Information concerning climate change in the form described above is easily available all over town, and young people receive information on climate change through multiple channels. In their day-to-day lives, they listen to the radio, read articles in the *Daily Post*, or go online, using social media. But also (or most notably) talking about climate change with friends, family, or neighbours plays an important role. They value the advantages of town life and emphasise the importance of information. The reason for this, according to Diana, a young woman in town, is that even if "disaster strikes, it's better than not knowing anything." The information flow from outside of Vanuatu is considered important for dealing with new challenges. One of the Climate Warriors states: "[This is] modern information. It comes from another place but it is here with us, it's in town. People in town need it, it makes them powerful. [. . .] We are growing up in a world, where we also learn from other places."

Young ni-Vanuatu in Port Vila actually live in an environment that is determined by principles and knowledge that are different to life in rural areas. The urban environment provides them with new perspectives, new ideas, and new knowledge. Belonging to a specific island or region may be still important for them, but their actual daily life differs considerably from life on the "home" island or the island where their relatives live. They do not interact in the same way with land, plants, and the weather as people living in rural areas do. Thus, most of the time they are engaged neither in planting or fishing nor in "magical"[7] practices in order to manipulate these environments in their daily lives. Engagement with and knowing these environments is different for young people living most of their life in town. In their daily lives they are confronted with other kinds of knowledge—principles connected with the money economy, and contact with knowledge about phenomena, developments, and notions that are brought to Vanuatu from outside and appropriated by ni-Vanuatu actors. One of

these kinds of knowledge is scientific explanations of the impacts of climate change. Joseph, one of the young ni-Vanuatu who moved to town in recent years, explains the relationship to the environment on the island in connection to climate change:

> In the rural areas they see it like every day, or every week the changes are happening to the environment. And that's how they see it, how climate change is, whereas people that live in Port Vila they know about it.

The citation implies that young people differentiate between experienced knowledge and knowledge that they have obtained through other communication channels, which are available to the urban population. Additionally, our interlocutors stressed that living in town one does not "see" or "experience" environmental changes caused by climate change, whereas community members on the islands do. These distinctions play an important role when young ni-Vanuatu encounter scientific knowledge about climate change and produce new meanings and roles for it.

Meanings and Roles of Scientific Knowledge About Climate Change

In order to understand the meanings and roles young ni-Vanuatu associated with knowledge about climate change in the process of reception, it is instructive to scrutinise how they relate it to traditional knowledge and to the environment, how they evaluate it, and what they intend to do with it.

While most ni-Vanuatu we spoke to recognise recent environmental transformations and problems, ideas about explanations and solutions differ. Some elder interlocutors from rural areas were not sure about the causes, and explained to us that it would be possible to deal with these problems by reverting to traditions and traditional knowledge. Our young interlocutors in town, however, ascribed the transformations and problems to climate change and explained that relatives and others in the rural areas are "confused" because they cannot explain and solve these problems with the help of traditional knowledge. They stressed that they, on the contrary, do not see any possibility of dealing with these problems by reverting to knowledge systems passed on by their ancestors, or traditional knowledge. They regarded these as either insufficient or inappropriate for explaining and dealing with environmental changes which are seen as caused by climate change. Ben, a member of the Climate Warriors, explained:

> You have to learn different knowledge. I already know about my traditional knowledge. But I already have to get the other part of it. [. . .] And knowing all of these two different parts is important.

Other interlocutors similarly distinguished "scientific knowledge" from traditional knowledge.[8] This has to be seen in connection with the discourse about traditional knowledge and kastom in Vanuatu sketched above: ni-Vanuatu had differentiated between local knowledge and knowledge from "outside"—in particular, from missionaries and the colonial administration—in the past, and this distinction today plays an important role in political and societal discourses on the national and local levels. Interlocutors associated traditional knowledge with the islands, thus with rural parts of Vanuatu, while they linked scientific knowledge to the town. Paul, one of our interlocutors, further remarked that "traditional knowledge is [...] only reliable to people living in the islands. And it's different for people living in town." This distinction corresponds with the differentiation mentioned above between knowledge about climate change which is experienced by the rural population and knowledge obtained from diverse channels like the media.

Although traditional knowledge was differentiated from scientific knowledge, both were valued as "true" by the young generation of Port Vila. This entails that "magic" or "supernatural" knowledge was not seen as less true in comparison to scientific knowledge.[9] For instance, knowledge of how to perform rituals in order to manipulate weather with the help of certain stones and scientific knowledge that explains climate change as a consequence of the emission of greenhouse gases are seen as equally valid. Ben stated that he believes that "science is true." This evaluation of scientific knowledge about climate change as "true" is another aspect of the reception process and can be interpreted as a process of gaining validity, as described in a similar way by Hviding for the Marovo people. He explains that several "successive states apply to the acquisition and validation of knowledge" (Hviding 1996:369). For the Marovo people, the sensory reception of hearing about something leads to a state of knowing. Depending on previous knowledge as well as on the social context of knowledge transmission, this may result in believing in the truth of something as a second step. Hviding identifies "trust" as the next and last step in the process of gaining validity (Hviding 1996:369). Trust, he states, is achieved once people see something repeatedly for themselves. Our interlocutors described a similar sequence concerning scientific knowledge about climate change. They first

heard about climate change from various sides—foreign organisations, government, local NGOs, and the media. We argue that the context of the town, as the experienced daily environment of our interlocutors, contributes to a further validation of this knowledge. Actors, for whom scientific knowledge about climate change is true, are based in town and thus are part of this environment. The next step in the validation process can be seen in the experience of the cyclone, which hit Vanuatu in 2015. The cyclone was announced in advance by the Meteorology and Geo-Hazards Department (VMGD) of the Vanuatu government on the basis of weather forecasts, computed by using scientific methods. Afterwards, it was related by various sides to climate change. Our interlocutors stressed the importance of having seen climate change now. Alice, a young female Climate Warrior, explained: "The storm showed us what we are talking about all these years. Now we see what climate change does to us." Some of our interlocutors additionally referred to the Christian religion as another truth, by considering God as responsible for the cyclone in order to give humans a sign to better follow Christian principles. Thus, for them, several "truths" can easily coexist.

Conversations about the important role of scientific knowledge about climate change and its valuation as true were often followed by an explanation by our interlocutors that it is essential to distribute it as widely as possible—and particularly to communicate it to community members and the family on the outer islands who do not have the possibility to receive it otherwise because of a lack of infrastructure. Maria told us: "They are confused about the ways the ancestors live. So I think that one has to go and give information that we are using now. They have been introduced [to it] now."

In contrast to Lindstrom's (1990) findings about knowledge in Tanna, where he observed that certain kinds of knowledge with an interpretive character were kept secret, and only technical/operational knowledge was spread, young people in Port Vila do not regard interpretive knowledge about climate change as secret knowledge, but as an important truth they want to spread. Below, we argue that this may be explained by the intention of the youth to disseminate what they see as necessary knowledge for the future, to all parts of Vanuatu.

Although young ni-Vanuatu intend to bring the new knowledge they acquired in town to the friends and relatives or community members who live on the islands, they also stressed that it is important "to keep the tradition." Our interlocutors emphasised the importance of preserving the

way of life they know from their parents and grandparents, including the associated traditional knowledge. This does not mean that they intend to revert to traditional knowledge in order to deal with climate change, but to be able to live a "traditional" life in a more general sense, for example, to be able to live from and with local resources, and the environment where these resources can be obtained in the same way as their ancestors. Thus, they regard it as important to find ways to preserve existing environment(s) and, at the same time, the "traditional" way of life. Scientific knowledge about climate change is seen as a means to achieve this.

While scientific knowledge about climate change was seen by our interlocutors as true and necessary knowledge that had to be disseminated to all ni-Vauatu, they also considered it an important way of connecting ni-Vanuatu with people from outside. In contrast to traditional knowledge, which was often associated with places and environments in Vanuatu, scientific knowledge on the other side was often associated with the life in town, but also with "outside."

Conclusion: Encounters of Ideas

As we have shown, young ni-Vanuatu ascribed to scientific knowledge a number of meanings and roles. It becomes clear that they contrast scientific knowledge and traditional knowledge. These two kinds of knowledge are seen as separate domains which may partly overlap. While in some contexts, scientific knowledge was understood as a possible complement to traditional knowledge, the former is rated as a superior or even as the exclusive form of knowledge that is capable of explaining climate change and dealing with the problems it creates. Importantly, young people tend to regard scientific knowledge of climate change as "true"—as well as other kinds of knowledge, like traditional knowledge.

In the following paragraphs we provide interpretations for the importance young ni-Vanuatu ascribe to scientific knowledge about climate change and for the conviction that it has to be distributed. These interpretations involve orientations and principles of thought—or ontological principles—which have been described as parts of Pacific Islanders' worldviews. We see these principles not as "beliefs" but as a "field of problems in which ideas are implicated" (Viveiros de Castro 2013:484) and as "concepts, which is to say the ideas and problems of indigenous 'reason'" (Viveiros des Castro 2013:485). From this it follows, in our view, that these principles, seen as concepts, ideas, or problems, cannot be changed like a belief,

nor are they static foundations which determine the reception process. We rather assume that the encounter of young ni-Vanuatu with scientific ideas about climate change results in processes of associating Pacific Islanders' principles of thought with scientific ideas. We are aware that this cannot be an actual representation of the thinking and acting of ni-Vanuatu, but we see our account as a "thought experiment" (Viveiros de Castro 2013:484).

The first interpretation focuses on the connection of ni-Vanuatu with their local environment, which, as we have illustrated, has been identified as one important principle of Pacific worldviews. As we have shown, young ni-Vanuatu in Port Vila experience a considerably different environment compared to ni-Vanuatu in rural areas. If the connection with and knowledge of their environment that people in Vanuatu have is grounded in experience, the connection with and knowledge of certain environments on the part of youth in town differs considerably from that of those living on "the islands." They do not engage and interact with their environment in the same way as the rural population, and thus, they do not experience or "know" it in the same way. Whereas traditional knowledge is part of the environment of people living in rural areas, scientific knowledge is part of the daily life of the youth in town, and provides them with an explanation for a certain new environmental phenomenon, namely climate change. Young people in the capital, with their future-oriented view, understand the sociocultural change in town as something which is also beginning to take place in the islands. Claiming that people on the islands are confused by the impacts of climate change implies that, for them, not only are some aspects of environment, like the weather or sea level, changing but also that other aspects of experience, like knowledge, are changing. Thus, they see certain aspects of life in town, including "new" knowledge, as indications of future transformations that will apply to Vanuatu in general. As Mondragon (2014), and similarly Galipaud (2002), has stated, meteorological phenomena and the human sphere are not principally distinguished in Vanuatu. Scientific knowledge about climate change is seen as a necessary part of these ongoing transformations. Disseminating new knowledge to the islands can be interpreted as an attempt to resolve the "confusion" which young ni-Vanuatu living in town see for those living in rural areas. In our interpretation, this is an attempt to (re)connect themselves and others with their transforming environment with the support of the new, scientific knowledge.

A second interpretation regards the outward orientation as an ontological principle of Pacific Islanders. Our interlocutors perceived climate

change as a phenomenon that arrives in Vanuatu from "outside" and often related it to being connected to "outside." We argue that acquiring scientific explanations about climate change allows them not only to understand this new phenomenon but also, at the same time, to maintain the flow of information from and establish a new connection to "outside," with the help of a topic which is not limited to a specific environment. According to our interpretation, they regard this knowledge as important for ni-Vanuatu because of the all-embracing environmental transformations sketched out above. Young people see themselves as having an important role regarding this connection—they are living in the environment of the town where they experience the continuous arrival of new ideas. Thus, they see themselves as the appropriate brokers of this knowledge from outside. By assuming this role together with the role as distributors of a new knowledge, which they regard as necessary for Vanuatu's future, to all people of Vanuatu, they actively draw a counter-image of the negative cliché of urban youth by actively engaging in affairs that concern the whole country and the world beyond. Despite the perceived uncertainty of living conditions in town and of environmental challenges, they act as creators of the future by associating old and new.

Notes

1. In 2015 we were sitting together and talking about the approaching cyclone. One of our interlocutors picked up the discussion going around in town.
2. Examples are the German Gesellschaft für Internationale Zusammenarbeit (GIZ), the Australian Agency for International Development (AusAid), and the New Zealand Agency for International Development (NZAid).
3. Examples are Oxfam, Save the Children, and Live and Learn.
4. An example is Wan Smol Bag.
5. "350 Vanuatu" is a local grassroots group—its members campaign and organise workshops, boot camps, or other activities to bring attention to the challenges caused by climate change. They are part of the wider network of "350 Pacific," the Pacific Climate Warriors.
6. In order to anonymise our interlocutors, names have been changed throughout the whole text.

7. "Magical" is used here as an emic term that is used by ni-Vanuatu in connection with traditional knowledge, for example, for ritual practices which aim to influence weather.
8. This does not, however, preclude what Heather Lazrus states for islands in general, that "knowledge is often a hybrid of island-based and scientifically derived insight" (Lazrus 2012:290).
9. Sue Farran states that in court cases ni-Vanuatu do not distinguish between "narratives of magic" which explain natural events and "claims based on modern legal ideas" (Farran 2010:11).

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CHAPTER 6

Whose Beach, Which Nature? Coproducing Coastal Naturecultures and Erosion Control in Aotearoa New Zealand

Friederike Gesing

Introduction: Coastal Naturecultures

Coastal erosion is a crucial issue for the politics of nature in the Anthropocene (Crutzen and Stoermer 2000; Johnson et al. 2014; Sayre 2012; Latour 2014). Significant problems with coastal erosion are experienced on coastlines worldwide and are bound to be aggravated by the effects of climate change (McGrahanan et al. 2007; Nicholls et al. 2007; Church et al. 2013; Wong et al. 2014). In the limited space of the coast, erosion emerges as a socionatural phenomenon—neither fully attributable to a natural sphere outside human influence nor to human actions, values and perceptions alone. How to deal with the threats of eroding coastlines in light of climate change and ongoing coastal development booms worldwide is a sociotechnical question. To tackle it means engaging in the politics of nature. This chapter argues for an environmental humanities perspective on beaches and coasts as "naturecultures". The term is generally credited to Bruno Latour, who first uses it (in the singular form) in *We have never been modern* (Latour 1993). I use it with reference to Donna Haraway (2003, 2008) and further literature that brings together cultural anthropology,

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human geography, and science and technology studies (see, e.g., Choy et al. 2009; Weiss and de la Cadena 2010). The concept stands for an intensified interest in the material practices and politics of nature. Rejecting a perspective of human exceptionalism, a growing body of work focuses on humans as entangled in "more-than-human" worlds (Whatmore 2002).[1] Through such a lens, coastal spaces are coproduced in intimate human–nature encounters with sometimes profound material effects, to a point where a clear separation between the nature and culture of the coast is neither possible nor helpful for understanding environmental conflicts, human feelings for the coast (Kearns and Collins 2012) and the materiality of beaches and baches.[2] In naturecultures thinking, natures become pluralised as they emerge through multiple forms of material practices, not all of which are centred on human actors (Hinchliffe 2007: 1). In this perspective, natures are end points, more or less stable assemblages, which are products of work, and not starting points, as geographer Steve Hinchliffe argues (Hinchliffe 2007: 190; see also Ong and Collier 2005). This reframing of the nature–culture relationship departs from the idea that while there are multiple cultures, there is only one universal nature (Latour 2014). Philippe Descola argues it is a mistaken universalism to think of one nature as a stable foundation upon which different cultural interpretations are based and argues instead that there are different *ontologies* of nature (in his rather rigid scheme, he differentiates four; Descola 2008, 2013). Consequently, the analysis needs to include "how nature is 'done', how it is practised, how it materialises as an active partner in and through those practices" (Hinchliffe 2007: 1).

In the following, I use the concept of multiple natures to examine coastal protection practices in Aotearoa New Zealand.[3] The chapter is based on my ethnographic work on soft approaches to coastal protection, for which I conducted 16 months of field research in Aotearoa New Zealand.[4] Besides participant observation at different sites and projects, including dune restoration and soft engineering, I studied Waihi Beach, described in this chapter, where decisions about so-called "hard" and "soft" approaches to coastal erosion control were subject to a long-standing local conflict. The material used for this chapter includes in-depth interviews with central actors in the conflict, notes from participant observation at volunteer dune restoration events, newspaper articles, and planning and policy documents, as well as a collection of material from the ensuing Environment Court action, including the final decision, expert witness statements and submissions from the public. The interviews quoted in this article were conducted during the main field research period in 2011; interviewees have been anonymised.

Working with Nature

Decisions over coastal protection measures can be controversial political topics. In Aotearoa New Zealand, local conflicts regularly emerge around the installation of so-called "hard" protection structures on sandy beaches.[5] While coastal house owners tend to argue in favour of hard protection measures like seawalls, revetments or groynes, public concern grows over the negative influence these structures have on beaches. While seawalls can be very effective in protecting the land behind, they do not stop ongoing erosion in front (Dean and Dalrymple 2004: 404 f.). This can cause an effect called "coastal squeeze": the loss of accessible high-tide beaches. In Aotearoa New Zealand, beaches and coasts are perceived as central markers of national identity (Hayward 2008; Clark 2004), and are among the few freely accessible public spaces. Mike Jacobson, a coastal hazard management expert, argues that seawalls threaten to destroy a coastal nature of nation-building character:

> Coastal hazards, property protection works and coastline natural character are intimately connected in a story that goes to the heart of a Kiwi icon – holidays at the beach, the beach *bach* [hut], and generally the important part that the coast plays in growing up as a Kiwi. Unfortunately, it is a story that has yet to take root in the national psyche in the same way as the stories related to New Zealand's native forests or endangered species. It is a story that needs to be adopted and acted on by communities before development (and the seawalls built to protect that development) 'kill the golden goose'. The important place of natural beaches and dunes in the lives of most Kiwis is rapidly becoming a thing of the past. (Jacobson 2005: 6)

Such criticism of "hard protection" is not limited to the context of Aotearoa New Zealand. Worldwide, the use of structural measures has been questioned in recent decades by a growing number of coastal management experts and political actors who bemoan the negative side effects of hard structures, including the externalisation of future economic and environmental costs (Cooper and McKenna 2008a).[6] The experts argue for the use of alternative approaches wherever possible. These so-called "soft" measures include dune and wetland restoration and beach nourishment, as well as different forms of managed retreat (Cooper and McKenna 2008b; UNFCCC 2006; Turbott 2006). This development has been recognised by the engineering profession as well. A popular coastal engineering textbook states that, internationally, "[t]here is a trend toward softer and less

obtrusive coastal structures", characterised by "less negative aesthetic impact" (Sorensen 2006: 5f.).

Current coastal policy in Aotearoa New Zealand is evidence to the political will to move beyond hard protection.[7] A community of practice (Wenger 1998) grows steadily that consists of people actively engaged in "soft" coastal protection practices, spanning from coastal consultants working towards alternative solutions with concerned homeowners, surfing scientists developing artificial reef designs, to local dune restoration volunteers with the community-based "Coast Care" programme (Bay of Plenty Regional Council 2016). Actors in the field often frame such practices as "working with nature"—and not against it (Trade Publications Ltd 2003; see also Cooper and McKenna 2008b; European Commission 2004; Inman 2010). Referring to a concept introduced by science and technology studies scholar Sheila Jasanoff, I argue that this emerging idea to "work with nature" in the field of coastal protection and management is evidence of a new "sociotechnical imaginary", a shared understanding of how the common future of Aotearoa New Zealand's coasts should be shaped in terms of science and technology (Jasanoff and Kim 2013, 2015). I use this concept to look at coastal protection projects as practices of making coastal naturecultures. Jasanoff and colleagues draw on Charles Taylor (2004), who argues that shared practices are essential in producing a shared common sense of community, and this shared understanding in turn defines accepted and meaningful practices. In this sense, the sociotechnical imaginary and corresponding coastal protection practices coproduce each other (see Jasanoff 2004). For example, one of my main research partners, a "Coast Care" volunteer, entrusted me with a whole collection of newspaper clippings and other materials containing information on hard and soft protection measures implemented both in Aotearoa New Zealand and overseas. Through his engagement with this shared imaginary of "working with nature", as much as through the practical approach of Coast Care dune restoration work he was involved in, this man has become part of a larger community of practice engaged in soft coastal protection.

These coastal practices are part of people's "everyday geographies of coastal experience" described by geographers Robin Kearns and Damian Collins (Kearns and Collins 2012: 948). Coastal practices express emotional dimensions of attachment to the coast, resulting in experiences that can be shared with others. Kearns and Collins underline the importance of such attachment to the coast for Aotearoa New Zealand's identity and sense of community, which add up to "a conceptualisation of national identity as

encompassing a 'birthright' to enjoy undeveloped coastal places" (Kearns and Collins 2012: 943). However, this sense of emotional attachment to the coast is not limited to a "relatively natural setting"; modified and developed coastal landscapes can also be the object of strong feelings (Kearns and Collins 2012: 952).

At the same time, the concept of private land ownership prevalent since British colonisation implies that property is thought to have eternally fixed boundaries. Not surprisingly, this situation can lead to conflicts over coastal nature. In the coastal community of Waihi Beach in the Bay of Plenty (BOP) region, existing older protection structures have been replaced by an extensive new scheme in recent years, in spite of the strong opposition from large parts of the local community, including Māori, supported by a number of leading coastal scientists and backed up by a policy change in the making. With the new protection scheme, which includes a massive seawall section, the local Council intended to safeguard circa 80 private seafront properties affected by coastal erosion. For the many people involved in the protest against it, the new seawall has come to symbolise the failure thus far to move beyond hard protection. After more than ten years of reviewing possible options, the political and legal battle culminated in an Environment Court appeal against the protection scheme by two Waihi Beach residents, which was rejected in 2008; the construction of the seawall was finalised in 2011.

With a consent period of only 25 years, the seawall might well become the last monument of what its critics view as a failed approach that protects private assets to the detriment of the public space of the beach. The seawall as a sociomaterial object sits uncomfortably in the midst of an environmental conflict that is not yet resolved. I argue that these rocks on the beach symbolise a dystopian future for Aotearoa New Zealand's beaches and the coastal lifestyle they represent, and, as such, might mobilise future opposition against hard protection approaches. In the following, I read the conflict as a clash of different naturalcultural imaginaries and practices.

History of a Seawall

While large areas of Aotearoa New Zealand's coastlines remain characterised by "traditional 'new world' low density individual dwelling subdivisional development" (Healy and Soomere 2008: 456)—relatively sparsely populated compared to many other coastal nations—the risk of coastal hazards is increasing. About a quarter of Aotearoa New Zealand's

coasts are subject to coastal erosion (de Lange 2012). Many settlements at accessible sandy beaches were located very close to the shoreline when they were first developed during the second half of the twentieth century (Blackett et al. 2010). At the time, it was common practice to level the foredunes with bulldozers to allow houses to be built directly bordering the beach, offering unimpeded sea views. The limited space between private properties, the public space of the beach and the ocean means, according to coastal scientists from the National Institute of Water and Atmosphere (NIWA), that "communities and coastal margins in many localities are on a slow, but sure, collision course" (Bell et al. 2001: 12).

Waihi Beach is a small town on the western fringe of the BOP region. It has a permanent population of about 1800, but about ten times as many people stay there during the summer holiday season (Waihi Beach Community Board 2007). They come to enjoy the long sandy beach for surfing, swimming and boating. While the northern end of the beach features wide dunes that bear witness to the activities of "Coast Care" volunteers (ropes and signs explaining the natural protection function of native sand-binding plants), further down the beach the relics of several decades of hard protection measures regularly resurface. Timber planks and rusty steel are washed out during storms or unearthed by construction work. Large, sand-filled geotextile containers of different age and condition can be seen, looking like enormous sand-coloured cushions. Some are almost invisible under layers of windblown sand; others are covered by unsightly films of green algae. These layers of different protection measures, to me, appear like historical cross sections of coastal protection archaeology, and walking down the beach with an informed local often turned into a guided tour through a life-size, open-air museum of Aotearoa New Zealand's coastal protection policy. At Waihi Beach, the whole range of options, from hard to soft, and the long decades of local conflict over hard coastal protection measures are strikingly visible.

On this part of the beach, the first row of houses is built on the dunes, in varying distances from the dune edge, with some as close as five metres to the drop of the dune that indicates where the beach begins: this is ultimate beachfront housing. A massive seawall consisting of large boulders is piled up in front of the properties to roughly the same height as the dune. At high tide, a walk on the beach has to finish here; there is no space left between the rocks and the surf. In this socionatural environment the seawall intervenes in the space where natural coastal processes and tides occur, as well as in human access to and enjoyment of the beach (Figs. 6.1 and 6.2).

Fig. 6.1 Waihi Beach during construction work (Photo: Friederike Gesing, 2011)

The seawall and the other coastal protection artefacts surrounding it are sociotechnical objects that are inextricably linked to the local history of coastal development. The area was first settled by the Māori iwi (tribes) Nga Marama and later Ngai Te Rangi, the latter still being the dominant iwi in the Western BOP region, spanning roughly from Waihi Beach in the west to the port city of Tauranga in the east. The first European land titles at Waihi Beach were issued to farmers in the early 1870s (Moore 1999). In the early twentieth century, the authorities built a road connecting Waihi Beach to a nearby gold mining town in order to create a "public recreation and pleasure ground", an early public health measure (Bay Of Plenty Times 1919; Brice 1976; New Zealand Legislation 1947). Small sections of land were leased out to mining workers suffering from lung disease, allowing them to build the baches, typical New Zealand beach huts of that era. From the late 1940s on, the settlement was extended and more baches were built into the dune fields along the seafront (Environment Court 2007, Appendix B: 2). New roads were constructed parallel to the shore on the landward side of the properties, with the houses overlooking the sandy beach on the

Fig. 6.2 Seawall at Shaw Road, Waihi Beach at low tide (Photo: Friederike Gesing, 2015)

seaward side. Foredunes in front of some of the houses were lowered to improve the view. By 1959, most of today's truly beachfront properties had been built; the "Waihi Beach saga" (Healy and Soomere 2008: 459) had begun.

The authorities at the time seem to have acted as if they could rely on the terrain to remain fixed and permanent during development. However, this turned out to be wrong, for the natural beach system actually fluctuated between phases of long-term erosion and accretion. Worse still, most of the development seems to have taken place at a time when the beach was unusually wide (Eco Nomos Ltd 2003). Around the same time that beachfront development was accelerating, however, the natural dynamics of the beach changed as well (Collins 2002). A series of severe storms hit the BOP and resulted in erosion of the beach and foredunes, amounting to the loss of about ten metres of land in each of the several storms throughout the mid-1950s to the late 1960s (Eco Nomos Ltd 2003: 47). The sociomaterial assemblage of the Waihi Beach coast had been profoundly altered: a coastal erosion problem emerged. In addition to extreme storm events, further

effects of human modifications of the beach environment became noticeable when storm water creeks that had been channelled onto the beach caused erosion around the development. As a result, several buildings were relocated further back on their lots from the 1950s onwards (Eco Nomos Ltd 2003: 47; Environment Court 2007, Appendix B: 1). To protect the houses at the beachfront, the authorities started to construct what over the years would become a potpourri of coastal protection structures.

From the early 1960s to the mid-1980s, several protection structures were built along the beach, including seawalls constructed from timber, steel posts and rocks of varying sizes (Bear 2009: 5ff.; Lumsden 2011: 1). In the mid-1990s, when newly introduced resource management legislation (the Resource Management Act or RMA 1991) forced the Western Bay of Plenty District Council (WBOPDC) to develop a new strategy, a scientific report confirmed what local residents had been observing for a long time: the structures on the beach were increasing overall coastal erosion, access to the beach around the structures was difficult at high tide, and pieces of rusty iron and concrete could be considered hazards in themselves. Even those who later became fervent opponents of a new seawall report that during this stage there was general agreement in the community that it "looked bad" and that something had to be done. The standpoint of the beachfront property owners, who still felt protected by the dilapidated wall, was nonetheless no different from the rest of the community. Robert Cook, a founding member of the Waihi Beach Protection Society, a lobby group of beachfront property owners, explains the situation at the time as follows:

> The rock wall actually worked; there's no doubt about it [...] It actually worked 'cause it held the line. It was just that it was such a dilapidated ... it had never been repaired for probably thirty years. Oh, it looked horrible [...], a jumbled mess. (Interview with Robert Cook from the Waihi Beach Protection Society)

At this point, Waihi Beach had become subject to rapid economic development as well and coastal change was well underway (see Freeman and Cheyne 2008). Building regulations proved insufficient to prevent further intensification of beachfront development because existing baches could easily be replaced with much larger and more valuable dwellings fit for permanent living (Environment Court 2007, Appendix B: 1ff.). Such upgrading became common practice in the 1990s in a climate of economic boom. As more and more people invested in coastal property, second homes

at the coast became very popular, and many people began planning for retirement at the sea. Public investment in road infrastructure led to considerable decreases in travel times, and new coastal areas became sought-after locations for second homebuyers from urban centres, especially Auckland. Prices for seafront lots in Waihi Beach doubled or even tripled within a few years (Woodrad and Skellern 2005), a significant factor in any decision about how to deal with the rotting protection structures and the ongoing erosion endangering those houses located too close to the sea. The question of how to address this situation was about to become a very divisive issue, eventually pitting the Council and the beachfront property owners supporting the new seawall against a majority of the community objecting to it.

Who Owns the Beach? Defending the Local Coast

In 1996, the local WBOPDC started to assess possible options for addressing the problem of coastal erosion at Waihi Beach. Workshops were held with Council staff, local politicians and coastal experts, some also including interested members of the community. A wide range of options were considered along the whole spectrum from hard to soft, including a new seawall, dune restoration, managed retreat and closing or re-diverting the creeks on the beach, as well as combined options (Western Bay of Plenty District Council 1997; Jacobson 2004).

Finally, the Council and its engineering consultants identified two measures as possible long-term solutions. Diverting the beach creeks into the nearby Tauranga harbour would have addressed the major causes of the erosion, instead of the symptoms. The option was discarded because of the high immediate investment costs. Managed retreat, on the other hand, would have removed existing development out of the immediately impacted areas of coastal erosion by relocating at least some of the roughly 80 threatened beachfront properties (Keall 2006, Appendix 3; Environment Court 2007, Appendix B). Such considerations called the beachfronters into action, who formed the Waihi Beach Protection Society to represent their interest in the implementation of structural measures that provided protection to their properties. In response to their lobbying efforts, managed retreat was taken from the agenda, and the Council decided to proceed with planning construction of a seawall, though not without admitting this would provide only a short-term solution to the erosion issues at Waihi Beach. Rumours circulated in the little town that the Council had felt

threatened by the possibility of legal actions of homeowners arguing that the Council, as the responsible agency for building regulations, would be liable to compensate for properties that could no longer be safely inhabited.

At this point, local citizens who did not want a new seawall on the beach also started to organise their protests. The newly formed group Friends of the Beach (FOTB) felt that the decision regarding if and how the beach should be protected should not be left to the beachfront property owners alone (see Cooper and McKenna 2008a). Waihi Beach resident Edward White, a Pākehā (New Zealander of European descent) in his eighties and former active member of the local Coast Care volunteer dune restoration group, underlines the scope of the conflict, which goes right to the heart of the Aotearoa New Zealander's love for the coast:

> I've tried to tell people that the beach belongs to all the people from hundreds of miles away, doesn't it? Not just a few people living on the front foreshore. But we fought this Council to stop this rock wall going up and we didn't win [...] Evil prevails when good people do nothing. So at least, at least we fought them. It's better, it's like in life, it's better to have loved and lost than never to have loved at all. (Interview with Waihi Beach resident Edward White)

It soon became clear that this conflict over a new seawall threatened to touch the cornerstones of Aotearoa New Zealand identities connected with coastal living, and also the growing anxiety over losing these beloved places. "New Zealand is a small country with a big coastal 'attitude'; nowhere is far from the sea", writes political scientist Bronwyn Hayward, quoting New Zealand poet Basil Dowling (Hayward 2008: 47). Hayward refers to the example of Waihi Beach when discussing how climate change adaptation and especially managed retreat as a political instrument challenge existing democratic processes. Conflict between private interests and public resources, beach access and amenity, she argues, is complicated by the complexity of temporal and spatial scales: the benefits of current and future generations, the effects of earlier decisions to develop the coast and/or build hard defences and the impact of such defences on neighbouring areas (Hayward 2008: 55f.).

Under the impression that there was widespread resistance to the proposal by Waihi Beach residents, the Council once again invited public input, and the FOTB presented an alternative proposal: the so-called "back-stop wall". This idea had been developed by a coastal management specialist who had become aware of the discussion in Waihi Beach. Instead of building a

structure on the public grounds of the beach, he proposed to locate the protection works further back, inside people's properties. The proposal argued that more room was needed for the dunes. Allowing the natural processes of erosion and accretion to take place would mean the dunes could work again as a buffer zone. Therefore, all existing protection works were to be removed. The backstop wall would only serve as a final barrier to protect the beachfront houses in case of the event of extreme erosion. The structure would be much lower than the current seawall and partly buried, ideally with more sand building up on top of it over time.

The FOTB's suggestion was a sociotechnical intervention also in the sense that it was not only addressing appropriate technology but simultaneously speaking to the question of responsibility, as the group asked for the beachfront property owners to take primary financial responsibility for the scheme (Keall 2006, Appendix 3). FOTB claimed to represent the interests of the majority of the community not living directly at the beachfront. In their perspective, many of the beachfronters were not actually part of the community at all; as second homeowners, they were in fact "out-of-towners". That this description has a strong normative underpinning becomes clear when Ron Whitherspoon, a long-term resident, explains the behaviours he believes distinguish the out-of-towners from the locals:

> The local people are beautiful people here; they got a great little community [...] The out-of-towners come in and that's when we get the graffiti, that's when we get the letter boxes torn down, the broken glass on the foot path, the dog faeces on the foot path, they're a different type of people unfortunately. I suppose there is a little bit of resentment [...] in us. I think the locals sort of appreciate what we've got here, a lot more than a lot of the out-of-towners. There are some lovely people that come in here on holiday, who got holiday places, but there is an element that is fairly self-centred I think. (Interview with Waihi Beach resident Ron Whitherspoon)

By specifying what does not count as locally appropriate behaviour, Ron defines the local in moral terms, as opposed to geographical or temporal (individuals' absence or presence in town). The opposition against the protection scheme is in this sense entangled with different senses of the community. As Kearns and Collins observe in relation to a different conflict over a coastal development project, community action can be seen as a result of shared everyday geographies coming under threat (Kearns and

Collins 2012: 952). Here, the community is coproduced in the course of the conflict by those residents united in their refusal of the seawall project.

The ongoing resentment against out-of-towners—or absentees, as some permanent residents also call them—is also fuelled by the knowledge that property prices have risen to an average of over a million NZD for the beachfront. Rising nominal values can cause financial problems for residents who inherited their houses or bought them a long time ago at much lower market levels. Because the annual property rates are calculated according to an estimation of the property value *at present*, rising values mean rising rates, a problem for those with limited or fixed income—like retirees—and with no intention to sell. The prime value of the ultimate beachfront has so far not been impacted by the high erosion risk that these properties have. A coastal scientist involved in defining hazard lines for Council policies and plans claims sarcastically that the primary hazard line is pretty much interchangeable with the "one million dollar line" of property value, with beachfront houses selling significantly higher than second- and third-row ones set further back from the seafront. The anti-seawall activists at Waihi Beach felt these risky private investments were now being protected at the expense of the wider public.

As a last attempt to stop WBOPDC from constructing a seawall, two local residents lodged an appeal to the Environment Court of Aotearoa New Zealand. Several coastal science professionals, who offered free advice as expert witnesses because they were convinced the decision to build a seawall was not grounded on sound scientific knowledge and would send the wrong signal in terms of future coastal management options, supported the appellants. The appellants' expert witnesses included two professors from the country's leading coastal science department, a senior scientist from the neighbouring Waikato Regional Council and a well-known coastal management specialist who had about 25 years of experience working for councils and private clients. However, these experts did not succeed in convincing the judge that the local resistance against the seawall was legitimate and the backstop wall an alternative solution.

The coastal scientists involved in the trial believed their knowledge to be better suited for understanding the present and future of the beach, its natural dynamics, processes and cycles. They opposed a coastal engineering approach which they argued was narrow-minded, static, too narrowly focused on solving a particular problem defined by the client, and offered solutions that were "hangovers" from a history of false reliance on engineered structures, or mere "band-aids" (Black et al. 2005: 5). The

presiding Environment Court Judge, however, argued that his role in the case was limited to weighing evidence on the "scientific viewpoint" (Environment Court 2007: 18); although, ironically, it was evidence from engineers that he saw missing on the appellants' side. At the same time, the judge sharply dismissed any attempt to reframe what he understood to be a scientific question into a question of public versus private interest:

> In fact counsel for the first appellants went so far as to suggest at one point of argument that it is selfish for the beachfront property owners to expect their properties to be protected via the wall as proposed at the expense of the natural beach environment and the well-being of others who use and cherish the beach [...]. The case is not about taking advantage of a public asset for private gain or about people receiving preferential treatment. Rather, it is about how the natural and physical resources of this coastal area should be sustainably managed, given the notable hazard risks [...] to which the area is unquestionably subject. (Environment Court 2007: 33)

The appeal was finally dismissed and the project went ahead. The Minister for the Environment had to approve the parts of the structure that were to be built below the high tide line, but the consent eventually issued was only temporary: it will expire after 25 years. Upon issuing the consent, Minister Steve Chadwick advised WBOPDC that by 2020, it would need to investigate long-term alternatives in collaboration with the community: "In the long term, we must restore and work with the natural processes on the coast", he declared in the press release (Chadwick 2008), echoing what the scientists in opposition to the seawall had argued. Soon after consent was granted, the construction work started. In its final design, the seawall consisted of rocks placed along approximately one kilometre of the beach, with large boulders of about one metre in diameter, piled up to a rock revetment of about three and a half metres high and deep (Western Bay of Plenty District Council 2010). The scheme also included the use of geotextiles for creek training, and the attempt to construct an artificial dune next to the seawall area.

The seawall as a sociotechnical object has united local opponents and coastal experts working across the country. Except for some of the beachfront property owners and the local Council, which was arguably baulking at the prospect of legal challenges and political costs, disapproval of the seawall was widespread. A revision of the New Zealand Coastal Policy Statement, especially of the parts relating to coastal hazard, took place

during the time of the appeal (Jacobson 2004; Department of Conservation 2008). It shows the political will was already there to move beyond such hard protection schemes. This makes the seawall an even more powerful object, the seemingly unpreventable outcome of an unstoppable process. It symbolises the paradoxical situation of a country that on the one side praises social equality, the nation-building function of iconic coastal landscapes and public access to the beach, but on the other side is built upon such a strong notion of private property rights. Arguably, it was not only the unprecedented coastal development boom that had sharpened this conflict but also repercussions of the neoliberal reform and privatisation policies that dominated Aotearoa New Zealand throughout the 1980s and 1990s (Kelsey 1995).

Dystopia Waihi Beach: Enrolling the Materiality of the Seawall into Coastal Policymaking

As noted above, the pro-seawall decision was furthered by framing it as a short-term solution. The costs for the protection scheme of about six million NZD will be funded through annual property rates over the 25-year consent period and distributed among the district residents, but with immediate beneficiaries paying the lion's share of the expenses.[8] The substantive costs, the length of the political and judicial quarrel before the project went ahead, but also the sheer size of the rock revetment make it highly unlikely that the seawall will be removed again as long as it still works as a protection structure for the houses on the beachfront. Those who were involved in the Waihi Beach case therefore tend to see it as a proof that coastal management and policy has so far been incapable of moving beyond hard protection. I agree that, for the moment, the naturalcultural assemblage around the Waihi Beach seawall seems relatively stable. But, as is shown in the following, the wall itself as a material object is becoming enrolled in policymaking beyond hard protection, and coastal policy emerges as one practice of making coastal naturecultures (for a practice approach to policymaking, see Wedel et al. 2005; Shore et al. 2011).

For many locals, the seawall remains a sensitive issue and the sight of the beach a constant reminder of their lost cause. Some fieldwork contacts reported avoiding going near the protection works; however, whenever I visited, someone offered to take me down to the beach for a look at the latest developments, closely monitored by the seawall opponents who

would alert Council staff whenever they felt something was deviating from the course set by the resource consent. Local activists perceive the revetment as a monument of their helplessness in defending themselves against various perceived enemies: the Council, the out-of-towners and the local plutocracy that falls short of the shared imaginaries of good old New Zealand and its supposedly "classless" society (Sinclair 1969).

Also the concerned scientists were frustrated about running up against (sea)walls. My very first visit to Waihi Beach took place during a university workshop in February 2010, where I was accompanied by one of the professors who had served as an expert witness for the Environment Court appeal. It was just before the work on the new rock revetment had started. He showed us the house that stuck out the most and explained moodily that the "bloody-mindedness" of these people was the reason the appeal case was lost. He said there were people who would think that burning down this house was the easiest solution to the problem and concluded his inflammatory speech by stating that "the science is done [...] [but] we need a better way of arguing science in Court". The policy is done as well, according to the expert witness quoted above, who argues that while "we got all the right policies", those arguing against hard protection are still losing out against "the cultural idea of property integrity, which people want to have protected entirely and without any compromise" (Interview with expert witness).

Current coastal planning documents for the BOP region in fact take a very critical stance towards hard protection projects like the one in Waihi Beach, and have instead set out to "promot[e] the philosophy of adaptation planning including 'managed retreat' and protecting the natural vegetative defence mechanisms of the coast" (Bay of Plenty Regional Council 2010: 26).[9] However, this Regional Council is the same agency that approved the consent for the Waihi Beach protection scheme later confirmed by the Environment Court. When asked how she accounts for the huge difference between political will, policy and practice, the coastal policy officer who has been instrumental in writing these policies explains that "[i]n reality it takes a long time to change people's minds about this sort of thing; and the policy, in my mind, is the front end of change" (Interview with Linda Pierce, Bay of Plenty Regional Council).

And the corresponding "back end" of change—in Linda's words—can also be found in a case like Waihi Beach where, for the time being, hard protection is being installed. Linda argues that over the last ten years alone, the general understanding of hard protection structures has changed—

among environmental managers and council employees as well as in the general public's perception and media discourse. New questions are being asked by the public vis-à-vis such demands for protection works, questions about the common future of the country that go beyond the immediate interests of some property owners:

> I think people have become more aware that, if you step back and look at this issue, it's not just about protecting one house from the sea but it's all wrapped up in climate change and on an island such as New Zealand, are we going to allow everybody that owns coastal land to build a 100,000 dollar wall in front of their property? Because the cumulative effects of that are going to be unpalatable. And it's not until you get to a place like Waihi [Beach], where the wall is required actually [along] quite a stretch of beach, that people start changing their minds on these issues. And I think the Waihi Beach scenario will be a good way of getting the public perception changed, because people would look at it and think, 'Actually, we don't want that here', and actually people start thinking more long term about these things. (Interview with Linda Pierce, Bay of Plenty Regional Council)

Linda's framing of the current situation and its possible long-term outcomes can be called an attempt at reverse engineering; her aspiration is that the apparent failure to realise an approach beyond hard protection may turn into a massive stepping stone towards her intended goals. In doing so, she explicitly takes into account the very substantial and, above all, visual presence of the seawall at this beach and incorporates it into the envisaged future of coastal policymaking in her region. A truly material turn, I would argue, with a policy practitioner following a kind of Actor-Network Theory approach to coastal policy, *avant la lettre*: she hopes the seawall will be enrolled into the transition beyond hard protection. In Michel Callon's concept of a "sociology of translation", this process of enrolling actors (human and non-human) is a necessary step in forming a network (Callon 1986). If such a network of people, objects, and ideas becomes stable over time, it produces outcomes and effects in the world. Seen this way, the seawall emerges as a means of visualising the perils of a future New Zealand that has been turned into a dystopia of misguided coastal protection strategies:

> I think that's the part that Waihi Beach is gonna play in this whole scenario and it might be that people think it's a complete disaster [...] I hope it is the last scenario, but I think it's gonna have an active part to play in that being the

> case, too, because I think that it's not until people start to see that and they start to think, 'actually when I was here as a kid we never used to have any of these big seawalls', and actually it is detrimentally affecting my experience of the beach in this community. And what happens if we in ten years' time or twenty years' time, when time comes to relook at this issue, we need to build a longer seawall or a deeper seawall, or a wider or higher seawall? Do we want that to happen? 'Actually I don't', yeah, and that's just all part and parcel of the process I think. (Interview with Linda Pierce, Bay of Plenty Regional Council)

To this effect, climate change, or more precisely the public discourse about anticipated effects of climate change, also provides crucial arguments against hard protection. Seen in this light, the seawall also makes climate change visible; it serves as the materialisation of an elusive problem frame that is otherwise hard to grasp because its effects are mostly expected to happen sometime in a future difficult to predict, or lead to gradual changes difficult to observe. Sheila Jasanoff has argued that climate change, as a scientifically defined entity, is not compatible with common forms of experiencing human–nature relationships. Contrary to the "long histories of living with nature" (Jasanoff 2010: 237) that communities have, climate change as a scientific phenomenon depends on specific techniques of producing and interpreting (and one might add visualising) global data sets. Climate change, Jasanoff argues, is difficult to grasp because the universalising scientific way of understanding it separates itself from the normative dimension of human encounters with the world, with local values and ideas of how the world should look. In this sense, climate change unsettles the notion of community "by displacing human beings, both as a species and as a source of norms, in favor of an impersonal, but naturalized, object of concern" (Jasanoff 2010: 237).

Could the visual quality and materiality of the seawall, provoking local engagement and conflict over value judgments as it has, provide the necessary link to grasp the normative questions that climate change poses? Another Council employee who also provided expert evidence in the Waihi Beach appeal case argues in a similar vein. His main point is that while right now hard protection structures remain an exception, this will fundamentally change under conditions of climate change, with widespread coastal armouring potentially becoming an issue in Aotearoa New Zealand. Preserving the beauty of the landscape requires care. Translated into the language of planning documents, "amenity value" becomes an objective for

moving beyond hard protection. Maintaining this value is a matter of economic interests as well, he argues, because tourism relies on it. Again, climate change is framed as a threat to the beauty of the coast. The visual aspect makes it possible to grasp coastal protection decisions as a normative, value judgement:

> Climate change helps the discussion in a way because it creates an imperative to act. It creates a reason to do it because without climate change, people would say, 'I don't know what you're talking about, it looks good to me; now, go away.' Whereas with climate change they're gonna say, 'Yes it looks good today but tomorrow it's gonna look bad. We need to do something now so it still looks good.' So it is actually helping. (Interview with Robert Miller, Waikato Regional Council)

If what "helps" is the *discourse* about climate change as a second-order effect, or climate change understood as an emerging actor in the network of coastal policymaking, depends on one's theoretical perspective. In any case, in contrast to property rights and scientific arguments, aesthetic values are not easily translated into the political and legal spheres (Froude et al. 2010). Therefore, I found that local activists and their sympathisers focused on making their case around arguments about natural coastal processes and resource management law. But the disturbing presence of the wall revolves much more around its visual nuisance—so one has to *see* Waihi Beach to understand, people claimed when I spoke to them. The seawall then also works as a bridge to the future, making the predicted effects of climate change more tangible and concrete.

Possible Futures: Tāngata whenua and the Cultural Pillar of Sustainability

Focusing on the future of coastal naturecultures from the angle of the "cultural" also leads to the question of how tāngata whenua or local Māori have positioned themselves in this conflict. In Aotearoa New Zealand, the term "cultural" is often used to describe matters of significance for Māori: a practice that is criticised by anthropologist Michael Goldsmith as an approach of "cultural asymmetry" which assumes that "some actors are more cultural than others" (Goldsmith 2009: 326f.). However, Māori representatives also make use of this framing, as is shown below.

In the decision-making process in Waihi Beach, Māori concerns have not been discussed widely, although the site of the seawall has cultural significance from the point of view of the locals affiliated to the Tauwhao hapū (sub-tribal group) of Ngai Te Rangi iwi.[10] Identified as the location of a historic Māori village or pā site, significant archaeological finds were made in the area in the 1960s, when storm erosion uncovered some unusual artefacts, including pā kahawai (fish hooks) with a mother of pearl oyster shell lure that is not commonly found in Aotearoa New Zealand. During the earthworks for the Waihi Beach seawall construction, an iwi representative acted as cultural monitor on-site to watch for any artefacts or taonga tuku iho (treasures), and especially for kōiwi (human bones) that must not be uncovered. While the local Māori representative underlines that Māori were "in total opposition" to the hard engineering parts of the project, they did not follow the decision-making process to the same extent as other opponents at Waihi Beach:

> Our marae [meeting house] wasn't set up to do so, so we didn't go down the road of putting in submissions; we didn't go down the path of doing a cultural backed assessment. So pretty much we missed the time frames and the project went ahead anyway. But we were supportive of the [Coast] Care groups that were in opposition of it also and we had a number of meetings on the marae actually, to have discussion in regards to the kaupapa [cause, or political strategy]. (Interview with Tūhua Brown, marae chairperson)

In recent years, however, a changing political landscape resulted in the founding of a runanga (tribal trust) that employs my interview partner as a resource management specialist. Many iwi and hapū are still in the process of settling Treaty of Waitangi Tribunal claims, hoping for land restitution or financial compensation for unlawful seizures (New Zealand Government 2016). In the case of Ngai Te Rangi iwi, the allocation of fishing quota via the 2004 Māori Fisheries Act brought much needed financial resources that have increased funding opportunities for education programmes, scholarships and lawyers—a necessary prerequisite in order to be able to challenge development projects in the Environment Court. So is the situation different now that more tribal institutions are being established? "That's right, things *are* changing. Things are changing", Tūhua agrees. And rapidly, so he says: "We've got a lot more say now than we did, say, ten years ago".

Tūhua attributes the changes in mainstream coastal policy mentioned above, which now leans more towards the use of natural protection options

(like the New Zealand Coastal Policy Statement, Department of Conservation 2010) to tāngata whenua input as well. He argues that in Aotearoa New Zealand, Councils have already adopted a model of sustainability that incorporates "the cultural" as another aspect of sustainability beyond the social, environmental and economic. This recognition of the cultural as the "fourth pillar of sustainability" also provides opportunities for Māori participation and engagement because in its very definition, Tūhua argues, "cultural" represents Māori values and philosophy:

> We know that model inside out; we were brought up with it. The only thing that they can't do – they can do the environment, they can do the social, they can do the economic, but they cannot do the cultural – only we can provide the cultural pillar for all these consents that they're making their decision on. (Interview with Tūhua Brown, marae chairperson)

The "cultural" then provides the inroad to political decision-making. Tūhua sees the Māori cultural renaissance as part and parcel of a globally shared space of indigenous resistance. This point of view shows Aotearoa New Zealand Māori operating in political registers that practically connect the categories of the local and global. Not only that, Tūhua argues that Māori concepts are translated back into the mainstream Aotearoa New Zealand political arena *via* the international stage. Māori leadership roles at the United Nations Permanent Forum on Indigenous Issues (UNPFII) means that the four-pillar model of sustainability was introduced at the UN level and taken up by other indigenous groups, and it has eventually "filtered down" to Councils in Aotearoa New Zealand.

Tūhua acknowledges that the majority of people in Waihi Beach are already against the seawall. Not unlike the Pākehā opponents of the seawall project—local residents and the Regional Council officer quoted above—Tūhua frames his concerns explicitly in visual terms:

> It's the damage that all that digging could possibly have upon that area, but also it's the visual; it's our visual relationship to that area. When we used to go there, we were able to go there and see the dunes and we would feel like we are still part and parcel of our tūpuna [ancestors], carrying on the traditions of our ancestors. But when we go there now what do we see? We see this heavy infrastructure, this rock wall, these sand bags coming out of the Waiorooro Stream and it just takes away our visual relationship to that area. By that [visual relationship] we are sort of connected to our ancestors, carrying on a

> customary practice that our ancestors did for over a thousand years in that one particular spot. (Interview with Tūhua Brown, marae chairperson)

A sense of belonging to a certain landscape and the alienation experienced in the face of visible changes to it are certainly sentiments shared by many Aotearoa New Zealanders, not only Māori. The reactions towards what observers perceive as increasing and unwanted development of the coast is evidence for the important role such emotional links to coastal natures play in Aotearoa New Zealand (see Peart 2009). Kearns and Collins argue that Aotearoa New Zealanders' "Feeling for the Coast" expresses Pākehā empathy with Māori worldviews as well as a general "distinct cultural relationship with the coast" (Kearns and Collins 2012: 942). According to Tūhua's narration, what is specific for Māori is the importance of ancestral linkages through which the connection to the land and landscape unfolds. Asked for his vision for the future, Tūhua speaks out strongly for a "soft" coastal protection approach, including dune restoration and the use of geotextile sandbags or "sausages". He frames his conviction as a matter of subscribing to Māori values:

> Us as Māori, tāngata whenua here, we'd rather see other ways of protecting the foreshore, which is more of quite a simple thing really; it's more about planting the dunes, protecting the dunes, enhancing the dunes, if we have to, by putting more sand in there. And just monitoring it like that because we know it works. The other option that we did look at was, you know how they have that big sausage? That was another option that the dunes could carry on building on like that; we would have supported that, so any more natural sort of remedy for that erosion would have had the one hundred per cent support of tāngata whenua. But because they were going to have diggers on the beach and they were going to be ripping up the beach and then they were going to put that rock wall back in place – [we objected the seawall] because we knew it didn't work before. What's to say it's not gonna work again, you know. (Interview with Tūhua Brown, marae chairperson)

Like other seawall opponents, Tūhua openly speaks out for managed retreat or relocation of the threatened houses. He tells me erosion is a natural process—a framing which is also common among coastal managers and others promoting dune restoration. In his narration, nature is personified as the god of the seas, Tangaroa:

> We feel sorry for those people in those houses, but we feel the Council should have paid them out, relocated those houses and let nature take its course, naturally, naturally. Our belief is, you know, Tangaroa will eat away at, well – because erosion, that's what Tangaroa does. (Interview with Tūhua Brown, marae chairperson, 6 October 2011, Waihi Beach)

With these statements, the iwi representative advocates soft protection by mobilising an indigenous ontology of nature. Possibly in the future, the changes in the bicultural political landscape sketched above, of which the increasing mobilisation of "cultural" arguments for nature is an important part, and the emerging coastal policy change towards soft management could reinforce each other in productive ways. Maybe when the Council has to embark again on the search for "long-term options" for Waihi Beach, Tūhua and the people he represents will be able to claim their power of definition over the cultural, or the "fourth pillar of sustainability", to intervene in the production of coastal natureculture in a way that supports soft protection practices of "working with nature".

Conclusion

The conflict over the Waihi Beach seawall, I argue, is not only about which technical solution is preferable for a scientifically described erosion problem. It is also a conflict about which nature(s) people want (Hull and Robertson 2009). It is a struggle over whose imaginaries and practices of nature-making gain legitimacy. A naturecultures' perspective asks how natural and cultural orders are coproduced in these practices of making coastal natures. The Environment Court appeal provided a critical moment of public attention for the Waihi Beach seawall and can serve as an entry point for analysing the layers of conflict over natural and cultural orders. Accepting that this conflict is also a struggle over the politics of nature would have meant to allow for the whole complexity of the matter to enter the court, instead of managing a flattened idea of beach and coast reduced to mere "natural and physical resources" (Environment Court 2007: 33). The judge provided the closure sought by WBOPDC and their engineers. For the seawall opponents and the coastal scientists supporting them, however, coastal nature is not a closed matter. It is characterised by a cyclical, open-ended movement of material, and the natural processes of erosion and accretion. The backstop wall option rejected in Court was meant to work towards a different naturalcultural assemblage in which

cyclical erosion would have been allowed to temporarily alter the coastal space, with the protection structure visible only when exposed by extreme events. The witnesses who testified at the appeal argued that their approach was preferable because it would allow more room for natural coastal processes. Such a solution of "working with nature" could have been part of a transition of coastal management beyond the "prevailing engineering paradigm", as one of the expert witnesses argued (Interview with expert witness). This view provides possible points of connection with tāngata whenua who also argue against the armouring of the shoreline and for coastal protection that "works with nature" and not against it.

The hard protection advocates and their engineers, on the contrary, focused on immediate threats and problems to be solved. They see the coastal environment from the perspective of human needs and perceive coastal erosion as a threat to their valuable investments. On some level, all parties to the conflict are concerned with various understandings of value: On one side of the debate, homeowners aim to protect their property values and financial investments for the future. The seawall opponents counter this by attaching value to other imaginaries. The Pākehā protestors refer to their close-knit community of year-round residents, depicting their idea of "good old New Zealand" and its rural coast. Tūhua Brown, representing local Māori, points to the importance of ancestral connections to the landscape and the right of Tangaroa, god of the seas, to take away the beach. The coastal management specialists that voluntarily contributed their efforts to fight the seawall proposal in court insist that dunes should be allowed more space for the natural coastal processes of erosion and accretion to take place.

Seen in this light, the conflict opens up the question of what is the right way to live with nature as a Waihi Beach resident and as an Aotearoa New Zealander—questions that go far beyond the issues discussed in the technical terms of coastal science and engineering and point to the coproduction of social and natural orders through these practices of making coastal natures. These practices not only build a specific coastal environment but also produce a certain understanding of whom the beach belongs to, who rightfully belongs to the beach, and who has the legitimacy to speak for it: those who own the coastal sections under threat, long-time residents of the wider community, tāngata whenua, or scientists who know the beach as a natural object.

The Waihi Beach seawall symbolises a struggle about the right state of the coastal environment. It comes down to a conflict about alternative visions or imaginaries of the future: How should the beach become? The

sociotechnical imaginary of working with nature (and not against it) is part and parcel of naturalcultural practices moving beyond hard protection, like the backstop wall proposal dismissed by the Environment Court, or the Coast Care work that is practiced by many of the seawall opponents. Residents, scientists and consultants invested much energy to achieve a "soft" solution, and the political framework seemed supportive of such a way forward. However, in spite of this coalition of forces, for the time being, these attempts to move beyond hard coastal protection have largely been unsuccessful. There has been a temporary closure of the conflict after the massive structure was installed on the beach to back up a hegemonic version of coastal natureculture as a private space in need of protection from the sea. Nonetheless, the conflict has changed the local environment, with ratepayers questioning the legitimacy of the Council's rule, local Māori exploring possibilities to better voice their opposition to hard structures on the beach, and hopes that the unsightliness of the seawall as a material object might become instrumental for transitioning towards a different coastal policy in the future. The sociomaterial assemblage of the seawall, made up of natural and political, of human and more-than-human forces might well destabilise at some point, and the rocks might be replaced by something else. If this happens, the natureculture of Waihi Beach, emerging from the practices of human and non-human actors, might be opened again to new interventions and a different politics of coastal nature.

Notes

1. This includes work on fellow critters and companion species (Haraway 2008; Kirksey 2014; Cassidy 2012), plants (Hustak and Myers 2012), microbes (Paxson and Helmreich 2014) and even stones (Raffles 2012).
2. Baches are typical Aotearoa New Zealand beach houses (see Grigor 2008; Kearns and Collins 2006).
3. Here and in the following, I use a composite for the name of the country in both official languages: New Zealand in the English language and Aotearoa in the indigenous Te Reo Māori language. After its use was discouraged throughout the twentieth century, Te Reo Māori has undergone a massive revitalisation in recent decades and was declared an official language (besides English and New Zealand Sign Language) with the Māori Language Act in 1987 (Ministry for Culture and Heritage 2015).

4. Fieldwork took place in February and March 2010, November 2010–October 2011 and February–April 2015.
5. Apart from the example of Waihi Beach (Bay of Plenty) discussed in this chapter, other communities in Aotearoa New Zealand with ongoing conflicts about coastal protection measures include Whitianga (Coromandel pensinsula), Haumoana (Hawkes Bay), Raumati South (Kapiti Coast), and many more. Virtually all involve coastal areas with sandy beaches.
6. Ongoing maintenance requirements also cause further costs. Additionally, seawalls can aggravate coastal erosion at the endpoint of the structure so that their construction often leads to a gradual armouring of long stretches of coast, an effect that coastal geomorphologist Orrin Pilkey calls "New Jerseyization" (Pilkey 1998: 13f.).
7. The current 2010 New Zealand Coastal Policy Statement (NZCPS), issued by the Department of Conservation (DOC) under the Resource Management Act (RMA) as a binding reference for regional-level coastal policymaking, is evidence for coastal policymaking that aims to move beyond hard protection structures. Policy 25 aims to "discourage hard protection structures and promote the use of alternatives to them, including natural defences" (Department of Conservation 2010: 24f.). According to the NZCPS, the use of public land for the protection of private property shall be prevented in the future.
8. The cost of the project, which amounted to NZD 5.9 million, was divided into three rate divisions: immediate beneficiaries, residents of Waihi Beach Ward (including the neighbouring villages Bowentown and Athenree) and other residents of WBOPDC, distributed over the complete time span of the consent (25 years). The rates will increase according to inflation rates. In the first fiscal year (2008–2009), the immediate beneficiaries on the beachfront paid NZD 3800, the residents of Waihi Beach ward NZD 21.90 and the rest of the district NZD 1.90 (Owens 2008).
9. This sentence was not taken into the proposed version, which is the next step in the policymaking process. However, Council staff member Linda Pierce explains to me this is how policymaking and planning works: the first version contains what the planners believe to be best practice, or leading the way, and then it is modified according to submissions from interested parties and the anticipated political feasibility, which Linda calls the "reality check".

10. A 2002 Council document—referring to one of the possible long-term solutions for the erosion problems at Waihi Beach—noted: "the cultural significance of Three-Mile-Creek will require further consideration prior to any decision to divert the creek" (Environment Court 2007: 15). This comment is probably a reference to the possibility of polluted water—storm water and/or treated sewerage—entering the harbour, or otherwise a mixing of different sorts of water, which constitutes a serious concern for indigenous groups in Aotearoa New Zealand (see McCan and McCan 1990; Ruru 2009). Also, the natural harbour continues to be an important fishing spot and harvesting site for kai moana (seafood), and preventing pollution of these food resources is a vital political cause that is often raised by tāngata whenua.

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CHAPTER 7

The "White Magic" of Modernity: Retracing Indigenous Environmental Knowledge in Settler-Colonialist Australia

Carsten Wergin

Introduction

Much anthropological work currently conducted in Australia is different from what a German anthropologist might expect. In Germany, one is trained to acquire data using a variety of methods and to contribute to scholarly discourse through ethnographic writing. In Australia, though there is a reasonable number of academic anthropologists and anthropological institutes throughout the country, the government and industry are other considerable employers of anthropologists and frequently employ them as expert witnesses. Their professional qualifications enable them to turn what Indigenous and non-Indigenous people present to them in lay language into scientific reports and other forms of evidence that qualify as such in the realm of Native Title claims, resource exploration proposals and other activities with possible impact on Indigenous land.

This chapter draws on ethnographic fieldwork in a conflict situation where an Indigenous group set out to preserve land from industrial development.[1] They called on numerous experts, including anthropologists, to assist them. The conflict stemmed from a proposal by the largest independent oil and gas

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company in Australia, Woodside Ltd., and its joint venture partners to build a AUD $45 billion liquefied natural gas (LNG) facility at Walmadany/James Price Point in the Kimberley region of Northwest Australia.

With about 50,000 inhabitants and 423,000 km^2 of land mass (roughly the size of Germany and Austria combined), the Kimberley region in Northwest Australia remains one of the most remote areas in the world, famously described in tourist advertisements as Australia's "last frontier." The construction of the LNG plant would have brought an additional 6000–8000 jobs to the region. It also would have included, among other things, the construction of a large port facility with an estimated 2 km jetty and more extensive movement for ships. A proper assessment of the possible impact on fauna and flora, including the annual migration of humpback whales, formed a significant part of the larger discussions surrounding the conflict (Wergin 2016, also below).

In the attempt to translate Indigenous worldviews into the terminologies of Western science and law, I was confronted with challenges that are central to this text. Decision-makers, such as government and courts of law, speak about the environment, assess its material and cultural values and ultimately determine its future based on Western law. However, for Indigenous custodians of the land, the significant points of reference from which they derive their worldview are expressed in Aboriginal law and culture, known as Bugarrigarra (The Dreaming) in the part of Australia that this chapter presents. As I discuss below, translating these worldviews into Western science terminology could be termed a "lasting" rather than a last frontier.

I argue that the attempt to translate Indigenous worldviews highlights not only the ways in which information is lost, but also a general lack of recognition for incommensurable ways of being in the world. This alterity does not just refer to a different representation of one reality, but to different realities or "worlds" in themselves (Pascht and Dürr, this volume (Chap. 1)). I show how an attempt to translate from one of these realities to another—a process that in this chapter is characterised by the Indigenous term "white magic"—leads to the subjection, or even loss, of one worldview to another.

I attempt to describe this distorted translation process from an "emic" perspective—as much as a white anthropologist born and raised in Germany can tap into this perspective. The Indigenous group most strongly opposed to the industrialisation project, the Goolarabooloo, asked me to produce a report about diverse heritage sites in the vicinity of the proposed LNG facility, which could be used as evidence in a court of law. I therefore documented burial grounds, artefacts and other remains using ethnographic and archaeological techniques, as well as Western science

terminology—or, in the language of my Indigenous hosts, "white magic." The focus of this chapter is less about what the world of this Indigenous group looks like, than it is about why its custodians felt the need for an anthropologist as a translator. Why "white magic," and how does it affect the place it is applied to?

Following this introduction, I begin with a theoretical discussion of ontological difference, followed by a brief discussion of relevant historic German scholarship in the region and the place in question—Walmandany/James Price Point, about 50 km north of the tourist town of Broome on the Indian Ocean coast. The case study begins with a short introduction on the various collaborators in the opposition movement and how their acknowledgement of the land based on the Indigenous notion of "living country" brought them together. I then turn to what the translation of this worldview could mean, and whether or not something new ("white magic") emerges from the dialogue between researchers and Indigenous actors. What becomes of ontological alterity if we reframe it in our own terms and relationships?

The conclusion revisits the significance of a general discussion on ontological differences, as well as translation processes as a means to bring diverse worldviews together (Holbraad et al. 2014). I argue that an applied anthropology that emphasises processuality and real-world experience plays a significant role in the attempt to make those views visible. Despite the long-standing "tradition of mono-naturalism and epistemological perspectivism on which capitalism has rested" (Hage 2014), Aboriginal law and culture have survived (albeit not unchanged). Collaborative work that recognises diverse ontologies as equal though incommensurable therefore presents a valuable alternative to the modernist tradition. It can facilitate economic and political decision-making that caters for both technological development and environmental preservation.

Ontological Difference and "The Dreaming"

The ontological turn in anthropology emphasises the coexistence of diverse worldviews, or "worlds," and challenges us to create possibilities to accommodate them. This entails more than the comparison of ontologies, including "a technology of description designed in the optimist (non-skeptical) hope of making the otherwise visible" (Holbraad et al. 2014). Aileen Moreton-Robinson (2003) describes this "otherwise" in regard to Indigenous people's sense of place and how it is configured differently from that of

settler-colonialists. Though Indigenous people refrain from asserting ownership and moral authority, their sovereignty is ontologically tied to the land (Moreton-Robinson 2003: 37). Aboriginal people in Australia and a number of other regions in the world consider themselves dependent on "country"—that is, "land already related to people" (Stanner 1965: 14)—and country dependent on them. A "healthy country" is crucial for the health of its Indigenous custodians, and vice versa (Rose 1996).

In the case study presented below, Bugarrigarra (The Dreaming) is at the heart of this "careful" relationship between people and the environment that nourishes both physically and spiritually. Bugarrigarra is the acknowledgement of a world that is as much tied to the past as it is to the present. Indigenous law and culture in Australia stem from ancestral beings and were handed down through the generations in ceremonies and customs, stories and experiences that are linked to particular places "on country." Since this law and culture have been enacted "since day one," they remain present in the "here and now." Previous scholars first approached this interrelationship of past and present, human and other-than-human, through the study of totemism, which

> ... in Aboriginal Australia is always a mystical connection, expressed by symbolic devices and maintained by rules, between living persons, whether as individuals or as groups or as stocks, and other existents—their 'totems'—within an *ontology of life* that in Aboriginal understanding depends for order and continuity on maintaining the identities and associations which exemplify the connection. (Stanner 1979: 127–8, my emphasis)

I will return to this link between the study of totemism and other types of "myth-consciousness" (Kolig 2000) and how they relate to the contemporary concern with ontological difference when I discuss the historic relevance of German scholarship in the Kimberley region.

On a different note, scholars, and settler-colonialists in general, introduced the concept of Western temporality, which impacted significantly on Indigenous societies. The introduction of time has had considerable consequences, since Indigenous societies based their ontologies on the understanding of an environment in which the past and the present are interlinked (Swain 1993).

Settler-colonialism can therefore also be described as the encounter of two societies in which different principles play central roles: on the one hand, rationality and a teleologically minded futurism; on the other, a

relationship between people and land that neither acknowledges humans as masters over the environment nor comprises a fundamental duality between nature and culture. Recognition of both does not mean essentialising ontologies as static and closed entities, but rather acknowledges transactions between many "worlds." The reason my attempt to translate between these worlds was doomed to fail is that it required me to turn the perspective that rejects this dualism into one that embraces it. What the case study below presents in more detail is that "white magic" therefore turns out to be "magical" only in so far as it allows Western science to continue to speak about "country," obscuring Indigenous law and culture in the process.

This is linked to the more general consequences of the introduction of Western language, which brought changes to Indigenous groups and individuals who began to expect "a tentative ontological status" from naming (Butler 1997: 25). However, despite the impact of the settler-colonialist worldview and processes of naming that were to gradually override Indigenous law and culture, Stephen Muecke points to the possibilities that remain available through the attempt to engage actively with pluralist understandings of the world:

> Australians of all complexions agonize over their identities, but let us not leave the only avenue as one of being someone or something. The crucial and nonnegotiable identity emerges in action, or out of inventive resistance, or out of artful politics, it emerges only in movement. (Muecke 2011: 5)

Instead of aiming for recognition through naming someone or something, it is diverse practices, means and ends that identify actants in the world, in Australia and elsewhere. The benefits of such recognition of pluralisms "allow us to populate the cosmos in a somewhat richer way, and thus allow us to begin to compare worlds, to weigh them, on a more equitable basis" (Latour 2013: 21). Here I draw on Bruno Latour (1998) who, in a discussion of the six regimes of justification outlined by Boltanski and Thévenot (2006), supports the recognition of ecology as a possible seventh regime in its own right. It is beyond the limits of this chapter to engage in this discussion in more detail, let alone outline all the regimes (cités) defined by Boltanski and Thévenot (2006). To further illustrate Latour's point, I concentrate on the so-called "domestic regime."

With Latour, I argue that ecology is subsumed by this regime as soon as there becomes a need for "defending (...) a particular tradition or a territory against the de-sensitised, de-territorialised, stateless, monstrous

character of an economic or technical enterprise" (Latour 1998: 6). When asked to produce a report and, in doing so, to exercise "white magic," I was to contribute to the defence of Walmadany/James Price Point against proposed industrialisation. However, in light of the above, this meant subsuming its environment into the modernist interpretation of a domestic regime.

In any conflict situation of industrialisation versus preservation, Aboriginal people find themselves in such a dilemma: They need to prove, for example in courts of law, that they have the right to speak for the land and demonstrate that their connection to it is alive. But they cannot do so in terms of Aboriginal law and culture, Bugarrigarra, because of the need to adapt to whitefella law, which is "dominated by a Western legal demand for certainty, based on a *legalistic ontology of determinacy*" (Smith 2007: 125, my emphasis).

I came to realise this first-hand when I was recruited by the Goolarabooloo to document heritage sites in a report that was to be submitted to a court of law. The problem I encountered in this process was that it was impossible to properly translate the significance of the place solely under the terms and conditions of Western law and science. The Indigenous concepts I encountered could not be translated from one language to another because the worldview they account for is ontologically different to the one I was to represent them in. Holbraad, Pedersen and Viveiros de Castro state:

> One does not need much anthropology to join the struggle against the political domination and economic exploitation of Indigenous peoples across the world. It should be enough to be a tolerably informed and reasonably decent person. Conversely, no amount of anthropological relativism and old-hand professional skepticism can serve as an excuse for not joining that struggle. (Holbraad et al. 2014)

However, "joining the struggle" for me turned out to be more than support for Indigenous people. It became a revealing act that accounts for the incommensurability of ontological principles at play. But before I turn to my attempt to translate between the two worlds of Western science and Aboriginal law and culture, it is useful to include a brief reflection on the long-standing German tradition of anthropological research in the Kimberley region and how it adds to the theoretical discussion presented above.

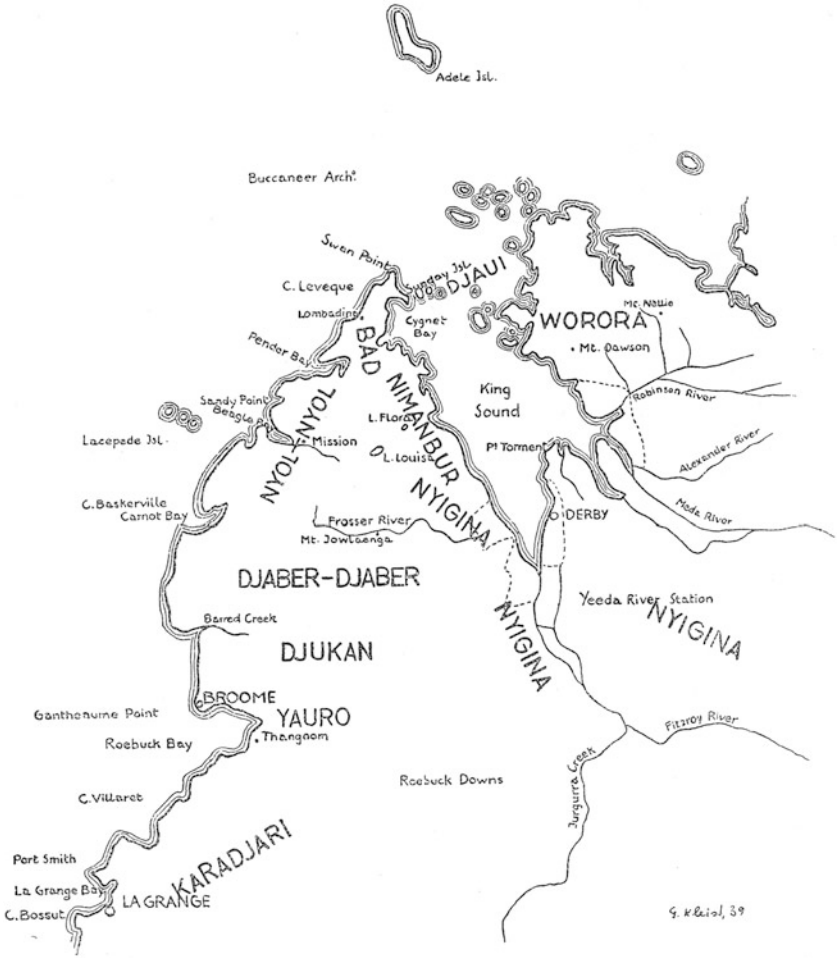
Theoretical Foundations of Historic German Scholarship in the Kimberley Region

In 1938, the Forschungsinstitut für Kulturmorphologie (Research Institute for Cultural Morphology) in Frankfurt am Main, Germany, conducted its first ethnographic expedition in Northwest Australia (Fig. 7.1). It is nowadays known as the "XXII Frobenius Expedition," named after the founder of the Institute for Cultural Morphology, Leo Frobenius (1873–1938). Frobenius worked under the assumption that human cultures develop like living organisms; they grow to maturity and die as individuals. His vision became known as cultural morphology or morphology of culture. The anthropologist Helmut Petri (1907–1986) was named director of the XXII Frobenius Expedition. Other participants were anthropologist Andreas Lommel (1912–2005) and artists and painters Gerta Kleist (1911–1998) and Agnes Schulz (1892–1974). The latter focused on reproductions of Indigenous rock art (Doohan and Porr 2015).

Petri published his results from this expedition in 1954 in the book *Sterbende Welt in Nordwestaustralien* (*The Dying World in Northwest Australia*, 2011). Only later did he again return to Australia. His friend and colleague at the University of Cologne, Kurt Tauchmann, notes that those newer experiences had a profound effect on Petri (1973: XII). In *Sterbende Welt in Nordwestaustralien*, he still presents a pessimistic view, as is evident in the title of his monograph. While Andreas Lommel kept this view, as is reflected in his subsequent publications (1966, 1969), Petri took a more optimistic position over the years based on further experiences with, and a more personal commitment to, Aboriginal people (Tauchmann 1973: XII).

Research materials collected, as well as much of the published results of the XXII Frobenius Expedition, are available to this day only in German. This remains an obstacle for reference and analysis of the primary data. Related to this, it has been argued that English translations were largely published without input or approval from the relevant Indigenous communities (Doohan and Porr 2015; Doohan et al. 2016: 94). The fact that most of these translations were only published recently further emphasises the persistence of at least a partial disregard of Western science for today's Aboriginal communities (Doohan and Porr 2015).

Despite misrepresentations and the general lack of understanding in the German texts, there is a growing awareness among scholars and Aboriginal communities of important and rare information in these materials, which



Karte des Dampierlandes, Nordwest-Australien.

Fig. 7.1 Map showing the Dampier Peninsula and adjacent parts of the Kimberley with their Indigenous groups as documented by Gerta Kleist during the XXII Frobenius Expedition (*Source*: Petri (1939))

should be accessible and re-evaluated. In light of this, there are various discussions underway about further collaborative projects based on the respective materials (Doohan et al. 2016: 103). For the first time, reproductions of rock art images from the 1938 Frobenius Expedition were exhibited in 2016 at the Martin-Gropius-Bau in Berlin, with permission from Traditional Owners.[2]

This historic episode is further relevant to my argument because Petri conducted research in some of the exact same locations that I visited roughly half a century later. I did not simply witness examples of the material collected during the XXII Frobenius Expedition, or places where research was conducted. What I encountered was a living memory of the proponents of this expedition. The name Petri, for example, came up on several occasions during my fieldwork. Some people referred to him as a researcher who their grandparents would frequently speak to. Those remembered him as a "believer"—someone who had learnt to see spirit beings such as "little people" on the dunes along the Kimberley coast, which are associated with Bugarrigarra.[3]

In his article "Sogenannte 'schamanistische' Erscheinungsformen im heutigen Nordwest-Australien" (1987, English translation: So-called "shamanistic" manifestations in today's Northwest Australia), Petri recalls a conversation he had in 1938 at Munja Station in the northern Kimberley (Petri 1987: 614). He spoke about kinship with a person named Yáobida (the "speaker" or "gossiper"); his colleague, D.C. Fox, had left for the day for Brockmann Creek. Upon his return, the two researchers shared their activities of the day and realised that both of them had spoken with Yáobida at the same time but in different places. In his article, Petri continues to explain that Yáobida was a healer (bánman, or mában) with the ability to materialise his alter ego and thus be present in two different places at once. Instead of questioning the incident he writes that, "[wir müssen] es so hinnehmen, wie es ist" (Petri 1987: 614, "we have to accept it as it is").

In doing so, Petri acknowledges ontological difference instead of presenting a rational explanation for the events. This is in stark contrast to other works by German-speaking scholars such as Erich Kolig whose view also stems from fieldwork in the Kimberley and is therefore worth contrasting with Petri's observations. Kolig prefers to highlight the shortcomings of a "myth-consciousness" that

> ... reduces the flux of time and events, of people and their deeds, to epiphenomenality and hence to relative triviality. This proclivity obviates the

> need to be curious about the non-mythical or non-creative, 'historical' past, or about the future. It also eliminates the need for carefully monitoring the present in order to elicit trends and processes that might be projected into the future, and the need to be able to anticipate it to some, albeit minor, extent. (Kolig 2000: 10–11)

In their approaches, Petri and Kolig present two opposing views. One acknowledges ontological differences between myth and reality (Petri); the other is bound to subsume both into one discourse (Kolig). My observations presented below support Petri's position, namely the acknowledgement of an existence of multiple worlds and also of an ability of (Indigenous) people to consciously move between the two.

A further case in point is what researchers involved with Native Title determinations told me about interviews they conducted with Indigenous elders. Some of them remembered how Petri examined them in childhood. Apart from his work as an anthropologist, he was allegedly employed by the Western Australian government to assess possible signs of leprosy on children's bodies. Based on his judgement, children were sent to specific camps set up to accommodate those infected. This anecdote is worth noting as it offers an additional perspective on the title Petri chose for his 1954 publication *The Dying World in Northwest Australia*. It also highlights that there is more than myth-consciousness surrounding Petri's legacy among Indigenous people today.

Apart from the work of the Frobenius Institute, other significant historic contributions to the field of anthropology came from Roman Catholic (Pallottine) missionaries and priests. Today, their work is also used in Native Title determinations and issues regarding land rights, such as the granting of permission for resource exploration projects. Among them are again German scholars like Ernest Worms (1891–1963), who wrote in a review of the aforementioned monograph by Petri:

> We are now so well informed about the aborigines of North Kimberley that their material and spiritual culture can no longer completely disappear even if the rather pessimistic title of this book should prove prophetic. (Worms 1955: 1013)

As mentioned before, during fieldwork I became aware of how the work of these scholars informs local Indigenous groups and individuals today. It is important to note that despite possible romanticism by scientists, tourists

and travellers regarding how Indigenous knowledge is passed down from generation to generation, Indigenous culture is a living culture and, as such, apt to change. All parties involved in Native Title determination, for example, are well aware of the protocols they need to follow for their interests to prevail. However, even today courts do not seem to take into account that a person who claims Native Title over a stretch of land and needs to prove his or her Indigenous relationship by presenting traditional knowledge of it might have read anthropological studies like those presented by Petri, Worms and Kolig.[4]

This leads to my central concern in this chapter, namely the critique of a modernist assumption that there is but one narrative to follow in order to understand everything in and of the world—a narrative that confines the relevance of Indigenous knowledge to the realm of the past. This is particularly valid with regard to the diverse ways in which the environment can be represented and talked about, as I show in the following case study.

Retracing Ontological Differences at Protest Camp Walmadany

Construction of the LNG facility—meant to process and store natural gas extracted from the Browse Basin in the Indian Ocean, roughly 425 km offshore—was to begin in 2009. But the site chosen for it, James Price Point (or Walmadany, to use its Indigenous name), holds significant natural and cultural value, so much so that a diverse group of opponents formed. This collaboration of a range of opponents, among them local Indigenous and non-Indigenous groups and individuals, environmental organisations, media representatives, politicians, well-known artists and other public figures, successfully delayed the project until April 2013, when Woodside Ltd. officially withdrew from building the LNG facility.

The collaborators shared a commitment to environmental activism. Walmadany has been consecutively reassessed as a significant environmental and cultural site since the 1960s.[5] It is furthermore part of the Lurujarri Heritage Trail that was founded in 1987 by the late Goolarabooloo senior Law Boss Paddy Roe. The nine-day walk follows an Aboriginal Song Cycle along the Indian Ocean coast, known as the Northern Tradition. Roe was custodian of a section of this song cycle that begins near Gantheaume Point in Broome and ends about 82 km north at Yellow River.

When I visited Walmadany for the first time in 2012, it had turned from an overnight stop for trail participants into a protest camp. Solar panels were installed to supply energy. High antennas were visible from afar and connected phones, radios and computers with the rest of the world. A wooden tower had been erected as a lookout for activity on the dune system: visits of workers from Woodside Ltd., who might want to assess the land, take soil samples or set up drill rigs. A banner with the words "First they ignore you, then they laugh at you, then they fight you, then you win" hung at the entrance to the protest camp (Fig. 7.2).

The famous quote by Gandhi can be applied in various ways to the conflict situation: "They" might address politics and industry that planned to build the LNG facility; or "they" might refer to Aboriginal people with family ties in the region who had once moved away, but who had now come back to claim the land. Opponents to the industrialisation project described them as people who are not called by their country to protect it, but who

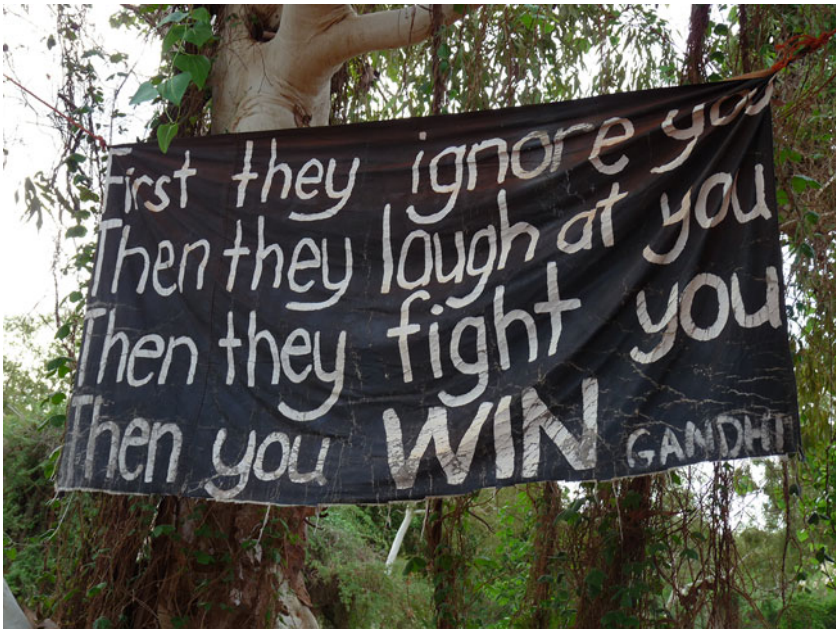


Fig. 7.2 Banner near the entrance to Protest Camp Walmadany (Photo: Carsten Wergin, 2013)

hear "money calling," since an AUD $1.5 billion compensation page was attached to the industrialisation proposal. Equally so, "they" can be understood to describe Western scientists or environmentalists who consider their ways of knowing superior to Indigenous law and culture.

A key element of conflict over industrialisation in Australia is to determine the rightful custodians of the land in question. Different parties involved in such determinations call on anthropologists to find out who these custodians might be. Working for opposing interest groups, such scientific experts also question each other's authority, while ethnographic studies paid for by the industry either suit the purpose of Indigenous "heritage clearance" in the most literal sense or end up in a filing cabinet never to be published (Wergin and Muecke 2012).[6]

My involvement in the conflict over the industrialisation of Walmadany/James Price Point was different. First, neither the mining companies nor governments were interested in my work, let alone paid for it. My scholarly research was sponsored by a European Union-funded Marie Curie Fellowship, which gave me considerable freedom. It was my choice to first approach the land around Walmadany through participation in the nine-day Lurujarri Heritage Trail. My motivation was to assess the value of the area from the perspective of the Indigenous group that organises the trail each year: the Goolarabooloo.

Upon arrival, however, I was confronted with a long history of conflict that culminated in the possible destruction of the trail through the proposed LNG facility. Since my research was motivated by a general interest in the trail as a cultural experience, the Goolarabooloo thought my work was valuable as a contribution to their opposition movement against the most recent industrialisation proposal. I brought along scientific degrees and expertise, tools and language skills, and the group thought of me as well equipped to write a report that would be recognised in front of a court of law.

My work tied in with that of a host of other contributors to the opposition movement who came from a range of professions and with various degrees of expertise in environmental activism. The result was a diverse group of stakeholders with different environmental interests at play in this conflict. Their worldviews intersected over the possible industrialisation or preservation of Walmadany/James Price Point, showing the issue to be more complex than simply another dualism of "evil" industrialisation versus "good" environmentalists/Indigenous groups.

Regardless of where they were active, all collaborators found common ground to accommodate their diverse worldviews and motivations in recognising "living country" as valuable to its Indigenous custodians, albeit for reasons that some supporters might not have fully understood. For the Goolarabooloo, the country is "living" because it is spiritually as well as physically nurturing. For non-Indigenous people, the effect is similar: they characterise the country as "pristine," "remote," or simply an ideal place to spend the weekend with family to "recharge" for the working week ahead.

According to Aboriginal mythology, creation beings and spirits of various sorts have been part of the land "since day one." They are institutionalised in oral history and talked of and experienced on "living country"

> . . .where the land is whole and complete; where the interaction between people and land is alive through law and culture; where the spirit of the land is 'standing up' and vibrant. Living country differs to [sic] cultivated country, which is where there is cultural confusion; the land has been replanned one layer over another; the spirit is hiding, withdrawn, waiting. (Roe and Hoogland 1999: 30)

"Living country" became the unifying concept for collaborators in the opposition movement. Its recognition brought Indigenous and non-Indigenous groups, environmentalists, casual tourists and travellers together. It made collaboration between these sometimes opposing groups (consider illegal camping or hunting endangered species) possible, since all could identify with it. It also granted the Goolarabooloo the final say before any protest actions were taken.

A particularly media-sensitive event in this respect was the arrival of the *Steve Irwin*, a ship normally used by the environmentalist group Sea Shepherd to intercept Japanese whaling fleets. Sea Shepherd's *Steve Irwin* visited Broome and the Kimberley coast in August 2012 as part of "Operation Kimberley Miinimbi." Ship and crew were invited by the Goolarabooloo as well as the Nyul/Nyul and Jabirr Jabirr people to raise awareness for the humpback whale population that migrates each year along the coast past Walmadany/James Price Point, and which would be impacted by the LNG processing hub. The visit attracted national media attention and also displayed support from the *Australian Greens* and their former leader, Bob Brown, who came to Broome for the occasion.[7]

"Country" allowed for these diverse collaborators and their different worldviews as environmentalists, politicians, local residents and Indigenous

custodians to work together under the premise of a combined effort to preserve the land. However, a problem arose for me when I was asked to recognise its Indigenous value and at the same time translate it into Western science terminology. In the terms and along the steps that protest action takes as outlined by Gandhi, Western science and Australian settler-colonialism originally *ignored* Indigenous knowledge. Through the impact of Native Title and other legislation, Indigenous knowledge, law and culture have become impossible to ignore. Instead, Western scientists began to *laugh*, for example at Indigenous stories about punishment from country for its intruders, in the form of bad weather, flat tyres, up to terminal illness. Others might have laughed at Helmut Petri's account of a person allegedly entertaining two conversations with two different people and in two different places at the same time, even more so since Petri provided no rational explanation for it.

After laughter, next in line for industry and government is to *fight* Indigenous groups, as was the case for Walmadany/James Price Point. Who *won* this fight was only partly determined by "right" or "wrong"doing. General visibility, power and the level of impact of their arguments in an assessment process were equally important. This created a problem since the fight for the preservation of the land also turned out to be a fight for (the recognition of) ontological differences. In the case of Walmadany/James Price Point, this meant deciding whether "living country" is defined by abstract theorems fought for in a court of law, or by its real-world experience, in which it is fundamental to consider biological and ecological needs as equal to human aspirations.

The above is exemplified in the community science projects on the environmental impact of the industrialisation project. These were again encouraged by the Goolaraboolo and administered with the help of diverse environmental organisations. Elsewhere, I discuss in more detail why the community science results stand in stark contrast to research on the same issues that was undertaken by industry and government consultants (Wergin 2016). The difference again stems from the recognition of the environment as "living country."

Community scientists presented considerable evidence for a "living country" in the form of extensive fauna and flora surveys that identified, among others, calving grounds for humpback whales and endangered species such as snubfin dolphins, bilbies and hawksbill turtles (Goolaraboolo et al. 2011; Goolaraboolo et al. 2013; WA Government 2011). A strategic choice in this regard was to link the notion of a "living country" to the global "mother earth" discourse. This was done, for

example, in an event staged at Walmadany on October 12, 2011, where Indigenous and non-Indigenous people came together to perform a corroboree (traditional dance ceremony). One of its organisers, Anne Poelina, provides audio commentary for a video about the event, which emphasises its global significance in relation to the preservation of "mother earth."[8] In this regard, the notion of a "living country" appears more contemporary than ever, since it acknowledges that not only nature but also humanity itself could be the victim of human expansionism. Such rhetoric resonates well with debates about the predicament of the Anthropocene and globalised scenarios about an environmental apocalypse.

It is interesting to note, however, that despite being aware of the contribution that local Indigenous environmental knowledge made to the community science projects, the Goolarabooloo and community scientists decided to translate the findings into prevailing Western science terminology. The aim was to defeat the work of the consultants on their own terms in order to guarantee best results in a court of law. This ties in with Kolig's (2000: 26) concluding arguments in his article *Social Causality, Human Agency and Mythology*, in which he argues "Aborigines will soon realise that it is more important and more effective to inscribe their history in books and, thus, on the nation as a whole."

In this case, Indigenous and non-Indigenous collaborators deliberately chose "books" to present their research results. However, in contrast to Kolig's predictions, this did not result in "the land" losing its significance. On the contrary, the shared acknowledgement of "living country" was at the root of the collaboration that led to more accurate results regarding local fauna and flora. Even so, the representation of those results in printed reports does not live up to the importance that "living country" attained in achieving them.

I experienced this first hand during a particular fieldwork situation, when I was meandering between Indigenous knowledge and Western science. For the report about heritage sites in the dune system near Walmadany, to which I now turn, I first drew on personal observations and previous studies in the area. One of the most comprehensive studies to date is the *Management Report for the Lurujarri Heritage Trail* (Bradshaw and Fry 1989). Walmadany is named as an important Jila (waterhole) in this study (Fig. 7.3). Aboriginal people used the area around it as a campground (Akerman 1981). As a result:

> Burials are periodically exposed and re-covered by shifting sands but the locations of only a few of these are known [...] According to the traditional custodian [Paddy Roe] it was customary to bury the dead in shallow graves in the dunes along the coast. It is to be expected that any developments in the area would disturb the bones of the many people who are buried in the sand hills between Bindingankuny and Minyirr. (Bradshaw and Fry 1989: 9)

Walmadany and its dunes are furthermore defined as:

> A MAJOR [sic] site. It has archaeological integrity and dense material over extensive areas (i.e. 10,000 + pieces) of shell/bone/stone material and some of the following features: hearths, species specific scatters, bone remains, an association with older soils. (Bradshaw and Fry 1989: 12)

Bradshaw and Fry describe Walmadany as a space of 2500 × 500 metres. The area shows "middens," "artefacts," was used as a "camping area," is "mythological" and of "major archaeological and ethnographic significance, plentiful material over extensive area on and in intact lenses within cliff face and in dune blowouts." The authors conclude that it should be the northern tip of a "proposed Lurujarri Protected Area" (Bradshaw and Fry 1989: 14).

On a visit to Walmadany in January 2013, Goolarabooloo Law Boss Phillip Roe guided me through a section of the dune system, similar to what his grandfather Paddy Roe had done with Bradshaw and Fry about 30 years before. He pointed out burial sites, artefacts, bones and campgrounds that had recently been exposed by rain and wind. His explanations were complemented by data I had collected during my participation in the Lurujarri Heritage Trail in July 2012.

After strong wind and rain, Roe patrols an area in the Walmadany vicinity to maintain sites and rebury exposed objects and human remains. During our visits, he traced the lives of people, identified communal areas rich with middens, pointed out artefacts and campsites. Our walk began at a place he identified as the burial site of Walmadany, the Aboriginal warrior who gave the area its name. About 15 metres away, near an exposed turtle bone, Roe pointed to another burial site of an old fella:

Fig. 7.3 The Jila (Waterhole) at Walmadany Camp (Photo: Carsten Wergin, 2013)

Phillip Roe: That was uncovered about two years ago, but we buried it, more deep, covered him properly again... Even this one here.
(...)
Author: So when did you find that other bone? Last week only?
PR: Yeah. I buried it up, and usually, if we would have no rain and wind, you could have seen where it lay, uncovered.

A: And how did the turtle bone get up here (Fig. 7.4)?
PR: They carried it man, from down there ... With that fireplace up there, where they must have been cooking (Fig. 7.5). And this is where they must have ate. Must have been these old people sitting here, and this is where this old fella must have died.
A: While eating the turtle?
PR: I'm not sure.[9]

Fig. 7.4 Close up of turtle bone (Photo: Carsten Wergin, 2013)

A: And how would you use [this grinding stone]?
PR: Well, you just grind it, grind seeds and things. And those holes in the middle, that's when they used to hit shells. [He takes a shell and demonstrates it.][10]

Contrary to the archaeological "uncovering" of sites, Roe and I visited sites that are regularly uncovered by wind and rain. They are part of what their custodians call a "living country" that changes through the impact of human and other-than-human agents. It is therefore less important to know where something or someone is buried than it is to have the knowledge to identify what is being exposed and how to rebury it.

Unlike in Christian practice, the dead were not buried in a particular place such as a cemetery, but near the place where they died. Roe explained to me that objects associated with someone were left with that person, while the community moved on to a different place. A body was arranged so that its head pointed upwards in the direction the spirit travels when leaving

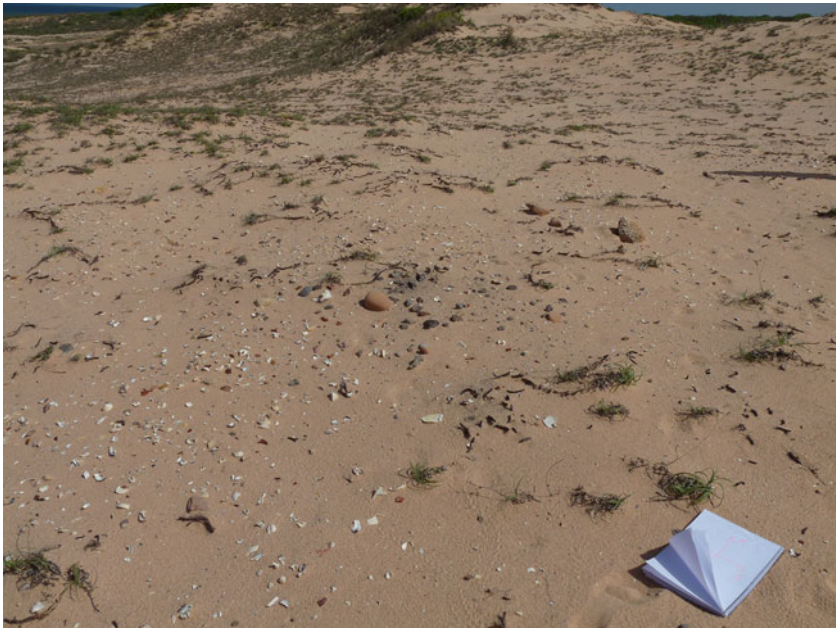


Fig. 7.5 Fireplace (Photo: Carsten Wergin, 2013)

it. The spirit returns to the ground and remains part of the "living country." It might reappear as a person visible on the dunes, in a dream, or in the form of a song that is given to someone.

My task was to turn his descriptions into Western science terminology. I had prepared myself accordingly. While Roe showed me tools such as grinding stones, I had brought my own tools such as a GPS logger, tape measure, camera and voice recorder. In my report, I also added observational results. I began by stating that the number of sites that Roe identified indicates that the dunes around Walmadany have been used extensively. The land supplied people with sufficient food, water and shelter, which made it possible to live year round in this area (Fig. 7.8). The dune formations turned out to be one interrelated network of campgrounds, burial sites and mythological places of Bugarrigarra.

The knowledge about this network was passed on from Aboriginal elders to younger generations, starting with Walmadany himself. I concluded that Walmadany, the place and the spirit/person, remain important in the lives

Fig. 7.6 Phillip Roe demonstrates the use of the grindstone to open shells. Also note the axe head in the lower right hand corner (Photo: Carsten Wergin, 2013)

of Indigenous people who associate themselves with the area. Based on this, the group of lawyers who worked for the Goolarabooloo recommended adding a reference to whitefella law in my report: Section 5 of the Aboriginal Heritage Act 1972 (WA) states that the importance of a cultural site is acknowledged if:

(a) The area holds numerous places of importance and significance where persons of Aboriginal descent have left objects used for, as well as made or adapted objects for use for, purposes connected with the traditional cultural life of Aboriginal people, past and present;
(b) It includes sacred, ritual and ceremonial sites, which are of importance and special significance to persons of Aboriginal descent;

Fig. 7.7 Phillip Roe demonstrates the use of the grindstone to open shells. Note the shattered shell, left from the stone he held in his hand in Fig. 7.6 (Photo: Carsten Wergin, 2013)

(c) It continues to be associated with local Aboriginal people and is of great historical, anthropological, archaeological and ethnographical interest and should be preserved because of its importance and significance to the cultural heritage of the State of Western Australia and the Australian nation.

I included this reference and chose direct quotation or language as close as possible to the original wording in order to meet the requirements set out by law. In the conclusion of the report, I also referred to Section 6 of the Aboriginal Heritage Act 1972 (WA), which addresses the continued use of a site, since bones and artefacts are still used for purposes connected with the traditional cultural life of the Goolarabooloo.

Fig. 7.8 View south overlooking the dunes system (Photo: Carsten Wergin, 2013)

The Goolarabooloo requested this translation of their knowledge into Western science terminology in order for it to be recognised in a court of law. They called this process of translation "white magic"—the ability to describe their significant places in Western science terminology. Members of the group had pointed out to me that they would prefer to enjoy Walmadany, take their family out hunting and fishing or accompany visitors on the Lurujarri Heritage Trail. Instead, they were obliged to fight for it in courts of law. Luckily, in the course of over 30 years of welcoming visitors to the land, showing them around and answering their questions, the Goolarabooloo had generated a supply of non-Indigenous people with relevant skills that they could now recruit for their cause.

Some of them might tie themselves to heavy machinery in an act of protest, or, as I did, learn new technologies such as GPS coding, engage with lawyers to optimise the impact of a report, adapt a particular jargon and read relevant acts and sections of the law. However, these tools not only had a significant impact on how the report was presented but also on what was

represented in it, since—and here I return to Latour's argument about ecology—their application subsumed "living country" into the domestic regime of justification. Within Indigenous law and culture, "living country" is a regime of justification in its own right, but in the report it was presented as part of a modernist discourse. As Paddy Roe and Frans Hoogland explain in the previous quote, "living country" was turned into "cultivated country."

This has further implications for the very possibility of translating between different ontologies. The way in which I prepared the scientific assessment of the cultural impact of the proposed LNG facility at Walmadany/James Price Point points towards the general dilemma that Aboriginal people find themselves in: They need to prove that they have the right to speak for the land and demonstrate that their connection to it is alive. However, they cannot do so solely in terms of Aboriginal law and culture, but need to make strategic use of whitefella law as well.

To do so, the Goolarabooloo—the Indigenous group who most strongly opposes the industrialisation of Walmadany/James Price Point—drew on the help of various people in order to defeat whitefella law on its own quantifiable terms. Among themselves, they acknowledged their interrelationship with "living country" as the source of physical and spiritual well-being. But the official reports they submitted to government and courts of law omitted this relevance in order not to be deemed "irrational" within the prevailing ontology of Western science.

As long as Indigenous groups need to prove their connection to the environment in such a way, significant parts of Indigenous worldviews are excluded from view. The Anthropocene recognises the irreversible impact of human activities on the environment. What also needs to be acknowledged then is the impact of Western law and science on other representations of the world. Instead of opening up the space for the acknowledgement of diverse worldviews and ontologies such as those of Indigenous law and culture, it renders them invisible.

Conclusion: Incommensurable Ontologies?

In this chapter, I have shown that the engagement of the Goolarabooloo with the world is considerably more complex than can be expressed in Western science terminology alone. The above has made clear that a proper assessment of the challenges posed by resource exploration initiatives demands for other ontologies to be taken seriously, such as those which

cannot be translated into Western science but are nevertheless of equal significance.

The "white magic" of modernity, of Western science and law, turns out to be magical only in so far as it renders other worldviews invisible. Its shortcomings make a good case for a more applied anthropology that works towards the recognition of ontological difference. Related praxis-orientated projects that focus on people as actants and in movement have the potential to be avant-garde: They emphasise real-world experience as the place where diverse moral, political and methodological questions jump into the eye of the beholder. Their results challenge law and science to aim for the recognition of pluralist understandings of the world, and of what in the beginning of this chapter was described as the "otherwise."

As "living country," the ecology of Walmadany/James Price Point was not subsumed into other worldviews but recognised for its particularities. In the four years since Woodside Ltd. withdrew from the project, it has become evident that this approach facilitated economic and political decision-making that was better informed and catered for both technological development and environmental preservation. Without the protest of the Goolarabooloo and their collaborators, the LNG facility at Walmadany would have been built. Meanwhile, the project has become redundant since a floating LNG facility is likely to be used—if the gas from the Browse Basin is extracted at all, given the subsequent drop in oil and gas prices. From this perspective, not only would the environment and what it holds have been destroyed for no reason, but Woodside Ltd. might well be bankrupt by now.

Notes

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2. See Kohl et al. (2016). Further information is available via: http://www.berlinerfestspiele.de/de/aktuell/festivals/gropiusbau/programm_mgb/veranstaltungsdetail_mgb_ausstellungen_137493.php (Accessed 03 December 2015).
3. Personal interview with female informant in her mid-40s and member of the Goolarabooloo community, Broome, in 2012.
4. I would like to thank Stephen Muecke for pointing this out to me.
5. The conservation history of the trail spans from a recommendation to be included in a National Park in 1962 to the current listed land use by the Broome Shire that recommends it as a reserve for conservation and Aboriginal heritage. See for example: West Australian Academy of Science sub-committee of the Australian Academy of Science committee on National Parks. *National Parks and Nature Reserves in WA*. University of Western Australia, 1962. Various Environmental Protection Authority (EPA) Reviews of Conservation Areas on the Dampier Peninsula conducted between 1971 and 1980; Burbidge A. A., McKenzie, N.L., Kenneally K.F. *Nature Conservation Reserves in the Kimberley, Western Australia*; Department of Conservation and Land Management, 1991. Shire of Broome, Department of Land Administration, WA State Cabinet. *Waterbank Structure Plan* 2000. Shire of Broome, 2000. Broome Planning Steering Committee. "Report," 2005, accessed January 28 2013, http://www.planning.wa.gov.au/dop_pub_pdf/broomesteering_commfinal.pdf.
6. One example of such controversies is presented in the discussion surrounding the 2012 Boyer Lectures given by Marcia Langton.
7. Further information about the outcome of "Operation Kimberley Miinimbi" is accessible via http://www.seashepherd.org/news-and-media/2012/09/12/operation-kimberley-miinimbi-summary-and-launch-of-campaign-film-1437 (Accessed December 15, 2015).

8. The video is accessible via the URL: https://www.youtube.com/watch?v=qIotH6GqvQI (Accessed January 22, 2016).
9. Extracts from voice recordings 3 and 4, 2013.
10. Extracts from voice recording 5, Fig. 7.6 and 7.7, 2013.

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CHAPTER 8

Naturally Occurring Asbestos: The Perception of Rocks in the Mountains of New Caledonia

Elisabeth Worliczek

Introduction

New Caledonia is diverse in its ethnic and cultural composition. In 2014, this French Overseas Territory located in the South Pacific had approximately 268,000 inhabitants, with 40 per cent of the inhabitants declaring that they belong to the indigenous Kanak community; 29 per cent are of European origin and approximately 9 per cent belong to the Wallisian and Futunian community; the rest declare that they belong to other ethnic groups.[1] The non-Kanak communities live mainly in and around the capital, Nouméa, and in a few other villages across the "Grande Terre", New Caledonia's main island. The Kanak community is present all over the territory. Without taking into consideration the full complexity of the cultural Kanak landscape, the division into eight customary areas (aires coutumières) and 28 Kanak languages gives an idea about the fact that on these Melanesian islands, there is not one homogeneous indigenous culture

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but a diverse array of different cultures. This diversity is expressed through different aspects of life, the history, the immediate living environment, practices and perceptions of each individual and the social group as a unit. Therefore, the views described and analysed in this chapter are based on information gathered from indigenous Kanaks; however, they cannot be interpreted as "the representative Kanak view". The presented knowledge was acquired in the context of a specific study, which was conducted in one tribu[2] in the Northern Province (customary area of Paicî-Cèmuhî). Furthermore, the participants of the study who voluntarily shared their knowledge did not get tired of pointing out that they share their individual knowledge, which is sometimes representative of their social group or clan, sometimes not. It is important to emphasise this fact because in this cultural context, one is careful with claiming possession of information or knowledge; speaking for a group of people is only acceptable if the social constellation and hierarchy correspond to the given context. The conclusions of this chapter thus do not claim to be representative of "New Caledonian" perceptions; they are based on the courtesy of a number of individuals who were willing to share information and who took the time to explain their concepts in detail. This allowed the author to make an empirical contribution to advance the understanding of rocks in this particular setting.

Naturally occurring asbestos (NOA) is an aspect that is usually not associated with the public debate about the health implications of asbestos. Nevertheless, it is an issue that plays a major role in New Caledonia, which is not only known for its white sandy beaches but also for its thriving nickel mining and refining industry. Asbestos has been frequently cited in the media (in France,[3] Germany[4] and elsewhere) because of its damaging effects on human health. In the past, it was often used as insulation material in buildings. This type of use is nowadays rejected and buildings where there are traces of asbestos are renovated in order to avoid human exposure.

In New Caledonia, this aspect is the subject of an ongoing public debate, also in the context of nickel mining operations and related exposure (see e.g. the Labour Party's decree, February 2016,[5] or the first case of compensation claimed from the Territory of New Caledonia and the Republic of France by a mine worker in 2014[6]). There exists an exhaustive analysis of the existence of NOA in New Caledonia by Francine Baumann (2010). Asbestos found as NOA takes shape in the form of serpentinite and chrysotile; that is to say, it is a mineral structure that is naturally part of the New Caledonian soil. The layers that contain nickel are frequently close to these forms of asbestos. The issue of potential health implications of asbestos in

the context of the mining industry will not be discussed in detail here[7]; the author rather focuses on exposure of the local population in everyday life in a non-mining context.

On the Grande Terre, NOA comes to the surface only in certain areas. It is not considered a toxic material in itself, only when it is on the surface of the soil and thus prone to create dust, which enters the human lungs easily. Hence, the danger of exposure to asbestos is not evenly spread across the entire population. Wide areas are covered by ophiolitic rocks, which is also where the main nickel resources are retrieved from. The area of interest for this research is located in the municipality of Poya, located in the Northwest of the Grande Terre. The study was conducted in Gohapin, a tribu in the North of the main mountain chain. Gohapin can be accessed via the Poya plain and is nestled in a little valley on the Western side, just beneath the peaks of the mountains.

In the early 1990s, it became obvious that New Caledonia has an unusually high occurrence of pleural cancer (mesothelioma) (Luce et al. 2000). In the New Caledonian context, the source of contamination was estimated to be the practice of covering the walls of traditional houses with a particular type of clay, called pö,[8] which is mostly made from dust coming from tremolite-bearing outcrops. This conclusion was followed by an initiative that systematically destroyed these pö-clad houses, which were mainly found in the tribus of the Grand Terre. However, the number of cases of pleural mesothelioma continued to rise over the following years (Baumann 2003).

Another possible contamination path is contact with NOA in its natural environment. Following this link, the DASS (Direction de l'Assistance Sanitaire et Sociale, the Direction of Health and Social Affairs—Public Health Department[9]) developed a prevention programme related to naturally occurring asbestos, based on leaflets and occasional workshops. However, it was soon established that these programmes did not prove to be particularly successful in the mountain valleys of New Caledonia's Grande Terre. It was concluded that in the New Caledonian mountain tribus, the understanding of the environment must be intimately linked with the local Melanesian culture. The DASS took pre-emptive action and asked the author of this chapter for an anthropological analysis to better understand the interaction between the local population and the environment, more particularly the perception of "serpentinite" (rocks that are composed of asbestos fibres).[10] The author, having specialised in environment-human

interactions and associated perceptions, took up the task to investigate this case on behalf of the DASS in 2011. Hence, this contribution to the book is based on a research project that developed in an applied context. Initially, the research question was how people classify rocks in the local context; this was supposed to lead to the information required by the DASS—an understanding of what choices people make regarding the NOA environment that they supposedly live in, and which worldviews are associated with these choices.

However, at an early stage of the preparations for the project, it became obvious that if this classification of rocks was the only aspect investigated, the results may lack depth; a holistic approach would be necessary. Environmental concepts can only be understood within the complex realm of other aspects of life; the concept of definitions and rules of social interaction and health play a particular role in this context. In order to find answers, the researcher and the DASS agreed on a complementary approach combining rock classification with wider concepts of life.

Taking into consideration the question of ontologies discussed in this book, it is important to point out that in traditional Kanak culture, a distinction between nature and culture—hence a distinction between the physical and the social environment—does not exist as such. This argument will be the guiding principle throughout this contribution. However, even if this distinction does not exist, a rhetoric of distinction found its way into the daily use of language and has resulted in an emic use of French words. This mechanism of integration is considered to be a European concept that was imported with European language. Since French is the language people use to communicate with each other when they do not belong to the same linguistic group (and frequently the main language used by the younger generations), the distinction between nature and culture is common when people describe interactions with the environment. However, when conversations become in-depth, and in particular when they touch on "metaphysical" connections (metaphysical reflects the emic use of metaphysique, describing aspects of life that are not explained through a Cartesian worldview and that often make reference to the ancestors or powers not visible to everyone), this distinction begins to blur and a wider, holistic concept of life and human-environment interactions begins to surface. In this sense, whenever the expression "nature" or "culture" is used in this article, it literally reflects the study participants' choice of words. The same is true for other expressions, such as "symbolism" (representing the association with an object, power or being that is not necessarily obvious to the outsider),

"beliefs" (convictions concerning matters of fact that are not shared by everyone) or "Western" (the definition of ways of life, worldviews, values and behaviours that have been imported from outside the Pacific since the beginning of French colonisation and evangelisation). Even though some of these expressions have been the subject of debate in anthropological literature, the author tries to stay faithful to the words that are originally used to describe concepts used on a daily basis in the local context.

Gohapin was chosen as the study area for two reasons: the setting fulfilled the geological requirements given the number of spots where NOA actually surfaces; this indicates that the local population is exposed to some degree and that there must be a certain general opinion about these outcrops. Furthermore, the people of Gohapin have proved to be valuable partners in environmental concerns in general and have been co-operating successfully with the World Wildlife Fund (WWF) for the past seven years.[11]

The inhabitants of Gohapin are exclusively of Kanak origin. This is an important aspect to consider, since the local population in itself shares local concepts and interpretations that are rooted in the Kanak worldview. However, this worldview varies in its details among the inhabitants of a tribu depending on a person's individual environment and experiences. Local life is typical for this kind of village in the Northern Province—not every adult in the village has a regular job with a salary; local agriculture and hunting play an important role. However, the nickel mining sector—the driving force in New Caledonia's economy—is the most important source of employment. There are several mines in Gohapin's surroundings and the Koniambo nickel processing plant attracts a lot of employees, many from Gohapin. This is an important aspect to take into consideration; the ambivalent relationship between this source of economic wealth on the one hand and the destruction of the (local) environment on the other hand has been a subject of interest for research (Horowitz 2001, 2002; Kowasch 2012).

In order to fulfil the requirements of the DASS (as described above), the author chose a two-step method: first, qualitative interviews were conducted with the inhabitants of Gohapin. In this task, the author was assisted by one of the Elders of Gohapin, Edouard Poinrin-Hibou, since this tribu does not have a designated chief at the moment. Customary guidance was necessary in order to create a setting of mutual trust with the participants. The selected interview participants were all inhabitants of the tribu, including representatives of both the older inhabitants, who tend to spend a

lot of time in the local environment, and of the young and professionally active population. Furthermore, some interview participants were chosen because of their reputation for having a particular kind of knowledge, such as a special connection with the world of the spirits and the ancestors. There was a lot of space for discussion around concepts of history, the environment, the evolution of society, the local vision of life, concepts of health and illness, how the rules of the universe are perceived and so on. This complementary information was necessary to place the results into the right cultural context.

In the second step, the participants were asked to identify different rock samples (13 altogether) that can be found in the region around Gohapin. There was a large range of different colours, shapes, ages and specific features. Participants named them in the local language and shared associations, the history or usages of a specific kind of rock. Most of the names for the rocks displayed were in Paicî.[12] Some of the rocks' names do not have a meaning in Paicî and so probably originate from another Kanak language, for example from Aijë, the language spoken in most of Poya's other tribus. The name in Paicî is often self-explanatory and gives an insight into the main criteria of classification. The combination of a linguistic and a cognitive approach was thus used to retrieve the essence of a common understanding regarding the interaction with rocks in general and with NOA in particular.

Given the New Caledonian nickel mining context, minerals have played an important role over the last hundred years. Rocks have been part of the public discourse for a very long time; they have been given special attention in the fields of economy, research, politics and technology. However, in pre-colonial times, they occupied a different, though still important, place. Through the lens of the issue of NOA, this contribution analyses how the Kanak of Gohapin articulate the scientific geological concepts of rocks—the dominant public discourse over the last few decades—and indigenous concepts. The latter do not only classify rocks but also give them a meaning which, in some cases, can embody other elements or concepts that go beyond mere physical appearance. However, these two concepts—one defined by the scientific geologic approach and the other by the indigenous Kanak approach—do not exclude each other. They are both used by the local population, depending on the context. In Kanak culture, there is a certain fluidity between systems; it is the context that defines the right concept to use.

This contribution covers several aspects of NOA and rocks in Gohapin: Firstly, rocks and their perception within the local Kanak society will be investigated, including aspects that are taken into consideration when classifying them locally. This reveals that scientific geological criteria are partly used, but it also shows that the classification goes beyond these criteria and follows a different pattern that is rooted in the land and in the characteristics or personality given to a rock. Secondly, there is a focus on rock names in Paicî, the local language. The linguistic aspect is not explored in-depth but is briefly presented through certain examples to explain the way in which rocks are given characteristics through language, and how these characteristics unveil patterns of classification. However, the author pays particular attention to the wërë, which is the local name for serpentinite and which is of special interest in this context. Furthermore, the meaning of being physically "ill" in the traditional definition of Kanak society will be contextualised. This is essential to understand certain perceptions regarding the interconnectedness between rocks, humans and the surrounding elements. Another important point is the historical migration in the area around Gohapin as it contextualises certain explanatory models for lung disease, such as mesothelioma. Finally, aspects of a modern society in transformation and its implications regarding rocks and illness are considered.

A presentation of the emic concepts related to scientifically recognised concepts (in particular of geology and health) will give the reader a better understanding of how the people of Gohapin, who are well aware of these sometimes complementary, sometimes contradictory worldviews, integrate different concepts in different contexts.

The Traditional Meaning of Rocks in Kanak Culture

New Caledonia has been the subject of extensive scientific geologic analysis mainly due to ongoing mining activity. The presence of petroglyphs has been analysed (Frimigacci and Monnin 1980; Monnin and Sand 2004). Extensive archaeological digs in New Caledonia, the birthplace of the Lapita culture, have made it possible to reconstruct aspects of its history (see Kirch 2012; Sand 2014). However, there is a lack of literature addressing the meaning of rocks in the Kanak environment—partial evidence is spread across writings from several authors, like Maurice Leenhardt (1937),

Alban Bensa (2000) and Christophe Sand (2014). Francine Baumann (2010) also embeds her research on NOA in the cultural context. Only a few scientific contributions touch, rather marginally, upon the place of rocks in Kanak culture, and even less on serpentinite.

When talking about the meaning of rocks, current societal transformations should be considered. From a Kanak perspective, a rock "is" something. Some of these meanings have been more or less abandoned, while others continue to be used and resist the influence of Western concepts. A person can, for example, work in the nickel mines and have a scientific geological understanding of rocks. At the same time, this person can feel embedded in the Kanak "metaphysical" cosmos, with its corresponding worldviews and concepts. Generally speaking, most people refer to different concepts depending on the context.

This is also true for rocks, as they might be of major importance to one person and have lost significance for another. The crucial difference here is the ability or the will to connect with ancient times; however, some practices (e.g. burying a rock with a yam) that transmit concepts of how the visible world interacts with the invisible world tend to become folklore—particularly since missionaries banned many of these practices in the past. Nevertheless, a lot of people are familiar with basic indigenous concepts; the degree to which an individual uses these concepts defines his or her context. Rocks can be considered sacred for different reasons, some of which are common knowledge, while others are more obscure. Some rocks (or places) are considered sacred or taboo without people knowing why. There are several contexts in which rocks play a particular role; many have their roots in the Kanak spiritual world. The list of uses and meanings of rocks is non-exhaustive.

Clan Totems

Some clans have a rock as totem: a certain type of rock represents a clan. This is sensitive information; while this ownership of a rock is not necessarily a secret, people not belonging to a certain clan do not voluntarily talk about that clan's totem.

Yam Field Stones

A rock can be buried in the field during the period when yam is planted in order to increase fertility. Such a stone has to be treated in advance with certain substances (médicaments kanaks) by a voyant (who is, in this context, someone who can "see", e.g. the future, the ancestors, fertility, an

illness, the source of a malediction) so that it can redistribute the received "energy" into the soil.

Taro Pits

A rock will lead water through a complex irrigation system in taro pits. These irrigation systems are very elaborate and serve their purpose extremely well. In the past, it was said that water is like a person who finds his or her way. Water runs at a certain speed downhill; hence, a rock has to be placed in its way so that the water can "take a rest". Consequently, the water flows around the rock and is able to "breathe" before it continues its voyage. In this case, the kind of rock that is used is of no importance; it is the material that counts—a piece of wood for example could not fulfil the same purpose. This is one of the cases where rocks and water are perceived to have a privileged relationship.

Magic Rocks

Every rock can carry positive or negative powers; a rock can, for instance, attract misfortune. For example, a voyant can put a spell on a rock that represents the totem of a certain clan; a member of this clan thus suffers the consequences. For this purpose, a rock is treated with plant substances or other liquids that will direct this positive or negative power. Rocks can also be associated with other types of power, for example with a hunger for war, as taught in the story of the belligerent Goodu (Bensa 2000: 27).

Messenger

In the past, certain rocks were used as messengers. Again, it was a voyant who treated a rock on a mountain crest with his magic so that the people down in the valley would hear the message.

Other "Beliefs"

In Gohapin, one is not supposed to throw a stone above a house because, if it falls on the roof, the inhabitants will have to "carry the weight" in their daily lives. If, for example, people suffering ill health are living in the house, the rock will make them even weaker. This act can also be dangerous if the stone thrown is the totem of a clan—it wants to be respected. Disrespect attracts misfortune. This conviction does not exist on the East Coast of the Grande Terre, where people even put stones on the roofs on purpose—a practice that is unimaginable in Gohapin.

Traces of the Past

There are a number of contexts from pre-European times where rocks played an important role: they were used as anchors for dugout canoes, as necklaces and jewellery, for megalithic monuments, for making axes or tools cut out of stone flakes, for petroglyphs, as magic stones for fields or other usages, in pottery or in the form of red clay for the cladding of huts.[13] Some of these uses are still common nowadays, such as the use for jewellery or axes.

Kanak Rock Classification

The participants of the study classify rocks according to certain criteria. In this chapter, these criteria will be introduced in order to show the aspects that are important when designating a rock.

Rocks in the Area of Gohapin

Around Gohapin, there are three main types of rock:

Shale is the dominant mineral around Gohapin. In the local language, it has a lot of different names depending on its state. Usually, the most frequent association with **limestone** in this area is the impressive limestone formations in the valley leading towards Gohapin. In other contexts, limestone is perceived as "regular rock". There are several **serpentinite** outcrops in the area around Gohapin. Serpentinite is easily identified as such and evokes further associations which will be developed later in this text. There are other minerals (e.g. nickel, quartz and tremolite, which is a member of the amphibole group) that are known by the population; some are found in the immediate environment, some further away.

The Nature of Rocks

Contrary to the Western concept of stone, rocks in the Kanak world are perceived as living matter, similar to plants or animals. They transform and move permanently; they grow and they have a life of their own. This is observed on a large time scale, longer than a human life. This perception of time is similar to geological time scales in the scientific sense. With regard to the ontological debate in this book, such a perception represents an opportunity to take a step back and analyse the issue from a meta-perspective. The

contrast between a Western geological approach and an indigenous approach that is based on different reasoning is quite stark; however, the results are similar regarding time scales of rock transformation: both approaches agree that these transformations far exceed the human lifespan. This complementary approach to time and life cycles in Kanak culture and Western science can also be observed in other contexts in Oceania, for example the expectation that even when climate change happens, a "balance" (équilibre naturel, considering that there is a state where elements or forces are in a state of balanced power) will be restored on a big time scale (Worliczek 2013: 385f). However, these similarities cannot be applied to other aspects, as will be shown further below.

As living matter, rock draws its energy from three different sources: The first source of energy is **water**; certain rocks attract water. This is the case for serpentinite, which "attracts" water with its shiny, liquid-like surface. Water is also considered living matter—like a person who follows his or her needs and sometimes follows paths that are in contradiction with physical laws. As mentioned above, sometimes rocks are placed in taro pits to change the water flow to slow down the water and to "make it breathe". Oral tradition also says that the ancestors were able to make water sources flow with the help of "magic stones" that attract water (e.g. the sources of the Netchaot or Poindimié rivers). In Kanak tradition, water sources are often considered taboo out of respect for old practices. Water can also contribute to processes of creation or decay and disintegration. The second source of energy is the **heat from the sun**; it charges the rock with energy. One example of this logic would be the mines in the Grande Terre's mountain chain that are oriented towards the sunset; this is where the mineral receives its energy in abundance. The third source of energy is the **cold from the moon**. The moon is in opposition to the sun and cools down the rock. It also contributes to the cycle of enrichment of the mineral.

The rocks do not need to be directly exposed to these elements; for example if they are deep down in the ground, they can draw this energy indirectly. However, shiny surfaces have the tendency to "turn" towards the light of the sun or the moon. One participant for example explained that if a rock is dropped, the shiny side will try to turn towards the sun during the drop.

As every rock has a life cycle, the aspect of transformation is crucial. It is necessary to know the various stages in the life cycle of a certain rock, because it is the state of transformation and its features that will determine the name that is given to a rock. A young rock is generally considered hard

and firm; whereas an older rock, being more advanced in its life cycle, will start to decompose and lose the features of its youth. It cracks more easily and is less resistant to external forces.

The Four Main Criteria of Kanak Rock Classification

In New Caledonia, just as in other places in the Pacific, people classify the objects around them according to criteria that vary substantially from the Cartesian worldview. A number of criteria influence the perception of an object, such as its origin, its consistency or texture, its position in relation to another object, location, the process of its creation, its exposure to other objects, its interaction with other objects, the number of elements that form the object and stages in the processes of creation and decay. This logic also applies to rocks, which constitute a central element in the surrounding environment. The very same rock may have different names, depending on the feature that is chosen as an identifier. The latter can be a rock's state of transformation, its colour or the place where it was found. Similarly, the chosen approach can determine the name:

The name "törimätöri",[14] for example, can describe rocks that do not have the same name according to geological classification. However, they have one common feature: the fact that they are composed of several elements. A rock described as törimatöri often corresponds to quartz, and at the same time defines a "rock that is only found at the seashore, not in the mountains".

Hence, its shape (composition of several elements), geological name and the location where it can be found determine its designation or name. This example shows that a given name depends strongly on the context of observation. A thorough analysis of the local way of classifying rocks in Gohapin has concluded that there are four criteria that are usually taken into consideration when naming a rock:

The Shape (Form, Appearance, Colour)

This criterion shows that a definition depends heavily on which aspect is considered at first sight. This can be the form (the shape of the entire rock, particular agglomerations or holes on the surface, the weight), the appearance (a shiny or flaky surface, how the surface reflects light, patterns in the rock) and the colour (the hue of the rock and the depth of the colour). Furthermore, the colour can be an indicator of the age of the rock (e.g. the wërë) and its environment (e.g. the petü mîî).

The shape gives rise to further indicators: It can evoke associations with something else (e.g. the use in yam fields: the shape will be similar to a yam tuber); it can be close to the final shape for usage (e.g. the atü budu, which is used as a sling stone); or it can be used to express the collective quality of a rock (e.g. the nä-parawé atü which "flakes like skin", or the törimätöri which is an aggregate of smaller rocks).

The Place of Provenance

The place where a rock is found can be crucial—sometimes a rock will literally carry the name of a place (e.g. atü gorodë). Gohapin's inhabitants know which rock can be found at a particular location, deposit, outcrop, mountain or river. There are certain zones that are distinguished when defining rocks. Often, the place of provenance is cited with the name in order to specify its origin: the river (atü pagöö, atü görö, atü nä-jawé), the mines (petü, atü gorodë), the mountains (atü görö-jàa), the seashore (quartz, silica) or the soil (atü puu).

The opportunity to visit certain places does not often arise; given the mountainous landscape of Gohapin, people are generally able to recognise and name stones that originate in the mountains or the rivers but not at the seashore, which is not part of the immediate environment. Through communication with people living on the East coast of the Grande Terre, the people in Gohapin (which is located on the Western side of the mountain chain) are aware that the rocks on both coasts are different—a fact that corresponds to geological evidence.

The Use

This criterion is defined by the final use of a rock. It makes reference in particular to the use of rocks in the past, since a lot of them no longer serve their initial purpose. It is thus very likely that in the past, the designation of rocks was more closely linked to their use. This hypothesis is also supported by Maurice Leenhardt's writings (1937: 54): he collected a song from the Houaïlou region, which was already considered ancient in Leenhardt's days. In this song, several rocks are named, including their characteristics and their different uses. Leenhardt confirms that "Rocks are known with their names, their different characteristics, their technical qualities and their place in the human environment" (1937: 54). It can be assumed that nowadays, almost 80 years later, a lot of these uses are not common practice anymore. Nevertheless, there are traces of these old uses and they are still a criterion for classification. Some examples of this kind of designation are:

Atü görö:	This is a rock that is used for heating up the traditional earth oven (bougna); it only cracks once in the hot fire, unlike other stones that are rather unpredictable.
Atü wërë péëë:	Here the focus is on its cutting properties. Very likely, it was used as a knife-like tool in the past.
Atü peata:	This rock is used to grind knives; contact with water facilitates the process, but it can also be found away from water.

Geological Criteria

The above criteria, which are embedded in the immediate Kanak context, do not apply exclusively: over the last 100 years, other criteria have found their way into the Kanak system of rock classification. In New Caledonia's Northern Province, nickel mining is the main source of employment and many of Gohapin's inhabitants work in the mining sector. Even those who are now retired worked in the mines and in related activities for 40 or 50 years. Through their professional activities, which were closely related to minerals, they acquired scientific geological knowledge, mainly through their contact with geologist co-workers. As a consequence, they developed specialised knowledge in certain geological domains. This knowledge sometimes superposes traditional knowledge of rocks; sometimes these two approaches blend together or complement each other. Often, these geological criteria are taken into consideration parallel to other criteria. However, sometimes people simply use the French name to name rocks (e.g. Serpentinite, Trémolite, Quartz, Silex, Calcaire).

Apart from the scientific geological definition, there is also a "traditional approach" that takes mainly two aspects into consideration: Firstly, there is the aspect of transformation. Like geologists, people in Gohapin focus on the life cycle of a rock. For example, serpentinite rock that is considered "young" exhibits certain characteristics (dark colour, hard and resistant to external forces). These characteristics will change over time: the rock will become whiter and will start to decompose. Secondly, there are those characteristics that focus on aspects like colour, the tendency to crack in fire, and hardness.

It has to be pointed out that all four criteria are coherent in the local reasoning; one rock can be described differently depending on the context. If the interlocutor is local, he or she will not be confused when one or the other criterion is emphasised to name or describe a rock.

Naming Rocks in Paicî

During the course of this project, one of the participants brought a notebook that contains, among other elements, a list of rock names in Paicî, the language mainly spoken in Gohapin. It was difficult to trace the writer of this list, but it was common knowledge that these names were immortalised by prior generations. Nowadays, some of these names can still be identified by Paicî speakers, but others have lost their meaning. There is evidence that the unknown names originate from other New Caledonian languages[15] but the people of Gohapin regret that, unlike in the past, people nowadays are not as multilingual as they used to be. However, most of the rock samples shown to people in the context of this study could be identified, named and explained.

The analysis discussed above shows that there is a clear system of rock classification: There are certain criteria that have to be respected; however, the priority of these criteria can change according to a given context. Various factors can affect this context; it is unlikely, for example, that people will use the same name when speaking in Paicî or French. Likewise, the description will vary if the interlocutor is from outside the Gohapin region—the place of provenance will not be stressed. However, these four classification criteria apply systematically and define a rock. Certain rocks are placed in sub-categories, which are often linked to the colour. This adds another descriptive layer to the basic identification and allows for greater precision. Nevertheless, these criteria can be confusing for an outsider since sometimes, the traditional approach is similar to the scientific classification, whereas at other times different criteria apply that do not correspond to this system, as will be shown in the following section.

The Wërë (Serpentinite)

"Serpentinite" in the Paicî language is translated as "wërë" (pronunciation: ouarah-euh). In the course of this study it became clear that this rock has a particular place in the local society. It is a rock that is relatively well known and most people have heard of the potential dangers that are linked to it. In the past, this rock was identified and given a number of characteristics.

When shown a sample of serpentinite, most of the participants contributing to this study could identify this rock. Of all the samples shown, it was the rock most often identified. The location of serpentinite outcrops is well

known in the surroundings of Gohapin, particularly the outcrops that are visible along the road towards the village. Nowadays, it is difficult to say if this awareness is due to the destruction of traditional houses with tremolite-clad walls, or if serpentinite's special character makes it easily distinguishable from other rocks.

Vocabulary Used to Describe the Serpentinite

"Serpentinite is the name given to rocks in order to describe their fibrous mineral morphology; this is widely called 'asbestos'. In New Caledonia, there are two groups of this kind: the 'serpentines' and the 'amphiboles'. Tremolite is part of the amphiboles, but there are also serpentines like chrysotile. Both serpentines and amphiboles can be found in different stages of their lifecycle; hence they can look very different depending on their current stage." (This is a shortened and simplified geological definition of serpentinite, given by Pierre Maurizot, DIMENC.[16])

Serpentinite, here also designated as NOA, is at the core of this study. Hence, it is essential to ascertain what exactly people mean when they talk about serpentinite—in rural Kanak villages, the use of the word "serpentine" is not always clear to an outsider and is used in different contexts:

Nickel: very often, the word "serpentine" is used to describe a rock that contains nickel. This does not correspond to the geological definition. Very likely, this association is made because nickel and serpentines are usually located close to each other.

Tremolite: the colloquial language uses this word to collectively describe "white clay" (la terre blanche; pö in the Aijë language, puu pwaa in Paicî). From a geological point of view, the clay used to whiten traditional houses was composed of tremolite and other mineral substances, depending on the location of the tribu (Baumann 2010: 111).

Asbestos: this word is usually used when talking about the white clay used for traditional houses and less often in the context of NOA.

Wërë: this word systematically applies to rocks that would be geologically defined as serpentinite.

In any given cultural context, it would be difficult for a lay person to identify the exact differences between the various types of serpentines and amphiboles. It is thus remarkable that in Gohapin, people have developed their own system of naming rocks. This system is influenced by geological terms; however, the description does not always correspond to the use of words in geology and can thus be a source of confusion if people have different backgrounds. It can be assumed that these differences in terminology have been a major source of misunderstanding when people foreign to New Caledonia interact with locals.

The Perception of the Wërë's Nature

According to participants, the wërë's shiny surface is associated with water, in the sense that the rock attracts water. When confronted with this association, geologist Pierre Maurizot (DIMENC) agreed: from a geological perspective, the serpentinite lodes are impermeable; thus, water seepage stops at this point and creates a humid layer.

The participants stated that the wërë is very hard and dark when it is young, and with age it becomes lighter and more fragile. The wërë is a rock that is stronger than other rocks—it grows in the soil and destroys them. If one wants to use the wërë to make tools (as was frequently the case in the past), one has to dig deep through a layer of old wërë, which is white and fragile, to reach the layer of strong, young wërë beneath.

There is also a type of vegetation that signals the presence of wërë. The easiest to identify are the pandanus, which grows close to creeks, ironwood and gaiac trees. In the past, people never made their gardens in areas where wërë was found. It was common knowledge that these areas were not well adapted for planting since the soils were not fertile. Likewise, people avoided establishing their settlements in wërë areas, which were considered unsuitable.

Maurice Leenhardt (1937: 58) states that in the area around Houaïlou (which is located right on the Eastern side of the Grande Terre's mountain chain, not far from Gohapin), the "serpentinite or jade" is called "the mother of rock", without giving further explanations for this name. Given the Kanak cultural context, it can be assumed that this name makes reference to the particular role of this rock, which was used to make axes (for common or ritual use). Again, in this context there is a lack of distinction between "serpentinite" and "jade". According to Dominique Cluzel, geologist at the University of New Caledonia, the main source of the rock used

to make axes was located in the North of the Grande Terre. Nevertheless, it cannot be excluded that other forms of very hard serpentinite from other places were used for similar purposes. This would indeed correspond to oral traditions.

The Perception of Illness and Its Relationship with NOA

As already mentioned, it is impossible to understand NOA and exposure without taking into consideration local concepts of illness. In the traditional Kanak perception, the causal relationship between high-risk behaviour (e.g. staying in a cold place, eating poisonous food, breathing in asbestos fibres) and illness as a consequence is not binding. Illness can have social causes: for example, wrong social behaviour or a curse that was cast by someone else. Good physical and mental health is the result of the right balance between different metaphysical powers; a person's behaviour has the power to support the social balance. Consequently, "bad luck", like illness, is perceived as a disruption of the vital balance (see also Baumann 2010: 39f and Houchot 2008: 70f). Powerful ancient spirits guide this interdependence between nature, society and the individual. Hence, if there is an imbalance, this does not only affect one person but also his or her environment (Salomon 2000: 51). Given this reasoning, the conclusion that NOA may cause illness directly is not always accepted as a viable reason.

In Gohapin, a number of participants in the study had doubts that NOA is the only reason for lung disease (see Baumann 2010: 173 who supports this approach). This is the case in particular for the destruction of traditional Kanak houses that were clad with mud containing tremolite.

People's reasoning is as follows: Past generations lived in these tremolite houses their whole lives and they did not get ill. The systematic destruction of these houses was accepted but without the profound conviction that it was necessary. The current houses, which were set up as a replacement for the old ones, are perceived as not being adapted to the population's needs: They are not adapted to the New Caledonian climate; the quality of life inside is perceived as inferior compared to the old houses. This observation is part of a wider set of examples where people feel that the balance of life in the tribu has been disrupted by external factors.

This perception seems to be confirmed by the fact that to date, there is no known case of asbestos-related lung disease in Gohapin; hence, the causal link advocated by scientists is not evident. The Kanak concept of human life, where humans are intimately linked to nature, is not in favour of such a

conclusion. For the participants, there are too many contradictions between their own observations, scientific statements, which are not always clear either, and different actions led by the administration that do not always make sense to the local people.

According to this reasoning, two causalities in this context explain the relationship of NOA and illness locally. One is the construction of roads, a symbol of colonial power. The construction of roads was imposed by the outside (e.g. engineers, scientists, governments) and led to a disruption in the Kanak system: one of the consequences (apart from other consequences that may be considered as good or bad by the local population) was the creation of dust containing asbestos fibres, a problem that did not exist before. The second causality concerns illness as the consequence of wrong social behaviour; people believe an action can have a kind of malediction as a consequence. These bad choices may date back a long time; the descendants today suffer the consequences, such as illness. People in Gohapin see no reason why this mechanism should not be applied to lung disease. Hence, people assume that the ancestors avoided exposure to serpentinite to avoid getting ill. Kanaks in ancient times are said to have had powers and knowledge that are lost nowadays. Rooted in this knowledge, they avoided settling in such dangerous places.

In this vein, they believe the current way of life weakens people, as observed in other places in the Pacific, for example in French Polynesia (Worliczek 2013: 434f). Imported food, the use of cars, alcohol, tobacco, a lack of respect for taboos; these behaviours are said to be the reason for the decline in physical strength of the Kanak people, renowned for their strength in the past. This "loss of power" and the conviction that the Western system has imposed elements that disrupt the previous balance are considered valid reasons for an increase in illness, be it lung disease, diabetes or other common illnesses.

Given this reasoning, the population does not see a link between asbestos fibres and illness itself; rather, it is human behaviour that is perceived as a catalyst for illness. As explained above, it is seen as a sort of "punishment" that is the result of either wrong social behaviour or a disturbance from the outside. Either way, the consequence is that people are no longer able to make the right choices and therefore expose themselves to risks (in this case, NOA). However, the negative consequences can affect not only individuals but also their kin. Thus, humans are entirely at fault for illness, and the consequences become visible when the balance is disturbed.

The concept of illness is changing with the transformation of society in general. New Caledonia has experienced a massive change over the last 150 years, and this has impacted on the perception of illness. The first missionaries brought new concepts of health and illness with them, and nowadays all people in New Caledonia have access to medical services. Young people tend to consult traditional healers less and more often turn to Western doctors. This indicates a change in approach to illness. It does not necessarily mean that the Kanak approach to illness has lost its power but rather suggests an orientation towards a transcendent medical system that is structured differently. However, the fear of malevolent powers is still present, and sometimes traditional healers or voyants are consulted in tandem with Western doctors.

Retracing the Migration History of Gohapin and Montfaoué: The Reasoning Behind the Place of Settlement

It is not only the inevitable link between exposure and illness but also other explanatory models that back up the logic concerning who is affected by asbestos-related disease: one of these refers to the geographical setting of a settlement. As an example, the research project investigated the choice of location for settlements, which is very likely influenced by the (non-) existence of NOA. Around the area of Gohapin, there is a high presence of serpentinite. However, at the end of the valley where the actual village of Gohapin is situated, the mountains are part of the main mountain chain of the Grande Terre and they do not contain serpentinite. The inhabitants of Gohapin live mainly in the valley; however, their land extends into other areas as well. People usually go there to hunt deer or for other activities. Therefore, Gohapin's inhabitants are not regularly affected by serpentinite in their daily lives.

According to oral tradition, serpentinite-affected places were not regularly inhabited in the past. The landowner clans of these areas explain that, to their knowledge, there are no traces of the traditional round huts that usually indicate the presence of pre-European settlements. The end of the valley, where there is no serpentinite, seems to have been inhabited. There are a lot of local stories that make reference to traces of settlements in the mountains; oral history relates events in these zones that date back a long time.

The elders of Gohapin interpret this correlation with reference to old times, when the powers of humankind and nature interacted differently from today. In those days, the clans' voyants were aware that these areas were "bad". Consequently, no settlement was located in areas considered sacred, taboo or simply bad for a number of reasons—reasons often, but not exclusively, linked to historical events that took place in certain areas.

The Case of Montfaoué

It is remarkable that in Gohapin, this correlation between traces of settlements that exist exclusively in serpentinite-free zones seems to be very precise: only the village of Montfaoué (not far from Gohapin) is affected by mesothelioma in the Poya plain (Baumann 2010: 204). According to oral tradition, Montfaoué has a special history with recent migration movements from the area of Houaïlou. In the context of this study, it was not possible to investigate the history of Houaïlou in-depth. It seems that the reason for the people migrating from the Houaïlou area was linked to conflict. This could, in traditional Kanak logic, have attracted bad spirits that led the people in question into an area that is not convenient for them.

On the Grande Terre of New Caledonia, there are several villages that are located on serpentinite outcrops. "The surface of the serpentinite outcrop in the Montfaoué area is one of the biggest in the entire mountain chain on the Grande Terre" (Baumann 2010: 204). Given the concept of illness and health explained above, it would be interesting to trace this history to discover the reasons that led to the location of the settlement.

In Gohapin, people are not entirely convinced that the disease in Montfaoué is solely linked to the random presence of NOA. This conclusion is judicious in Kanak reasoning, and it is not contradictory to the geological data of the region.

The Frequenting of Places

The same logic is applied concerning the frequenting of serpentinite-affected places around Gohapin. The most important serpentinite outcrop close to Gohapin is located on the last pass before arriving at Gohapin valley.[17] According to the inhabitants of Gohapin, there were no houses or gardens in this area before the arrival of the road, meaning people rarely visited this area. Exposure to serpentinite started with the construction of the road—however, the presence of the road is perceived as an improvement in daily

life. Nevertheless, in Kanak logic, this attitude could be considered yet another external element that has disturbed the balance (see above).

On New Caledonia's Grande Terre, there is a distinction between Kanak tribus of the sea and tribus of the land. This translates into different ways of life and customary exchanges between different tribus (e.g. crabs from the sea tribus and deer from the mountain tribus). This important distinction sometimes also translates into a different perception of rocks. For example, if there is a rock (e.g. quartz) that is usually not found in the mountains but on certain beaches, people will identify the "foreign origin" of the rock—they will recognise it, but they are aware that it does not come from their immediate environment. However, since this distinction between sea and mountain tribus is not a separation that transcends every aspect of life and there is a lot of mobility and exchange, people usually know the origin of the rock.

In the rather recent history, there were major population movements on the Grande Terre. In the case of Gohapin, people used to live in the mountains in pre-European times. With the arrival of the missionaries, people moved into the Poya plain. Later, mainly due to conflict with the arrival of European settlers who claimed the plain for agricultural purposes, this Kanak population moved back to the mountains, into the area where the tribu lives today. Due to these migration movements over the last few generations, the knowledge of the environment is not exclusively concentrated on the area where the current settlement is, but extends into other areas as well. In the context of rocks, this means that people are able to distinguish between rocks common to the immediate environment (including their origin, history, use and shape) and those that can be identified but originate elsewhere and are less well known.

The Transformation of Society and a Changing Lifestyle

With a changing lifestyle, some rocks are less well known. This process can be observed in a lot of societies: the requirements of daily life change over time, and values in a society shift because of these requirements. Rocks used to be an essential part of life and were present in a lot of different contexts. Nowadays, the nickel industry is ubiquitous and through it, the notion of "value" of a rock has shifted: where in the past, the value of a stone was of a spiritual or practical nature; today that value is primarily economic. This is not surprising given the dominant position of the nickel economy in New Caledonia.

Nowadays, a lot of young people from Gohapin work in one of the numerous mines located in the Northern part of the Grande Terre. This way of life is very different from the typical way of life in a tribu, and one of the consequences is usually a loss of knowledge concerning the local environment. In general, it is the older generation that looks after the subsistence crops. They are almost permanently in contact with their environment; they observe and know about the symbols and interpretations of this environment. However, it has to be pointed out that even those who are senior in the tribu today have spent a good part of their professional lives in the mining sector. This kind of work, centred on the exploitation of rocks, complements the traditional knowledge of rocks in another way.

The current transformation of the Kanak lifestyle challenges a lot of traditional conceptions—of the environment and all other aspects of life. The loss of a profound connection with the land—which plays a crucial role in Kanak culture—is perceived as a great loss by both the older and younger generations. However, there is an awakening of movements that seek to reclaim this connection; this separation between humankind and "nature" is not accepted anymore. A special emphasis is being placed on "cultural" practices, such as the use of traditional musical instruments or the art of sculpting rock and wood. As Kanak people retake possession of these practices, they are retracing the character and significance of the elements that they work with, like bamboo or soapstone. The driver of these practices does not have its roots in scientific analysis but in an inherent need to reconnect.[18]

Sometimes, these transformations have their roots in the selected integration of certain elements of new ideas, resulting in new and complementary approaches. With regard to the example of lung disease and the Kanak concept of health and illness, however, the Kanak concept of illness persists. On the other hand, people tend to respect the instructions of professionals (in geology, health) who work with Western concepts of illness and health. Consequently, these two perceptions and their corresponding actions create a complementary set of factors on which the population's individual decisions are based.

It can be assumed that certain concepts are deeply rooted in people who grew up in traditional Kanak culture, both in the past and the present. However, according to some of the inhabitants of Gohapin, in pre-European times, these concepts were inherently part of an obvious reasoning, well adapted to the cultural context and the way of life that had developed in New Caledonia's mountain chain. Since then, this way

of life has changed a lot. The concepts continue to exist, but the reasons or explanations for their existence are no longer part of the common knowledge. This does not call the concepts into question per se—often, they continue to exist, but people don't know why they follow these concepts. That is why in a lot of places, it is difficult to obtain detailed information from the younger generation; in general, it is the older generation that is best able to explain these concepts.

Conclusion

In Kanak culture, rocks can represent a structuring element, something that may not be visible at first sight. This hidden meaning can transform a simple rock into a powerful concept. In this contribution, I have shown that rock is perceived as living matter that can have different attributes. When classifying rocks, a number of criteria are taken into account: shape, origin, use and, last but not least, the scientific geological definition. These criteria are not absolute—they are applied according to a given context. The scientific geological criterion is no exception, but it is integrated into a wider set of criteria. The author argues that the people of Gohapin do not need to make a special effort to separate the other criteria from the scientific geological ones; this separation is fluid and the boundaries change depending on a given situation.

Furthermore, all the rocks have names in the local language; these names further explain the reasoning behind the classification. This may not come as a surprise to the reader, but so far the naming of rocks in the local Kanak language has received little attention. It is therefore important to point out that there is a complex system behind the attribution of names that should be further explored. Nickel mining is of great importance in New Caledonia, causing enormous environmental transformations and introducing new knowledge systems based on scientific classifications. This chapter shows the ways in which diverse classification systems of rocks interact and fuse.

The example of Gohapin shows that "rock" is integrated in cycles that influence the operations of the universe as well as the environment. The juxtaposition of time and space has been discussed considerably in terms of kinship but also of cyclic time perception (see Leblic 2006: 66f; Poédi 1990: 57); this also applies to rocks. They are perceived to have a lifespan of their own and they interact with their surrounding elements. One could even go further to assume that if rock is living, retrieves energy at certain times, has individual powers, is part of a hierarchical order and is subject to an ageing

process, then it is equally entitled to be part of the living universe where living and interacting elements mutually influence each other, such as humans, animals, plants, the earth, the sky and the ocean. Finally, it can be concluded that in Gohapin, rock is not simply dead matter but an element that plays an active role within society, including the existing knowledge and meanings associated with it. Rocks are part of the immediate environment that structures life in the tribu.

Notes

1. The latest available data on ethnic communities in New Caledonia dates from 2009. See: Institut de la statistique et des études économiques Nouvelle-Calédonie. 2009. "Communautés". Accessed 13.03.2016. http://www.isee.nc/population/recensement/communautes.
2. The New Caledonian tribu, originally an administrative division, are rural villages inhabited almost exclusively by the Kanak population, representing the indigenous community of a certain area. The inhabitants very often have strong ties through kinship and the corresponding clans are usually strongly rooted in the land. Hence, the word tribu is used in this context; the emic use of this word does not translate well into English.
3. Aizicovici, Francine. 2015. "Amiante: les associations de victimes dénoncent le « choix de protéger les décideurs »", *Le Monde*, 17.4. Accessed 13.03.2016. http://www.lemonde.fr/economie/article/2015/04/17/amiante-les-associations-de-victimes-denoncent-le-choix-de-proteger-les-decideurs_4618187_3234.html.
4. Kriener, Manfred. 2009. "Das tödliche Wunder", *Die Zeit*, 29.1. Accessed 13.03.2016. http://www.zeit.de/2009/06/Asbest.
5. Parti Travailliste Kanaky. 2016. "Réglementations de l'amiante en NC." 10.02. Accessed 13.03.2016 http://partitravaillistekanaky.blogspot.co.at/2016/02/reglementations-de-lamiante-en-nc.html.
6. "Amiante: la Nouvelle-Calédonie et l'Etat condamnés", 2014. Le Monde. 22.12. Accessed 13.03.2016. http://www.lemonde.fr/877sante/article/2014/12/22/amiante-la-.
7. An overview of this issue considering aspects of development and health is given by Baumann (2010) and Houchot (2010).

8. For more information on the use and nature of pö, see Baumann (2010).
9. For more information see http://www.dass.gouv.nc.
10. The geological definitions are not detailed in this context since it is not relevant for the topic under study. However, their classification according to geological criteria has been approved by the geologists Dominique Cluzel (Université de la Nouvelle-Calédonie) and Pierre Maurizot (DIMENC).
11. « La tribu de Gohapin et le WWF travaillent ensemble depuis sept ans pour un mode de développement durable en tribu qui se structure sur la restauration du lien Homme-Nature via l'engagement dans des projets de préservation, restauration et valorisation du patrimoine naturel et culturel, ceci aux bénéfices des populations de Gohapin et progressivement des autres tribus associées au massif forestier de l'Aoupinié, à savoir Goa et Pöö. » Biodiversite.nc. "WWF—Tribu de Gohapin. Une Association durable." http://www.biodiversite.nc/WWF-Tribu-de-Gohapin-une-association-durable_a147.html. Accessed 13.03.2016.
12. Most villages in the Poya municipality, except for the tribus of Nétea and Gohapin, do not speak Paicî. Nevertheless, it can be assumed that the names given at Gohapin might be used in wider parts of the customary area of Paicî—Cèmuhî, which expands towards the North of the Grande Terre.
13. This list was established with the approval of Christophe Sand, Director of the IANCP, Institute of Archaeology of New Caledonia and the Pacific.
14. Further detailed linguistic analysis of the rock samples is omitted in this article, since the main aim is to familiarise the readership with the guiding principles of rock classification. However, more detailed information can be obtained from the author upon request.
15. In the context of this study, it was not possible to follow this trace further.
16. Direction de l'Industrie, des Mines, et de l'Energie : Direction of Industry, Mining and Energy.
17. It should be noted that this road was not yet sealed at the time of the study. This has since changed; important roadworks were done in the area. However, the case of this road is an excellent example and it allows significant conclusions to be drawn about the perception and interpretation of various elements.

18. For further information see for example the "Département des Musiques Traditionnelles et des Chants Polyphoniques Océaniens" (DMTCPO). http://afmi.nc/dmtcpo. Accessed 13.03.2016.

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CHAPTER 9

Epilogue: Re-building Ships at Sea: Ontological Innovation in Action

Amiria Salmond

In her poem *Tell Them* (2011), the Marshallese poet Kathy Jetnil-Kijiner conjures the precarious environmental—and existential—situation in which many Pacific Islands and their inhabitants find themselves as a result of currently changing oceanographic and meteorological conditions. In places like Kiribati, the Marshall Islands and the Solomons, spring tides are washing away beaches, soaking coastlines and seeping up into the fresh water table to contaminate ground water, transforming people's livelihoods and killing plants, animals and microorganisms. In some places land that was once habitable and fertile is no longer so, and has already been abandoned to the tides. Extreme weather events such as floods, tropical cyclones of unusual intensity and long-term droughts are exacerbating these problems and causing further difficulties, as are changes brought about by ocean acidification and generally hotter atmospheric conditions. As explored in this volume, an increasing number of people in Oceania and beyond see these transformations as effects of global warming or climate change: unprecedentedly severe and worsening environmental conditions, with consequences for some—if not for the planet—that are potentially catastrophic.

This book addresses such problems alongside other transformations of Oceanic environments caused by industrial and infrastructural development, associated for instance with mining and the extraction of natural

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gas. A balanced course is charted through politically volatile territory, with contributors noting the diversity of positions Pacific peoples hold on such developments as well as on their impacts at home and further afield. Whereas many interlocutors are strongly critical of, and worried about, changes being wrought both more and less directly by industrial interests upon their localities, others embrace the advantages to be gained through increased commercial activity and from efforts on the part of governments, NGOs and business to mitigate or compensate for developments' negative effects. Still others are concerned with the "spiritual" or "cultural" implications of such changes, seeing above all the hand of god, of ancestors, and of other deities or supernatural forces in the unfolding of specific transformations.

As a collection of articles by German-speaking scholars, the volume builds on a rich tradition of Pacific ethnographic research less familiar to Anglophone readers. The relatively brief duration of Germany's colonial period would lead one to expect its ethnographic literature on Oceania to be quite limited; in fact, an extraordinary wealth of knowledge and material was amassed by German ethnographers in the Pacific especially in the period to 1919, as contemporary museum collections in particular attest. After Versailles research continued, but opportunities for knowledge exchange during the interwar years were limited and preoccupied with questions of race and physical anthropology. Since the German discipline's radical redirection from the 1950s, social anthropological research has flourished in departments of *Ethnologie*. Today there are over one hundred German-speaking ethnographers actively working on the Pacific, and among the contributors are leading exponents of Oceanic anthropology in German universities. The present volume thus emerges from conversations informed by a distinctive disciplinary heritage, and will bring wider visibility to German-speaking social and cultural anthropology.

Aside from reflecting Germany's long-standing scholarly ties with Oceania, the assembled studies are united too by an interest in connections between global industrial expansion and relatively dramatic actual and projected changes in Pacific natural and cultural environments. While the examples are not all associated with climate change as such, they are all characteristic of what many are now calling the Anthropocene: "a new geologic epoch, defined by unprecedented human disturbance of the earth's ecosystems" (AURA 2016). This concept arose against a tide of skepticism and denial about industrial capitalism's immediate and long-term negative impact on the current and future well-being of the planet and its human as well as non-human inhabitants. To counter the influence of powerful advocates lobbying in the interests of multi-national conglomerates, a massive

scientific and scholarly effort emerged dedicated to altering the course of global industrial development towards greater sustainability and towards mitigating its actual and anticipated effects. Drawing momentum from international accords including the 1992 United Nations Framework Convention on Climate Change (UNFCCC) (extended as the Kyoto Protocol of 1997, modified in Paris in 2014), the repercussions of this movement continue to reverberate across the academy. Among its most stimulating recent expressions in anthropology and related disciplines are Bruno Latour's philosophical explorations of the political phenomenon of climate change and its denial (e.g. Latour 2004, 2011, 2012), and Déborah Danowski and Eduardo Viveiros de Castro's ontological take on the implications of apocalyptic cosmologies (Danowski and Viveiros de Castro 2014, 2015).

Ever since the terms "Anthropocene," "climate change" and "global warming" first appeared in scientific literature, then, the ontological status of the conditions they index has been controversial. Many Pacific peoples have now been living with these discourses for decades, but the question of what to do in the face of these apocalyptic scenarios appears increasingly pressing and urgent. While innumerable and varied measurement projects have in general worked to render the hypothesis of accelerating environmental transformation an ever-less-disputable fact, the *causes* of specific changes continue to be debated in many circles, within and beyond Oceania. Whether the speed and intensity of recent shifts are demonstrably anthropogenic—an effect of human agency rather than part of natural fluctuation patterns within longer-term cycles—are still, with regard to some phenomena at least, matters of reasonable (if often politicized) contention. At the same time, a great weight of scientific certainty is now consolidated on the view that major shifts are undoubtedly afoot, the scale and pace of which can only be attributable to human activity, especially the burning of fossil fuels such as coal and oil on industrial scales (IPCC 2013). Compounding this, the last two decades' massive expansion of material consumption in many countries, which helped drive (and unevenly distribute) sustained economic growth while simultaneously increasing "greenhouse gas" emissions, continues to produce mountains, lakes, rivers and floating islands of often toxic and highly visible waste. Against this backdrop, it is no longer possible to reasonably doubt the contribution those of us living in industrialized societies make on a daily basis to the accelerating transformation of our broader environment. Every time we buy new clothes, turn on a light bulb, access a server, print an article, go the supermarket, drive a car, fly to a conference or even take public transport,

we participate in and thus further the existence of systems of extractive industrialism that are by all accounts irrevocably altering the planet's seasonal and atmospheric balance (see Berners-Lee 2010).

Every day in the newspapers, on television and in our social network feeds, articles announce the latest temperature records broken. Extreme weather events are presented as symptoms of global warming, as are the immersion of islands and coastlines that stood for centuries if not millennia above sea level. In many areas of the Pacific Ocean that seem remote to North Americans and Europeans, local people are part of these media networks and participate actively in their circulation of images and ideas. In vulnerable areas government officials and NGOs arrive to educate inhabitants about the risks to already precarious ways of living posed by the threat of such patterns intensifying and—as explored in several contributions here—recommend adaptations to changing conditions. Yet being aware of such likelihoods does not itself equip people to avert them, nor does it present any obviously viable collective means by which to avoid the most dire predictions; despite last year's climate talks in Paris, for instance, the emissions rates of many countries remain stable or continue to increase. In fact, as some contributors here explore, proliferating discourses of climate change may merely add to people's worries and fears, or appear so insurmountable as to be inconceivable. In which case, some people ignore them and get on with their lives as best they can, just as those in more affluent settings continue to drive cars, put their towels in the drier and fly around the world on business and on holidays to distant locations. In this sense, climate change provides yet another example of the limited effects of "awareness" on ostensibly risk-taking behaviour; more evidence of how powerful the human urge is not to deny ourselves the comforts to which we have become accustomed, even when indulgence may bring about destruction. At the same time, however, many people—including anthropologists—are engaged in an urgent quest for solutions to these seemingly intractable problems. Among the many approaches now being developed to address aspects of climate change are what might be called strategies of ontological innovation.

Anthropology in the Anthropocene

Despite being often critical of science and the forms of knowledge through which scientists assume privileged authority to pronounce on the nature of reality, anthropologists were relatively early adopters of the concept of the

Anthropocene (first popularized by Paul Crutzen, a Nobel Prize-winning atmospheric chemist) and of the scientific thesis of anthropogenic climate change. Many arrived at these positions through witnessing the effects of extractive and polluting industries at first hand on the lives and well-being of the people with whom they work. Others have taken up the views of interlocutors—whether climate scientists, NGO staff or indigenous activitists—who attribute specific problems in a place to factors understood as major contributors to changes associated with the Anthropocene, including deforestation, fossil fuel combustion and big agriculture. And some draw connections between their own more-or-less popular understandings of the science of climate change and apparently unusual meteorological or oceanographic conditions observed at home and in the places where they work. In any case, anthropologists interested in environmental issues deploy the particulars of their own on-the-ground experience in relating to broader-scale discourses of global transformation, in a manner not dissimilar to their interlocutors.

What our discipline can contribute to such problems—which, though unleashed or exacerbated by human action, turn on the planetary effects of atmospheric pressure, precipitation, and winds as well as chemical reactions and geological forces—is as yet by no means clear. In its recent Global Climate Change Task Force report, *Changing the Atmosphere* (2014), the American Anthropological Association (AAA) emphasized the discipline's philosophical efforts at critically re-framing both the challenges of environmental transformation and potential solutions. Yet its main focus was on the mediating roles played by anthropologists as people well-placed to "communicate and translate local peoples' perceptions and concerns" and to guide the development of public policy designed to encourage sustainable behaviour and forward planning (Fiske et al. 2014: 10). Ethnography is singled out especially as a "methodological power to bridge local understandings beyond the local to the multitude of stakeholders and on a multitude of scales (Roncoli et al. 2009: 88; Crate 2011: 177)". By "integrating traditional ecological knowledge (TEK), into climate models" in particular and "connecting diverse knowledge systems" in general, the authors assert (Fiske et al. 2014: 19) anthropology can support the development of more nuanced global solutions through its uniquely "holistic" perspective. In this view, shared humanity provides the conditions of possibility both for the prospect of globally integrated solutions, and for anthropologists to position themselves as translators and connectors across human difference.

The studies included in the present volume in some ways exemplify approaches of this kind. Several contributors are concerned with how discourses about global warming and other environmental transformations, which appear to have emerged *outside* the places in which they work, are translated and received *into* local contexts. Rather than looking for instance at how scientific activity carried out in Pacific locations works to render climate change visible, the tendency here is to contrast science as a "global" discourse with "local" forms of knowledge and beliefs so as to foreground the former's reception, translation and elaboration within island settings. Considerable efforts are made to describe indigenous understandings that seem to influence how this "outside" knowledge is being received into informants' life-worlds (indeed, the very contrast between "local" or "traditional" knowledge on the one hand and "outside" or "scientific" knowledge on the other is revealed as an ethnographic artefact; see Hetzel and Pascht, this volume (Chap. 5)). Some authors write about their own involvement in developing government policies and legal discourse, with a view to impacting positively on specific socio-environmental problems. All share a conviction that distinctively anthropological approaches to these challenges may help ameliorate the predicaments of interlocutors and their environments in significant and meaningful ways.

Ontological Innovation

At the same time, in studying these transformations, the volume's contributors find inspiration in approaches they associate with the "ontological turn" in social anthropology. This is a movement (or rather a series of movements) that seeks to interrogate fundamental assumptions underlying anthropological practice, not only to question their universal relevance to the kinds of problems the discipline addresses but also to propose viable alternatives. Its thrust is taken here as a call to attend to questions of human difference and similarity not just at the level of culture, or of knowledge about the world, but also at the level of ontology—that is, assumptions and principles about the nature and orders of (human and non-human) being. A common theme running through the chapters is how people in the Pacific do not always hold the world to be divided by the same oppositions as those underlying scientific vocabularies, including some that remain typical of anthropological discourse: nature versus culture, people versus animals, mind versus matter, knowledge versus being. Although they often mobilize scientific concepts and terminology, Oceanic peoples also draw on

cosmologies and traditions specific to the places they come from, which can open up not only quite different perspectives but also alternative ontological prospects and potentialities. Emphasis is placed on how these perspectives and the openings they generate are dynamic and transformative in relation to changing conditions, not least those arising from missionary activity and colonization, as well as those of an atmospheric, oceanic or geophysical kind. Insofar as what is being studied here is "other peoples' ontologies," these are taken to be vibrant, permeable and processual as opposed to ahistorical and hermetically sealed. Far from neo-primitivist characterizations of timeless and essential differences, these are case studies of ontological innovation in action, explorations of creative and novel ways in which Pacific peoples are rebuilding their ships at sea—combining old understandings with more recently arrived influences and ideas, including those of science—in their efforts to generate or keep open distinctive existential possibilities.

At the same time, there is a second and quite different sense in which it is possible to read this volume as a collection of exercises in ontological innovation. What is assembled here also—beyond reports from the field—is a series of diverse and distinctively *ethnographic* experiments in rethinking "climate change" and other environmental and sociocultural transformations. These thought experiments are offered prospectively, with the aim of supporting the urgent and necessary work of devising viable solutions or adaptations to predicted crises. The contributors' first hope is to make a difference to the matters at hand, but their efforts at re-conceptualization are at the same time aimed at furthering the adaptation of anthropological analysis itself, within a fluctuating and rapidly transforming intellectual climate.

One reason for the turn towards ontology here, in other words, is that workaday disciplinary assumptions are found lacking; methodologies that treat cultural and material aspects of existence as discrete in an a priori sense are seen to have distinctive ways of setting up problems like environmental transformation, which in turn invite certain kinds of solutions. Methods that construct knowledge as a mental object, locked inside the black box of individual subjectivities, may be ill-prepared to deal with knowledge of the kind that influences weather or causes volcanos to erupt, which resides in places or in artefacts and which may be imparted to initiates by ancestors. Approaches that compartmentalize spirits and magical forces as aspects of religious belief and custom, or which address only their sociological functions, cannot but foreclose at a fundamental level on alternative conditions

of possibility. The conceit of human exceptionalism, out of which anthropology's project—as the *logos* of the *anthropos*—has arisen, seems more like a root of problems like climate change than a viable basis on which to work towards their amelioration. Even the idea of human unity (which arose relatively recently in its modernist incarnation) has come to seem suspect in the way it lends itself to global political and economic projects designed to work in favour of liberal democratic elites, of which global warming is but one of many symptoms. These are just some aspects of an increasingly widespread tendency to question key assumptions underpinning disciplinary practice and methodology that is impelling anthropology's current turn towards questions of ontology.

Pacific ethnography, this volume demonstrates, has the capacity to suggest alternatives. The line of thought goes something like this: "how might problems of climate change and other environmental transformations appear differently, were we to approach them in ways suggested by the distinctive kinds of comparisons ethnography mobilizes and the particular relations in which we, as ethnographers of Oceania, are implicated? And what alternative solutions or strategies for adaptation might arise from these endeavours?" Thus, we are invited to consider how comparisons between geological knowledge and Kanak conceptions of rocks as entities that grow, age and move of their own volition suggest novel ways of educating people about the dangers of asbestos-induced illness. We learn how contrasts drawn by young people in Vanuatu between local traditional knowledge and global scientific knowledge work to influence their efforts to learn about and disseminate information on climate change and the need for adaptation. In Kiribati, Christian liturgy and hermeneutics operate through songs and bible stories as key counterpoints to science's apocalyptic narratives, sometimes working against, sometimes in tandem with, projects to increase awareness and encourage sustainability. In New Zealand, different nature–culture imaginaries and practices of belonging in coastal areas conflict over and are negotiated in the form of physical measures to hold back erosion. As in Hermann's Kiribati, and on Chuuk in the Caroline Islands as recounted by Hofmann, emotional investments are made in lands that are conceived to share certain qualities with people, so that incursions that threaten land (often attributed to global warming) evoke feelings of anger, sadness, worry, fear and insecurity. Such emotions may encourage apathy and denial, but they can equally spark "a will to act, to do whatever is possible to protect these bedrocks of... existence" (Hermann, this volume (Chap. 3)). As in Wergin's contribution on the Kimberley region in Northwest Australia,

such distinctive ways of relating to a place can be mobilized to defend it, whether against changing environmental conditions or the destructive force of industry.

Reading these chapters as experiments in rethinking particular environmental transformations, then, allows us to appreciate their comparisons of different "ontologies" as devices for entertaining alternative *possibilities* as to how things *could* be or become, *were* things as they sometimes appear to be in, say, Aotearoa, Tuvalu or Gohapin. This is an alternative to reading them (perhaps more in line with the grain of their texts) as declarative statements about *what is* for people in those places—as if it were possible for ethnographers to "see through the native's eyes" and transmit these insights to their readers. The distinction between these readings is important, for reasons both philosophical and political. First, critics of the ontological turn have rightly pointed to the logical inconsistency of insisting on the existence of multiple ontologies as a matter of fact, and of claiming that ethnographers are in a position to access conceptual schemes fundamentally different from their own. Drawing on the analytic philosopher Donald Davidson's arguments against ontological relativity, among others, they assert that the very claim "there are different ontologies" is an ontological one. It sets up a metaposition from which an asserted multiplicity becomes visible, one that unavoidably implies a (meta-)ontology of many ontologies. And an ontology of many ontologies is still *an* ontology, just as a world of many worlds is still *a* world—one that cannot but foreclose, ultimately, on the possibility of others. Declaring the existence of different ontologies is one thing; subjunctively entertaining the possibility of ontological alternatives is quite another.

Second, as post-colonial and indigenous critics have long emphasized, the tendency of anthropologists to assume both the authority and ability to speak on behalf of their interlocutors may be construed as a form of (neo-) colonial imposition, even an act of violence. The aim of much postmodern angst and introspection was to devise ways of allowing anthropology to continue in the aftermath of this and related critiques, whether by circumscribing them or by addressing them head-on. Many anthropologists continue to grapple with these challenges, and parts of the ontological turn are much preoccupied with questions surrounding the politics of ethnographic knowledge. "Recursive" approaches especially, which begin with the work of Melanesianists Roy Wagner and Marilyn Strathern, as well as that of the Brazilian anthropologist Eduardo Viveiros de Castro, have

sought to craft ways of writing about others that are profoundly influenced by (though do not always explicitly address) this post-colonial literature.

These recursive ontological strategies are different from others (Salmond 2014) in the way they seek to generate openings through which otherness can come to bear upon anthropological thought, in full recognition of the discipline's modernist baggage and of the affordances as well as the limitations of its signature method. Ethnography is embraced here as a comparative and therefore fundamentally *relational* endeavour, designed to reach through modernist binaries towards that which anthropology imagines as other, as *alter* to, or outside itself. Ontological difference or alterity is thus construed not as a property of groups of people—phenomena one might discover or empirically investigate as such. Rather, difference is approached as an artefact-in-becoming of comparisons: those our interlocutors make in attempting to account for what appear to them as contrasts or analogies between their own understandings and what they imagine to be ours; those we make in our associations with them and with the places in which we work; and those internal to our attempts to convey insights thus gleaned to fellow anthropologists.

The point is to address the probability that seamlessly channeling other peoples' "ontologies" or "life-worlds" to our peers may not be in anthropology's gift. The argument is not that there is no real difference "out there," nor that it is in some ultimate sense inaccessible. It is simply that, in seeking to distil alterity that arises ethnographically, we inevitably transform it into something other than itself. Crucially, this is not only a limitation but can also be turned into an advantage! Recognizing that difference is relational *as far as ethnographic method is concerned* allows us to acknowledge our own implication in the relations through which anthropology helps difference (for instance between groups of people) to become real. Such positioning of course carries considerable responsibility. At the same time, we can no longer assume the power to define alterity as ours alone; on the contrary, the work of ontological innovation (of relation-making, of differentiating) is inherently—albeit not always equally—distributed. Working recursively means working from *within* the relational perspectives that enable ethnography and which it generates, not positioning oneself above them so as to get a better, more objective, view. It also means submitting to the constraints such relations place on us, just as they constrain our interlocutors. Power is a crucial factor here; relations are often difficult to negotiate and true symmetry is rare. Yet approaching difference as something that is *done* rather than *discovered* admits creativity and

unanticipated possibilities as the inseparable accomplices of vulnerability and uncertainty. Refusing to solve the problem of difference before leaving the academy—or at all—is a means of opening the discipline further to the unexpected, the surprising, that which we never thought possible, and of seeing what alternatives—ontological and otherwise—might thus become manifest.

Such approaches have obvious relevance and applicability to problems of environmental transformation, including climate change. As the contributions gathered in this volume make clear, different solutions, strategies for adaptation and ways of imagining the future may emerge when ontological alternatives are taken into account.

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Index

Note: Page numbers with "n" denote notes.

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