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Tony Crook, Peter Rudiak-Gould (Eds.)

PACIFIC CLIMATE CULTURES

LIVING CLIMATE CHANGE IN OCEANIA



Tony Crook, Peter Rudiak-Gould (Eds.)

Pacific Climate Cultures: Living Climate Change in Oceania

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Living Climate Change in Oceania

Managing Editor: Izabella Penier

Associate Editor: Adam Zmarzlinski

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His Highness Tui Atua Tupua Tamasese Ta'isi Efi

Prelude:

Climate Change and the Perspective of the Fish

Fundamentally the problem of climate change is a problem of arrogance and greed. If we want to seriously address the critical issues that face our world today we have to come up with something that is bold enough to allow us to say the unsayable. In other words, what is constructive in this search for answers is also what is most hard to say.

Arrogance and greed are human vices that speak to the weaker side of ourselves; to our vulnerabilities as humans. The arrogance that pervades the modern psyche is an arrogance that compromises the soul: that of a people, person, leader, parent or child. Arrogance and greed while seemingly easy to identify, are difficult to make transparent or even to avoid. Arrogance is the condition of presuming unfettered dominion over our environment and all living things. It is the ability to rationalise and believe that what is wrong is right.

Greed is the unhealthy preoccupation we have with profit, i.e. the accumulation of pecuniary or material gain for individual benefit at the unreasonable expense of others. Modern technology, industrialisation and mercantilism have allowed us to live a life of comfort literally at our fingertips. But this has come at a cost to our natural environment and spiritual health.

The dialogue on climate change is therefore not easy. Not just for the technicalities of understanding atmospheric changes and rising sea levels but equally, if not more so, for the soul-searching questions it forces us to confront about ourselves and our pursuits of wealth. The paradoxes of our modern economic philosophies come to light in this debate. The rationality of modern liberal economics finds as Raymond Aron points out, a “pessimism that sees, in politics, the art of creating the conditions in which the vices of men will contribute to the good of the state” (1957: 284). Recent comments on CNN about climate change and the world credit crisis puts it this way: “It is about having clean air and water” on one hand and “saving the United States not polar bears” on other. Climate change and the credit crunch graphically illustrate the crazy complexities of these paradoxes.

The nub question for me is how can I contribute to the conversation? In doing so let me own up that the biggest hurdle for me is to summon the courage to say something meaningful about climate change in the company of such eminent authorities. I come to these issues and questions with a heart full of anxieties, yet am buoyed by the belief that in the ultimate we have a common origin and destiny and are entrusted to search for insight and perspective, and hopefully for solutions, to the worst problems to have faced man.

A Different Paradigm

In this common search, I offer the insights and perspectives of my Samoan indigenous reference or *faasamoa*. Within it is a worldview that privileges not just the perspective of other men, but of other living beings—of trees, animals, oceans and stars. It is a worldview or life principle that demands humility, sacrifice and respect of our sacred origins. This paradigm comes alive through the poetry, nuances and metaphors of our Samoan language, its legends, rituals and song chants. It tells of the importance of the principles of *tapu*, equivalence and affinity to overcoming arrogance and greed.

Tapu and Sacrifice: The Story of Sina and Tuna

The legend of Sina and Tuna is core to Samoan culture and is about the sacrifice of an unrequited love. An eel (Tuna) pines for Sina (a human girl) without avail. Unable to win her he eventually wills himself to death. His parting words to his beloved were: When I die cut my head off and bury it in the earth, it will grow into a tree whose leaves will weave mats and shutters; whose milk will sustain your thirst; and whose flesh will give you food. Every time you dehusk the nuts from this tree you and your descendants will see my face. And, every time you drink the milk from my mouth it will remind you of my undying love.

According to Samoan mythology this is the origin of the coconut tree, which is an essential feature of Samoan agriculture and spirituality. Today the leaves of the coconut tree are still used to weave mats and shutters for houses and to make food baskets. The coconut milk is still the principal beverage in Samoan society. And the flesh of the coconut is still staple food in our Samoan diet. The flesh is often grated and strained using sinnet to obtain cream and make oil. The cream provides flavour and taste to food; the oil can be used for massage and ritual blessings.

The metaphors of this story emphasise sacrifice. Arrogance is self-indulgence; greed is self-aggrandisement. Both are inimical to sacrifice. Tuna, despite being rejected, was able to rise above anger to leave a legacy of grace and humility. The coconut is *tapu* because it is reincarnation and when we eat the flesh of the coconut that is communion. Tuna as eel and as coconut tree demands a psychology whereby fish, plant and human are treated as co-inhabitants of the planet and actors in a common culture, where their desires and destinies are intertwined. When Tuna's head is buried in the earth there is connection with mother earth. Tuna's sacrifice brings blessings. The message is that what is good, decent and wholesome is spawned by sacrifice.

Affinity and Equivalence in Ritual Performance and Language

In the village of Solosolo there is respect and public affinity between man and dog. The funeral ritual of Solosolo is honorifically named *le maile* i.e. dog. The people of Solosolo believe that the dog, when baying at the moon, is communicating with the cosmos and the gods. During the *le maile* funeral ritual performers transform themselves into dogs. They take on the persona of a dog through action, articulation and psyche. In behaving like a dog Solosolo connects “dog speak” with “human speak” and celebrates affinity and equation between animal, cosmic and human life. Here man finds mystical connection between dog and moon reflective of a sacred relationship, a *va tapuia*.

In the village of Asau, the *tautai* or the head fisherman consults with his god about when to receive the *tamasoaalii* (honorific reference to the fish, i.e. mackerel). The relationship between the *tautai* and his god is *tapu*. On the designated day, early in the morning, the head fisherman, on his own, paddles his canoe to what is known as the *ava o atule* (literally, the entry of the mackerel).

<i>Afio maia oe le manaia</i>	Welcome to you the manaia—the honorific for the head of the untitled men’s group
<i>Afio maia oe le tausala</i>	Welcome to you the tausala—honorific for the belle of the village ladies group
<i>O lea ua talisoa le aiga o Tautai’fau ma le au taliuta</i>	The fishing guild and the village await you
<i>O loo faatali Aiga ma Salafi ma lo latou maopu</i>	The village of Asau await you
<i>Afio mai oe le tamasoalii</i>	I welcome you, the man who is the aide of the chief

The language used to address the mackerel is not common parlance or slang, it is chiefly language. In fact, here the head fisherman treats the mackerel as chiefs, evidenced by his specific use of chiefly honorifics. This is high praise. After the chant, the mackerel in reciprocal courtesy would follow the head fisherman into the net. This deference between man and fish underscores a mystical bonding that is celebrated by the Samoan saying: “*le ia a le tautai e alu i le faalolo*,” meaning the fish defers to the will of the head fisherman. This mystical bonding speaks of a sacred affinity and equation between man and fish.

By today’s reckoning the act of becoming a dog or addressing fish as chiefs can counteract man’s arrogance as pre-eminent being. The sacred bonding between dog and moon or fish and *tautai* or head fisherman reflects a spiritual culture or a *va tapuia* (sacred relations) between humans, animals, cosmos and the gods. There is inherent respect for the sacred equivalence and affinity between them.

Respecting the Sacredness of Trees by Seeking Pardon

In the debate on climate change the role of the trees and the forest as the “lungs of the earth” is critical to the production of clean air. In our Samoan reference trees have a life and soul and so are divine creations. Trees catch airborne pollutants by their leaves and bark, and through their root systems are able to cleanse ground water. They allow us to breathe clean air. In the Samoan indigenous context, if a tree was to be cut down, a prayer chant or *faalanu* is performed. The word used to describe the cutting of a tree is *oia*, which derives from the word *oi*, meaning to cry in pain. This presupposes that a tree suffers pain. The *faalanu* is performed to seek pardon for causing pain.

In the celebrated story of the canoe-builder Lata (or Rata in other parts of the Pacific), when failing to seek pardon from the spirit guardians of the forest for taking the life of a tree, he was denied use of the tree. In this story Lata was baffled to find that after felling during the day a tree from the forest in Savaii to build himself a canoe, that the next morning when he rose to start working on carving the canoe, the tree trunk was restored to life in its original place. On the third night of this happening Lata decided to hide during the night to see how the tree came back to life. After felling the tree he hid. Late into the night he saw female spirits encircling the tree, restoring it to life. He approached the spirit guardians and asked why they did this. They told him that he had disrespected them by failing to seek pardon before he fell the tree. Lata apologised and sought pardon. When he awoke the next morning the spirit guardians had carved him a beautiful canoe. The relationship between man and his environment, between man and his co-inhabitants is based on a spiritual culture that finds affinity and equivalence, balance and harmony, between them. In taking from the environment we are accountable to the environment.

Conclusion

The relationship between trees, animals, ocean and mother earth is one of balance, where boundaries are respected and protected. This is captured in the Samoan saying: *e le laa le uto i le maene pe sopo le tai i le eleele* (lit. the floater cannot intrude on the function of the sinker, as the ocean cannot encroach on the boundaries of the land). In our arrogance and greed, we have encroached the boundaries of what is right and just. As we search for solutions we must be open to the wisdom of others. What has happened over the years as man has become more knowledgeable through science is that that very knowledge has given us a much greater capacity to abuse the elements and forget the need for harmony.

What we need in our search for balance and harmony is a culture of humility and sharing where arrogance and greed are openly admitted and addressed. This is the first step to healing. Man must have the courage to rise above himself and restore his

fatumanava, i.e. the earth in his heart, and to find ways to connect (metaphorically) with the fish. I say the fish because I wish to end with a famous story from Robert Benchley, who while a student of International Law at Harvard University, made a joke about the perspective of the fish. The story goes that in a final examination Benchley was confronted with the question: Discuss the arbitration of the International Fisheries problem in respect to hatcheries protocol and dragnet and trawl procedure, as it affects (a) the point of view of the United States; and (b) the point of view of Great Britain. In addressing the question Benchley wrote desperately: “I know nothing about the fisheries problem; and nothing about the point of view of the United States; and nothing about the point of view of Great Britain. Therefore, I shall discuss the question from the point of view of the fish.”

Humour aside, for the climate change debate there is poignancy here in searching for the perspective of the fish. For Samoans, there is a sacred essence, equivalence and affinity between man and fish. To find solutions to our current environmental problems we must ask ourselves what it is to be a fish. To do this you must be prepared to enter the mind of the fish, to become them, to live as them, and experience the sacrifice they might have to make in order to survive. To protect the environment, you need to be able to respect the environment. The relevance of the viewpoint of the fish is embedded in the wisdom of Robbie Burns:

*Would some power the gift to give us
To see ourselves as others [the fish and trees] see us.*

Soifua.¹

¹ Presented to the Stars of Oceania Summit, University of Hawai‘i, 9-12 April 2009.

Tony Crook, Peter Rudiak-Gould

1 Introduction: Pacific Climate Cultures

As an instrument for reducing emissions and slowing global warming, science has failed. As a source of definitive prescriptions about how communities should deal with a changing climate, science alone is inadequate...a purely technocratic approach is likely only to exacerbate the climate crisis because it ignores the dynamic psychological, cultural, social, economic and political systems that affect climate impacts.

(Finucane, 2009: 2)

1.1 Living Climate Change in Oceania

Cultural concepts and ecologies are vitally inseparable, mutually constitutive and made living through each other. Pacific philosophies understand oceans, lands and skies as agentive, malleable living forms participating in, constitutive of and responsive to cosmological and kinship-based relations capable of encompassing the perspectives of fish and the relational qualities of people. In this vein, the Prelude diagnoses climate change as the consequential, unbalanced, manifestation of human “arrogance and greed.” In this vein too, the Afterword depicts the “inter locks” of vital energetics to convey the reciprocal mutuality of living climate change. What we coin here as “living climate change” in Oceania then, entails rather more than simply living *with* climate change - as though it were merely a matter of making an accommodation with a troubling, separate and adjacent realm or some distinct natural domain only legible to science and a technocratic approach. Climate change amplifies and makes manifest human natures, conceptual ideas, relational practices and their consequences, and this volume explores the registers, forms and actions through which Pacific peoples are living climate change as diverse cultural concepts and ecologies newly combine. Changing climates and changeable cultures in the Pacific make manifest and make known the constitutive relations and reciprocal exchanges amongst various life-forms in a shared and living realm of responsibility which has no end of forceful motivating currents. The relations and effects drawn forth through “climate change” have in this sense always been a part of life itself in the Pacific, and are increasingly influential and dominant currents amongst many others. As much as distinctive forms of reciprocity inform and support these inter-locking relations, distinctive forms of reciprocity are also shaping the climate mediated encounters through which Pacific peoples are living climate change - adapting through their own means, and adapting climate change to their own ends. We might as much point to “climate” or “culture” as concepts expressing aspects of mutually constitutive relations, yet must remember that such Eurocentric terms are poor substitutes for

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particular Oceanic conceptualisations, and merely proxies for specific indigenous references and philosophies. Different forms, sources and registers of knowledge are being brought into new relations through climate change, and combined and made living in particular ways. As described below, discourses of “climate change” in a scientific register are being dynamically adapted, combined and appropriated into narratives and genres which are also home-grown. Pacific climate cultures as depicted here, then, draw attention to diverse cultural forms which are registering, expressing and responding to the emergent properties, effects and possibilities of “climate change.” Grasping these interconnected and reciprocal relations at the outset opens up the possibility for apprehending new ethnographic objects, of asking new questions, of offering new descriptions and new analyses, and of formulating language for new forms of pro-active response—and this also affords the basis for a different paradigm and a distinctive Pacific contribution. *Pacific Climate Cultures* aims to bring Oceanic philosophies to the frontline of social scientific theorization. It explores the home-grown ways that “climate change” becomes absorbed into the combined effects of globalization and into a living nexus of relations amongst human and non-humans, spirits and elements.

Pacific peoples have their own explanations for the causalities and wider effects of “climate change,” and their own interpretations of the broader cultural changes entailed in the diverse encounters and manifestations of climate cultures across the contemporary Pacific. We need not imagine that climate change is entering from beyond Pacific worldviews as if they were somehow separate domains impinging upon or having to adapt to each other. Reciprocity is an important principle and social mode: it involves a sophisticated aptitude for discovering new possibilities in resources of all kinds, and an equally adept skill in accepting external interests and turning them into home-grown initiatives. As a cultural principle, combining mutual enactments enables distinctive forms of social and knowledge exchange. It creates a ready-made space in which different sources of knowledge can be combined, and a ready-made mode through which multiplicity can be accommodated. Of course, this reciprocal mode of combining and exchanging interests operates in diverse ways across local and global scales, and so disrupts any simple picture of internal and external. Pacific peoples have a long and distinguished history of meeting the peoples of other regions of the world on their own social and cultural terms, and of engaging with outsiders through their own economic and political interests (Thomas, 2010; Matsuda, 2012) and can be relied upon to creatively respond to climate change through the cultural resources of their own life principles.

The renaissance and contemporary importance of Pacific voyaging, and its role as a compelling home-grown response to climate change, illustrates the point. In saying that “Pacific indigenous navigation is a powerful metaphor for Pacific leadership,” His Highness Tui Atua Tupua Tamasese has in mind guidance “to find yourself in your cultural histories and indigenous references before tackling the references of others,” “for our own [national] development moving into the future,” and for the

challenges of 21st-century global politics (Tamasese, 2010: 1, 3). The Pacific Council of Churches' formulation of the "Island of Hope" (2001) envisions navigating a way towards sustainability based on life-centred Pacific ways. Since the 1970s through to the current Mālama Honua Worldwide Voyage (2013-17), the Polynesian Voyaging Society's double-hulled voyaging canoe, Hōkūle'a, has inspired the redesign of a new sail plan for humanity.² The Third UN SIDS Conference in 2014 transformed the meeting hall into, and portrayed the outcome document,³ as a double-hulled *va'a* or voyaging canoe (Crook, 2016); and Kathy Jetnil-Kijiner's address at the 2014 UN Climate Summit invoked Marshallese canoes in calling for a "radical change of course."⁴ Besides motivating the enhanced geopolitical presence of the Pacific on the global stage, climate change has had an important regionalising effect across the Pacific, providing a new basis for emphasising common cause across a range of scales, and a point of contention and division with some traditional geopolitical and development partners, most notably Australia, through the "new Pacific diplomacy" (Fry and Tarte, 2015).

Pacific peoples are on the frontline of climate change: recognised as among the first affected by the changing nature of sea-level rises and global weather systems (Farbotko, 2010; Lazrus, 2012), and yet curiously absent from the front line of early climate change debates. Whilst the dichotomy of the universal character of IPCC guidelines (Barnett 2001) and the specificity of Pacific contexts (Pernetta, 1992) was recognized right from the outset, the Pacific region is gaining increasing scholarly attention (e.g. Mortreux and Barnett, 2009; Jacka, 2009; Lazrus, 2009; McNamara and Gibson, 2009; Barnett and Campbell, 2010; Rudiak-Gould, 2011, 2013a). Prophecies about the inevitability of displacement due to climate change create spaces in which ideas such as migration lose all proportion and reality (Kempf, 2009), and become driven by policy development rather than by material circumstances (Mortreux and Barnett, 2009). They do not necessarily reflect experiences (Lieber, 1977), local plans and wishes (McNamara and Gibson, 2009), "multistress" contexts of environmental, social, and political changes and pressures (Becken, 2005) or local perceptions of potential political and economic advancement (Connell, 2003).

Pacific peoples' receptions of and responses to the physical effects and prophetic narratives of anthropogenic climate change (such as the "end of the Pacific," Nunn,

2 Nainoa Thompson, "Redesigning a Sail Plan for Humanity," http://www.huffingtonpost.com/nainoa-thompson/redesigning-a-sail-plan-f_b_10374096.html

3 "This week we have all helped to build a great SIDS *va'a* or voyaging canoe, the SAMOA Pathway. We have also equipped it with the many paddles necessary to move it forward, through the many partnerships we have celebrated and launched here in the Pacific. We are departing on a journey and charting a course together towards the many multilateral negotiations awaiting us." (Tuilaepa Lufesoliai Sailele Malielegaoi 2014).

4 <https://www.un.org/climatechange/summit/2014/09/watch-marshallese-poet-kathy-jetnil-kijiner-speaking-climate-summit/index.html>

2013) are beginning to shape international priorities, policies and practices (e.g. Kelman, 2010). Scientific prophecies are absorbed and heard within the frame of religious and cosmological interconnections, and prompt internal reflections and critiques of localised community affairs (Rubow and Bird, 2016). Rather than simply a question of physical and tangible changes to natural systems that require technological and material remedies, climate change in the Pacific is altogether more complex, and yet altogether more straightforward from a social science perspective. Climate and weather are barometers, so to speak, that manifest and express the qualities and changes in social relations—peoples’ dealings with one another and with other beings in their lifeworlds (cf. Strauss and Orlove, 2003; Lefale, 2010).

Hence the limitations of assuming that the motivating cultural concepts are the same as those informing international climate discourses, and the limitations of assuming that the scientific account of global warming is shared as an explanation of the causalities at work (Salick and Byg, 2007; Jacka 2009). In the Pacific at least, it is equally important to look at where the effects of climate change wash up—as a cultural idea, an environmental discourse, a global prophecy, a political ideology—in the social thinking of Pacific peoples and the particular places and communities in which they live.

Place-based ethnographies of “traditional ecological knowledge” (TEK) (cf. Crate, 2011) do well to avoid viewing TEK as an indigenous equivalence to science (Leach and Davis, 2012). Pacific knowledge-practices are composite, relational, combinatory and highly inter-personal, and characterised by the importance of places and persons and hierarchical relations. For example, Borofsky’s study in the Cook Islands (1990) shows how pedagogy involves a willingness to learn for hierarchical advancement rubbing against an unwillingness to appear hierarchically subservient; Harrison’s (1990) and Lindstrom’s (1990) studies in PNG and Vanuatu respectively, show how knowledge requires the verification of another person; Crook’s work in PNG shows how knowledge is regarded as a bodily capacity that relies on combining rationales and relational sources for efficacy (2004, 2007a). Technocratic and bureaucratic cultures of knowledge and practice often rub up against and combine with local modalities of knowing—as new relational sources and rationales—and, thereby, disrupt any easy reading or questioning as to whether they might be commensurate or incommensurate. Yet, creating pathways for including alternative modes of knowing into official assessment and reporting processes are far from unproblematic (e.g. Magistro & Roncoli, 2001; Nakashima et al, 2012).

Advancing the theoretical understanding and practical interaction of different systems of knowledge-practice are critical features of social science contributions in response to climate change, and provide key pivots for the emerging “cultural turn” (e.g. Adger et al, 2011; Hulme, 2009; Rudiak-Gould, 2011; Urry, 2011). Engagement with scientific paradigms and the terminologies of international policy agendas may be a premise for anthropological engagement (Crate and Nuttall 2009, 2016), but we need not assume that these international terms and causal connections also

provide the premise for Pacific perceptions of climate changes. Nor should we assume in a distinctively Eurocentric vein that climate cultures are merely diverse social constructions of the same natural facts (cf. Pettenger, 2007). Anthropologists wishing to avoid the limitations of such a “social constructionist” position, are learning that when it comes to climate change it is insufficient to assume and ascribe the scientific account of the causes of global warming—and to only then look to culture *after the fact* as a resource for adaptation or else a basis for vulnerability. Instead, their predisposition is to look beyond this Eurocentric folk-model and academic convention and to anticipate that Pacific peoples will have shifting and multiple explanations, deriving from and addressing specific aspects, and analysable in terms of cultural concerns that reflect the interconnections between dimensions of the world which all nonetheless fall within a distinctly humanised and cosmomorphic vision of life.

The Pacific continues to exercise an important and disproportionate influence on the intellectual development of social science disciplines, including social anthropology. Social anthropology has a long tradition of studying indigenous perceptions of ecological relations in the vernacular terms of traditional cosmologies, but its specific engagement with the issue of climate change can be traced back to a conference organized by (erstwhile Pacific anthropologist) Margaret Mead in 1975, ‘The Atmosphere: Endangered and Endangering’, which brought together scientists and social scientists across a range of disciplines, and set precedents as much for subsequent research as for policy engagement (Kellog and Mead, 1977; Baer and Singer, 2014: 23-24). Mead was involved in the first Earth Day in 1970, and in the years leading up to the conference had clearly recognized the emergent idea of “our shared atmosphere” (1972) as a powerful *cultural idea* that all people shared equally, which served to dissolve national differences and which echoed President Kennedy’s vision of the atmosphere as a unifying political entity in which “we all breathe the same air” (1963).

A Pacific contribution to debates seeking to theorise climate change, then, could well be fashioned from juxtaposing metaphysical connections made by peoples across the region and drawing notions of mutability to set against commitments to immutability, and vice versa: that is, to critically point out cultural distinctiveness and to productively deploy conceptual divergences. Indeed, following the Prelude to this volume and drawing upon Samoan indigenous reference we might well look to a worldview or life principle that “privileges not just the perspective of other men, but of other living beings” and respects their “equivalence and affinity,” as a source of insight which unsettle prevailing assumptions in the understanding of climate change.

As much as the contributors to this volume put forward examples and analyses from a range of venues across the region to convey how Pacific peoples “make what they would” (Bolton et al, 2013: ix) of climate change, they share a concern to speak beyond a suite of Pacific exemplars illustrating common cause, to contribute what amounts to a Pacific vantage point on anthropological and wider social science

assumptions and theorisations of climate change. Beyond a collection of small-scale case-studies from across a large-scale region, the materials and analyses here speak to how scale and relations of adaptation, combination and appropriation appear to, and are approached by, particular cultural logics, and moreover, speak to prevailing orthodox understandings of climate change, and thereby challenge these hegemonic understandings from a Pacific perspective.

Alongside the temptation to read these Pacific examples as multipliers of the ways that many cultures make what they would of the same facts of nature, or as a collective exhibition of a region's responses to a shared experience, or as evidencing the confirmation of a theoretical perspective, comes an invitation tempting readers to engage the contributions that follow as an opportunity to re-work and re-frame any underpinning cultural and ideological commitments of their own. As much as the descriptive enrichment and analytical enhancement that might be derived from the Pacific ethnographies that follow, the volume also offers insight into why the problems of climate change are difficult to make transparent. Here we touch upon distinctively Eurocentric interlocks, interconnections and conceptual separations by which the disjuncture of representations from that which is represented provides a corollary of the disjuncture between nature and culture or different social constructions of a shared real world. Whilst the relational iteration of cultural interlocks may be universal, the character of the interlocks and what is being connected are, of course, not. Pacific climate cultures provide a vantage-point on folk-models and cultural assumptions of our own.

It is instructive that His Highness Tui Atua Tupua Tamasese's forthright diagnosis of the problem of climate change in terms of "arrogance and greed" in the Prelude to this volume should be a necessary preliminary and instrumental means to finding a way to be "bold enough to allow us to say the unsayable." Conventions need to be knocked off balance to reveal both old habits and new possibilities, and in this way too His Highness' provocation is a fitting Prelude to the ambitions of this volume. Pointing to the problem of arrogance and greed might be hard to say because of the "soul-searching questions it forces us to confront about ourselves," and because of the resistance to acknowledging presumptions of "unfettered dominion over our environment and all living things" and an "unhealthy preoccupation" with "material gain for individual benefit at the unreasonable expense of others." Offending delicate social protocols makes these things hard to say, no doubt, and acknowledging their traces in one's own actions and in one's view of oneself is uncomfortable. Beyond etiquette and honesty, the impasse appears to be a problem of representation: that is, of collapsing the disconnect between the ideal world as represented through cultural models and the real world as reproduced through social actions. Representational strategies embody and reiterate certain assumptions: representation necessarily involves a separation or detachment, and suggests a corollary in the very separation of human ideas and systems from environments taken as causal factors in anthropogenic climate change. So, the wider question and larger point to be taken here is that, from

this Samoan perspective, why should the obvious disconnect between the reality of the world and the social actions that manifest it, be so “difficult to make transparent”?

Questions of “change” summon notions of prior and normative states. Similarly, that social, economic, political and cultural changes accompany climate, meteorological, ecological and environmental changes summons a prevailing order of things, for example, in how one register is implicated in and represented by the other. In addressing this question, we might look to adapt or combine some older cultural and intellectual resources of our own. The view that order is the proper and normative state, and that the order of nature provides a model for society, such that changes in one are represented by changes in the other, reveals particular cultural origins and corresponding problems or “totemic illusion” with analysts discovering “social control” (Strathern, 1985: 116) and “society” in parts of the Pacific (1988). Indeed, Pacific socialities provide vivid counter examples of the “familiar and predictable lifeworlds humans create for themselves” (Hulme, 2015: 293). In respect of Pacific materials, Wagner counter-intuitively suggests we resist the temptation entailed in “constantly trying to [bring] things into an ordered and consistent relation”: we should instead grasp the motivation as “constantly trying to change, readjust [and] ‘knock the conventional off balance’ ([1975] 1981: 66), or ‘the more disputes are settled, the more they erupt’ as Strathern puts it (1985: 127). “Change” holds a different position and quite alternative effects in such different views: starting points carry definite corollaries for analytical stances, theories and motivations. For when Strathern suggests that in one view “parts of social life are seen to offer commentaries on other parts, much as the social scientist’s job is to offer commentary” (1985: 112), this is a question of representation that pertains as much to a tradition of social science as to the social traditions these disciplines emerged from, and we should grasp the parallels between our social and methodological positions. The question of why it is so hard to see the disconnection between the world as it is ideally imagined and the world as it is lived is fundamentally a problem of representation: as such it goes to the heart of social scientific description which relies on a separation or disconnect with its object into order to make it describable in the first place. The Pacific is a provocative place from which to confront these questions.

There are different ways of understanding social relations, and alternatives to assuming that it is relations between differentiated domains that call for explanation. Roy Wagner’s depiction of Scientific and Papuan conceptualisations of the innate, spells out the consequences of stances that take either “relating the perceptibly differentiated” or “differentiating the perceptibly related” as their epistemological starting points (1977). For example, the honorific words the Samoan chief addresses to the fish confirm their relatedness in an equality of status, a mutuality of respect—albeit further differentiated in a culinary hierarchy. Of course, these stances and starting points derive from cultural commitments to the metaphysical ways that ideas participate in each other, and we stand to learn from Pacific people’s own cultural and social representational strategies—not least whether they are representational

in quite the same way. As Hulme observes, these are matters of agency: “as new and not-so-new political interests find multiple uses for climate change, our material, social, and imaginative worlds become subject to its powers” (2015: 297). Agency is also evident in analytical stances and starting points for description, and also evident in the corresponding location of realms of human responsibility and of innate realms taken for granted.

As much as any utility derived from counter examples to the conceptual differentiation of nature and culture or human and non-human, the ethnographic materials in this volume can be read as affording counter examples to a representational strategy able to “describe one’s social world as apart from the actions which constitute it,” by which “Life is understood in terms of a split between representations (descriptions) of it, and as it really is” (Strathern, 1985: 128). But as we have seen, there are real problems with assuming that this particular social representational strategy is universal: “however useful the concept of society may be to analysis, we are not going to justify its use by appealing to indigenous counterparts” (Strathern, 1988: 3). The all too familiar representational strategy we know as “society” provides endorsement for relations between individual members and collective groups, and provides a corresponding means of differentiating dual registers: just as it is possible to describe a social world as apart from constitutive actions, so it is possible to speak at the individual or society level without the need to speak at both levels at the same time, for in their differentiation they also invoke, and provide a rationale for, each other. In terms of climate change, the articulation between dual registers endorses the possibility of speaking to the problems of climate change in one register and of speaking to personal participation in those problems in another register. And the tongue twister of articulating differentiated separation—when to speak of one evokes and relies upon the other—makes transparency difficult and a diagnosis almost unsayable. Perhaps this also informs what His Highness Tui Atua Tupua Tamasese observes as “the ability to rationalise and believe that what is wrong is right.”

Climate change in the Pacific is indistinguishable from the constitutive ideas, actions and responses, and thus adaptation and appropriation are not bridging a representational gap between differentiated registers: instead the focus falls on reception by knowledges which are relational and combinatory, and on apprehensions and actions which are mutually constitutive. If the parts do not index or represent or offer commentary on other parts, then what happens to the corresponding position for analytical representation and commentary? If order is not the motivation and if change is not disruptive to convention but rather a means of revealing it, then cultural appropriations crafting analogies through climate change begin to appear as techniques of knowledge by which to apprehend the capacities, affordances, possibilities and constraints of the world anew. Climate change affords a venue for multiple ways of knowing in a changeable world, and a method of discovering insights into re-worked possibilities. In other words, it begins to appear as a revelatory

technique, a means of finding ways of saying what was previously unsayable about the world and the conventions of its constitution. This volume questions whether and how climate change in the Pacific is being “used to stand in for a wider set of human concerns about their changing cultural, political, moral, and physical worlds” (Hulme, 2015: 293). In doing so, the volume offers both ethnographic and analytical insight, and both regional and theoretical provocation, in which aspects of the region’s epistemologies share an equality of status with the region’s experiences as contributions that enrich understandings of climate change. In this way, the volume aims to put the Pacific closer to the frontline of social science theorisations of climate change, and the combinatory character of knowledge itself here creates space for a new narrative, reiterating the volume’s contributions in new narrative terms.

1.2 Discourses of Climate Change in the Pacific

A spectre is haunting Oceania: the spectre of climate change. It is indeed spectral, not quite real, because like “modernity,” “democracy,” “decolonization,” “development,” and many other mega concepts of our age, it describes both a present reality and an imagined future that is still in the process of materializing. “Climate change,” like the other concepts mentioned above, is by its very nature not an endpoint but a process: moving from a past of familiar (and often assumed to be stable and benign) climates, to a present of perturbed and “weirding” climates, towards a future of possible climatic catastrophe. Much has been written about climate change in the Pacific: impacts, forecasts, responses. Less has been written about “climate change” in the Pacific: a discourse and steering concept which itself has the power to cause change. The inverted commas around “climate change” imply a postmodern detachment or irony, and could easily be lampooned for treating as unreal what is actually a very real, very serious, anything-but-ironic threat. But for the social scientist or humanities scholar there is nothing unreal about climate-change-as-discourse: it is really out there, doing real work, channelling real resources, inspiring real action, as this volume intends to show.

What is done in the name of this phrase? In the Pacific, probably as much, or more, than is being done in response to actual physical manifestations of climate change (Hermann and Kempf, this volume). Islanders are responding to the idea as much as to the thing, the future as much as the past or present—the very definition of Beck’s “risk society” (Beck, 1992). The Pacific is a special place to investigate the reception and appropriation of “climate change” concepts, because here the discourse takes some of its most arresting and intense forms. The Pacific Islands in general, and low-lying coral atolls in particular, have found themselves portrayed—by foreigners, and now sometimes by their own inhabitants!—as places of inherent and overwhelming vulnerability, facing mighty challenges at best, evacuation and disappearance at worst (see Connell, Hermann and Kempf, and Struck-Garbe in this

volume; also see Mortreux and Barnett, 2009). This is environmental alarm-sounding at its most sensational register, sometimes verging on “climate porn” (Lowe, 2006). These hyperbolic predictions can rob agency from islanders (Farbotko, 2010; Barnett and Campbell, 2010), but they can equally open the door to the invention of new sorts of agency, as all of the case studies in this volume illustrate. Connell’s case study raises the intriguing possibility that islanders can strategically appropriate doomsday discourses for their own ends.

The result is an interesting tension: on the one hand, we have extreme predictions and pronouncements, on the other hand, in most Pacific communities, a more moderate physical reality. Some Pacific Islanders have indeed been overwhelmed and displaced by (what has been called) the impacts of climate change—the classic, though simplified, examples are the Carteret Islands (see Connell’s and Struck-Garbe’s contributions to this volume for widely different takes on this emblematic example), and Takuu atoll—and many other communities are experiencing increasing socio-ecological distress partly due to changing and destabilizing climates. But by and large, for now, life goes on in the Pacific Islands, and climate change exerts its influence as much as anticipatory idea and conceptual resource as it does through saltwater intrusion, eroding graveyards, cyclonic winds, and bleached reefs.

A fascinating dynamic result. When Pacific Islanders hear about “climate change” and “global warming” (which even those of limited education now do on the radio, in classrooms, at workshops, and elsewhere), for many it is not simply a restatement of what they can plainly see unfolding in front of them, but rather an intriguing set of forecasts and claims, sometimes appearing to be a sort of “prophecy,” as in Hermann and Kempf’s chapter. The scientific discourses of climate change do not merely confirm what Pacific Islanders already know, but in many ways, diverge from their experiences of the world. The scientific and media presentations of the issue may be narrowly “environmental,” while islander understandings are typically interwoven with moral and cultural concerns, making no stark distinction between natural and cultural change (Rudiak-Gould, 2012a). The messages may emphasize particular environmental changes that islanders deemphasize, and vice-versa: foreign media accounts privilege sea level rise as the overarching existential threat, while some locals may be more concerned at the moment with the mundane but important impacts of droughts and coral bleaching. The messages may have a different temporal focus: media accounts tend to be preoccupied with possible scenarios for the century’s end, while islanders may be more interested in what responses can be taken on the ground now (Veitayaki and Holland, this volume). They may differ in the exuberance, or wideness, of attribution—islanders may attribute many things to climate change that scientists would hesitate to, or even reject entirely (Rubow, Newell, and Nolet, this volume; also see Rudiak-Gould, 2012a); conversely, islanders may be intensely concerned about certain climatic changes, such as shifting seasonality, that media outlets rarely emphasize. The message received may evince intense anxiety about the future, while locals are more sanguine (Mortreux and Barnett, 2009). In other cases,

exactly the opposite difference is found (Connell, 2003). Climate change impacts and predictions leave some islanders frightened, others excited, others entirely unfazed, creating opportunities as well as dangers, as Rubow's case study in the Cook Islands shows.

As many of the case studies in this volume show, islanders are now attributing a great variety of local changes to "climate change," or to its recently translated equivalents in Pacific languages. This is a relatively new phenomenon, which in many Pacific societies began in the last five or ten years (Rubow, this volume). A key question, as we see it, is what exactly happens, what exactly are the consequences, when an environmental change becomes understood in this way. The contributors offer some answers to this question. A variety of different issues—water stress, migration, marine pollution, fisheries—are, for good or ill, gathered together under a single heading, and thus seem to demand an integrated, perhaps even a single, response (Newell, Connell, this volume). It becomes all too easy to assume that all of these issues will follow the same trajectory—steady intensification, worsening—even though the reality is more complex, as we see in Rubow's chapter. The widely varying experiences of different Pacific societies are similarly grouped together—all are now "on the frontlines of climate change," "facing climate change," "vulnerable to climate change," and so forth, even though among Pacific Islanders are enormous differences of wealth, power, positionality, and attitude to climate change (Rubow in this volume; Hughes, 2013). It is a bridging concept that rallies disparate Pacific societies around a central concept that looms over them all (Kelman and West, 2009). The discourse of climate change also builds bridge between the Pacific Islanders and the citizens of high-income, industrial nations, some of whom now conceptually relate to islanders almost entirely through the idiom of "sinking islands" (Connell, this volume). Certain opportunities are unlocked. Funding earmarked for climate change work becomes available for climate change education, adaptation, and mitigation projects (Veitayaki and Holland, Binging, Rubow, Newell, this volume)—indeed for any kind of project that can be plausibly labelled with that extremely marketable phrase, for many officials of Pacific NGOs lament that nowadays every project must be said to relate to climate change lest it not be funded (Newell, this volume), such that communities may express all of their disparate concerns in terms of climate change (Rubow, this volume). Pacific environments become emblems and evidence, Pacific communities become victims and witnesses (Connell, this volume). Western journalists suddenly become intensely interested in the movements of small, marginal, usually ignored populations (Farbotko, 2005, 2010; Farbotko and Lazrus 2012)—it is unlikely that media outlets would have given much attention to the looming relocation of fewer than two thousand Carteret Islanders from their eroding islands, if not for the fact that it could be recognized, or spun, as an "impact of climate change," thus making the migrants "climate change refugees" (Connell, this volume).

Still other changes may take place when islanders come to see local changes as climate change impacts. Guilt, but with it responsibility, is taken away from local

hands, for if something is “an impact of climate change,” locals are neither to blame for it nor are able to solve it (Newell, Veitayaki and Holland, this volume). Complex local processes and histories that contribute to vulnerability are thus ignored (Connell, Nolet, this volume). Many small local problems become a single global mega-problem that may seem solvable only by the world’s most powerful states (Newell, Veitayaki and Holland, this volume). This disempowers at the same time that it, more positively, discourages unnecessary self-flagellation and victim blame (see Struck-Garbe in this volume). By giving an account of the causation of climate change, tracing it to particular industrial artefacts, it suggests ways of participating in mitigation, for those societies that see it as worthwhile (see Veitayaki and Holland, Binging, this volume; also see Rudiak-Gould, 2014a). The science also warns people that changes they see around them are not the apogee of a cycle, but part of an upward trend that will continue for decades or centuries. Things will not return to normal, but will continue to become stranger, and worse (Nolet in this volume). This is a call to arms, but also for some Pacific Islanders an invitation to anxiety and despair (Loughry, 2010); Hermann and Kempf’s chapter in this volume shows that the two reactions can co-occur. Putting local changes under the label of climate change may also scientize, make technical, local processes that before seemed amenable to the vernacular, leading to the disempowering perception that local knowledge has been rendered obsolete (see Veitayaki and Holland, this volume). Just this process appears to be occurring on some of the atolls of the Federated States of Micronesia, where the *idea* of climate change, by itself, is making a once-familiar environment seem unknown and unknowable (Pam and Henry, 2012).

So, climate change can change minds. But it should equally be noted that this “momentous” narrative can seem banal and obvious to some Pacific Islanders. Some of anthropogenic climate change’s central premises have been standard ontological premises for many Pacific societies for centuries. The entanglement of nature and culture, which Cecilie Rubow points out in her contribution is inherent in the idea of anthropogenic climate change, is no surprise to societies that have never stressed the distinction. The dynamic, uncontrollable nature of the climate system is hardly a surprise to those who have had to creatively adapt to its vagaries for centuries (Robertson, this volume). The idea that humans can influence the weather, that people’s wrongdoing can be registered in the environment, is not news at all to the many Pacific societies with long traditions of weather magicians, chiefs, and deities who bring good and bad weather depending on public deference (Newell, Robertson, this volume). Even the idea of inundation and disappearance is not novel to some Pacific Islanders: Marshall Islanders have long worried about being swallowed by the waves, living in a country where typhoons can remove entire islands from the reef (Rudiak-Gould, 2013a; also see Hermann and Kempf, Newell, this volume). The idea of forced migration is sadly familiar to the Bikinians, Eniwetokese, Rongelapese, Banabans, and many other Pacific Islanders who have already faced wholesale displacement to make way for phosphate mining, nuclear testing, and other

destructive practices (Lieber, 1977). The perceived loss of identity and tradition was looming over many islanders long before Western journalists and activists declared that climate change migration will kill culture—it has long been seen to be under threat from colonialism, immigration, voluntary abandonment, and much more (Newell, this volume; Keesing, 2000). The apocalyptic narratives that often form part of climate change rhetoric are not new to Pacific communities with pre-existing eschatologies of doom (Rubow, Nolet in this volume). The idea that something is rotten in the state of industrial modernity is an affront to committed modernists (Žižek 2010), but hardly a revelation for the many Pacific Islanders who have, through their rediscovery and celebration of traditional culture (or “kastom”), already launched a powerful critique of blind modernization (see Newell, Nolet, this volume). We may sometimes overestimate the impact and the novelty of climate change; it may be most surprising to Westerners whose ideologies and ontologies made it so hard to accept and recognize.

While much of the preceding discussion has implied a kind of binary between locals/non-scientists and foreigners/scientists/journalists, this is a dangerous oversimplification. Locals may themselves be the scientists in question, as well as the journalists and science educators (Rubow, this volume). The understandings that result are “hybridized knowledge” (Soselisa, 2007): coming from two distinct sources, perhaps, but ultimately melding into something that blurs the line between science and local knowledge.

Despite this potential for productive collaboration and hybridity, often the lines remain too starkly drawn, with scientific assessments side-lining local voices (Finucane, 2009), turning the dialogue into a monologue. On the other side, advocates of local knowledge may also value only one side of the dialogue, portraying science as useless, oppressive, or redundant to local knowledge (Robertson, this volume). While this argument is valuable as a corrective for the overweighting of scientific authority in climate policy, it too risks precluding productive dialogue. Climate science may be of help to Pacific Islanders just as Pacific Islanders are sorely needed to contextualize, localize, humanize, moralize, and complicate the grand pronouncements of climate science. A key question is therefore the following: what exact aspects of climate science, communicated in what way, can be helpful to Pacific communities in their efforts to respond to climate change? and what exact aspects of local knowledge could be usefully incorporated into scientific understanding? Pleas for this sort of collaboration (Kelman, Mercer, and West, 2009) are a step in the right direction, but are often stingy on details. We hope that the chapters of this volume begin to offer more specific answers to these questions. At this point, only tentative answers can be offered. What can science offer Pacific Islanders? It can provide long-term predictions of climatic events decades in advance—uncertain predictions, of course, but still useful for planning, and something local knowledge can rarely provide, since it rarely claims to forecast events decades in the future (Hermann and Kempf, this volume). Climate science can offer an account of causation that absolves locals of

much of the culpability (see Veitayaki and Holland, Connell, this volume), inspiring some Pacific representatives to act as the conscience of the UNFCCC negotiations (Barnett & Campbell, 2010: 101). Climate science, by grouping local problems under the travelable, saleable *cause célèbre* of “climate change,” can be of practical value by providing a steering concept with which local climate activists can attract attention and funding (Newell, Veitayaki and Holland, this volume). Climate science can call attention to certain environmental changes that are not yet salient to locals, but which promise to pose enormous problems in the future (Rudiak-Gould, 2014b) (for instance, ocean acidification is rarely a local concern at the moment, but promises to become among the most damaging impacts on Pacific communities in the future). What can local knowledge offer to science? It can localize the science, providing on-the-ground specificity of impacts and adaptation strategies (Kelman, 2011). It can suggest to climate scientists relatively overlooked climate impacts (Finucane, 2009)—a good example being the changing seasonal timing of rain, wind, harvests, and so forth, which is of great concern to many communities around the world, but an impact of climate change that has not been much emphasized in scientific reports (Jennings and Magrath, 2009). It can render the science more holistic, perceiving the multiple drivers of vulnerability and change, of which global warming is but one (Veitayaki and Holland, this volume).

A variety of theoretical resources in anthropology and the wider social sciences and humanities lay a solid foundation for understanding climate science reception. Any ethnographically sensitive discipline would see the “receivers” of discourses not as empty vessels to be filled, but creative agents who reconstruct and reinterpret the message as they receive it (Rudiak-Gould, 2011). Climate change is, among other things, a discourse of *risk* in the anthropological formulation of Mary Douglas (1992) and colleagues (Douglas and Wildavsky, 1982; Verweij et al, 2006) which suggests that individuals and societies will select and respond to risks in such a way that key ideological commitments are upheld. Those pressing for radical change will find apocalyptic risks credible and seek radical solutions to them; those defending the status quo will downplay risks and advocate, at most, conservative responses to them. Sometimes a discourse seems so threatening that the response is to disavow it entirely; in the Pacific this often takes the form of dismissing the idea of climate change on the grounds that God promised Noah never to flood the earth again, an argument that people in Kiribati, Tuvalu, and the Marshall Islands make, and probably elsewhere as well.

In the process of ideologically domesticating climate change, some parts of the scientific and media discourses are discarded, ignored, or forgotten; other, novel parts are grafted on; and the result is a new understanding of the issue, different from any other understanding but still recognizably a discourse in the climate change genre (Rubow, this volume). Though scientists often feel that inaccuracies are introduced in the process—and they are probably right—the net result is not so much bastardization or adulteration as it is reinterpretation. The scientific discourse

of climate change by itself hardly engages people—it is too geographically disparate, too technically esoteric, too invisible in its mechanism, too value-free, too focused on global *climate* and not focused enough on local *weather* (Jasanoff, 2005): “climate is recorded, weather experienced” (Ingold and Kurttila, 2000: 187). By refashioning the idea of climate change, islanders *make* it engageable and actionable (Veitayaki and Holland, this volume).

This is a particularly Pacific brand of a more general process occurring in societies nearly everywhere, where climate change discourses are being “appropriated in support of a wide range of ideological projects” (Hulme 2009: xxviii).⁵ None of this requires scientific dishonesty or denial, for the science of climate change is such an enormous text that “those holding different value perspectives may see in the huge and diverse body of scientific information relevant to climate change different facts, theories, and hypothesis relevant to and consistent with their own normative frameworks” (Sarewitz, 2004: 389), and thus remake it in their image. This volume aims to explore this process in a particular region of the world.

A wide body of scholarship on the Pacific Islands by anthropologists, historians, geographers, and others lays the ethnographic foundation for this volume. The reception of climate change is a process not quite like any other that has previously occurred, but many aspects of it are reminiscent of previous knowledge encounters in Oceania, and research on those historical precedents sheds a great deal of light on the current situation of climate change communication. Pacific Islanders have many times before been told that their well-being is better understood by foreign experts than by themselves, creating feelings of scientific scepticism as well as reluctant dependence; a prime example comes from nuclear testing (e.g. Dibblin, 1988). Pacific Islanders have been told many times before that their homelands are tiny, remote, and inherently vulnerable; this is not an invention of the climate change era, but a longstanding colonial trope that has merely been reinvented and reinvigorated in today’s environmental narratives (Barnett and Campbell, 2010; Farbotko, 2005, 2010; Hau’ofa, 1993). It is essential also to consider previous work on Pacific Islanders’ practical, social, and spiritual attachment to land (Campbell, 2010), now a key influence on their approaches to climate change (see Newell, Hermann and Kempf, Struck-Garbe, Nolet this volume), as well as pre-existing discourses of decline and progress, decaying culture and increasing sin, missionary salvation and virtuous modernization (Tomlinson, 2004; Rudiak-Gould, 2010), which are now being used to understand climate change (Newell, Nolet, this volume; Rudiak-Gould, 2012b). We must also take guidance from previous scholarly documentation of islanders’ great

5 “Our discordant conversations about climate change reveal...all that makes for diversity, creativity and conflict within the human story—our different attitudes to risk, technology and well-being; our different ethical, ideological and political beliefs; our different interpretations of the past and our competing visions of the future” (Hulme 2009: xvi).

environmental knowledge, gained through gardening, fishing, sailing, and sheer curiosity, now undergoing processes of both decay and invigoration (Johannes, 2002), both of them partly as a result of climate change.

This volume is the result of a session entitled “Appropriating Climate Change: Pacific Reception of a Scientific Prophecy” at the European Society for Oceanists 2012 conference in Bergen, Norway. The contributors include both Pacific Islanders and Westerners, from a variety of academic and professional backgrounds, reporting from urban and rural communities in Kiribati, the Marshall Islands, the Cook Islands, Samoa, Fiji, and Papua New Guinea, as well as the halls of the United Nations. Two presentations at the session, by Mark Stege, and by Hans Thurlstrup and Jennifer Rubis, are not included in this volume, but provided important illustrations and provocations. Stege discussed Climate Education Week, an outreach program held in the capital of the Marshall Islands, which communicated discourses of climate change and saw students planting the ocean shore of their school with native plant species traditionally used to protect against salt spray, wind damage, and erosion, thus “planting resilience.” Stege made clear that it would be misleading to see this purely as a “climate change adaptation” or “climate change outreach” program. Thurlstrup and Rubis discussed the enormous value of indigenous ecological knowledge and traditional techniques for climate change adaptation through the UNESCO-coordinated Climate Frontlines initiative (see UNESCO, 2012), and demonstrated that Pacific Islanders can quite easily take up climate change discourses: while the greenhouse effect is new, changes in climate and the necessity of responding to them are certainly not, and in that sense, climate change hardly needs to be appropriated at all, as its central premises are already built into indigenous cosmologies.

1.3 Pacific Climate Cultures

Elfriede Hermann and Wolfgang Kempf’s chapter takes us to Kiribati, where scientific narratives of “climate change” have been received not only by government officials but by locals of many walks of life and levels of formal education. These “prophecies” of sea level rise and other existential threats to the country are understood to have power in themselves—“the power of anticipation,” as the authors put it—to create despair and inaction as well as hope and engagement. While noting that I-Kiribati respond to climate change with diverse attitudes ranging from scepticism to intense concern, Hermann and Kempf focus on the way in which locals have managed to appropriate the discourses in empowering ways through song. Traditionally, I-Kiribati songs are used to declare intentions and to make binding promises: prophecies in themselves that help to shape the future rather than merely anticipate it. More recent musical compositions exercise their power through the evocation of emotions—vis-à-vis climate change, the dominant emotions are love, fear, and sadness. Hermann and Kempf analyse a particular song, “Koburake!” which was written before discourses

of global warming and sea level rise were in wide circulation, yet remarkably contains a prophetic reference to the I-Kiribati homeland disappearing under the ocean. The song, both in its original intended postcolonial meaning and its newer reinterpretation as a song of climate change, illustrates the confluence of agency and disempowerment that discourses of climate change foster: a sense of powerlessness in the face of a global process that no one country can stop, combined with a call to arms for airing islanders' plight to the world.

Cecilie Rubow shows how Cook Islanders came to understand a series of damaging cyclones as “impacts of climate change.” Rubow uses cyclones ethnographically to examine the discursive appropriation of climate change by Cook Islanders, and also more generally to symbolize our postmodern condition, in which nature and culture are messily hybridized, categories become tangled and ambiguous, and global processes refract in innumerable locally specific ways. She emphasizes the diversity of local responses to climatic hazards and discourses, which include dismissal as well as opportunistic embrace, excitement as well as fear, and which are expressed in religious, scientific, and political registers. At the same time, her case study demonstrates how a particular discourse—that of climate change—bundles together numerous processes into a single super-category. In the Cook Islands, issues as disparate and multiclausal as invasive species, damage to coastal infrastructure, and water pollution are being recast as sub-issues under the climate change umbrella. While climate change impacts rip apart, climate change discourses tie together.

Maria Louise Bønnelykke Robertson's case study from Kiribati approaches climate change through the lens of predictability and unpredictability. For many Westerners, anthropogenic tampering in the climate system raises the fear that the weather will no longer be stable and knowable, while also raising the hope that with improved forecasting and modelling the weather will become more knowable than ever (and, through geo-engineering, perhaps controllable as well). But, writes Robertson, Pacific Islanders rarely conceive such hopes or fears when they hear of anthropogenic climate change, because they have always understood the climate as partly predictable, partly unpredictable; climate change is no surprise at all. Robertson draws a detailed portrait of the I-Kiribati navigator Teueroa, who dismisses scientific narratives of climate change despite her close observation of a changing, dynamic local environment. Media discourses of climate change sometimes imply not only that the climate is changing but that the *fact* that the climate is changing constitutes a change from the (stable) past; Teueroa rejects this reasoning. Robertson's study demonstrates that local acceptance and rejection of climate science does not hinge entirely on the first-hand observation of confirmatory local changes, but on an exegesis of the moral and ontological underpinnings of Western notions of nature and the decision to accept or reject those underpinnings.

Emilie Nolet explores the reception of the 2012 floods in Nadi, Fiji, and surrounding villages, showing how differing causal interpretations of the disaster are linked to differing political commitments and policy preferences. National government

and media have predominantly attributed the floods to “climate change,” with the implication that the hazard will intensify in the future and therefore relocation of poorly-positioned settlements will become necessary. Other voices have pointed the finger at local development activities, including the impacts of intensive tourism, suggesting very different policy outcomes. Still other Fijians interpret the floods as a divine sign of coming Judgment Day, meaning that the best response is fatalistic resignation; or as God’s punishment of indigenous Fijians for their imitation of Western ways, implying that the best response is to reclaim traditional lifeways and to oppose political leaders who weaken the authority of indigenous Fijian chiefs. The conversation on climate change is thus also a conversation on culture, development, power, rights, and ethnicity. As Cultural Theory would predict, the idea of climate change is being used to justify and push forward political preferences.

John Connell takes a critical look at the media and activist application of climate change discourse to the Carteret Islands, on the fringes of Papua New Guinea. Causes of environmental change on this atoll include not only climate change-induced sea level rise but also tectonic change and the local construction of seawalls and removal of mangroves. Carteret Islanders’ response has been a complex series of migrations to and from nearby Bougainville Island, driven not only by environmental threats on their home atoll but also by economic considerations, negotiations with landowners on Bougainville, and Bougainville’s civil war. This complex story, writes Connell, has been collapsed by journalists, filmmakers, and NGOs into a simple story of climate change-induced exile; they have appropriated the Carteret Islands as proof of, and an emblem of, climate change. Some sources even report, very much erroneously, that the islands have already been entirely evacuated and scientists had predicted the complete submersion of the islands by 2015. However, in an intriguing twist to Connell’s account, some Carteret Islanders themselves have embraced this simplistic and misleading narrative: they have performed the role of “climate change refugee” and played into Western assumptions of needy noble savages in order to obtain assistance for a relocation that they were planning anyway. As Connell writes, they have turned the problematic narrative of “climate change exile” into a weapon of the weak.

Jennifer Newell’s chapter notes the relatively high awareness of climate change discourses in Samoa, to the point that some Samoans feel oversaturated with the message. According to Newell, this stems not from Samoa’s vulnerability to climate change impacts but from its positioning as the Pacific region’s hub for administering climate change-related funding. This opens the door to cynical manipulation of the climate change aid game, in which damages from local development are opportunistically recast as “climate change impacts,” thus absolving local developers and leaders. It also opens the door to a productive discussion on continuity and change, on which aspects of Samoan tradition should be maintained and which should be adapted or abandoned in order to navigate a changing world. Communal care, what a social scientist might call “social capital,” is considered favourable for

climate change adaptation. But other Samoan traditional practices are ambiguous. Are open-walled Samoan house structures an asset during extreme weather, or a liability? Does ancestral attachment to land foster environmental stewardship or simply prevent people from seeing the need to relocate inland? Newell's case study shows that climate science does not enter a vacuum: it is taken up into a complex field of pre-existing debates, shaping them as it is shaped by them.

Marion Struck-Garbe explores Papua New Guinea artists' use of visual media to depict, make sense of, and to challenge, climate change. Their works have addressed the threat of land loss (and the cultural losses that are seen to stem from it) on low-lying communities; coral bleaching and the resulting decline in marine resources for shoreline communities; and deforestation (a cause of climate change, not merely a consequence of it) by industrial logging. It is abundantly clear that these artists are responding not only to local climatic changes, but also to media stereotypes and scientific discourses of climate change: depictions of the Carteret Islands must owe part of their inspiration to the media narrative that John Connell's chapter explores, and artwork that is intended as a protest against the greenhouse gas emissions of industrial nations clearly builds on scientific and media accounts of global anthropogenic climate change.

Joeli Veitayaki and Elisabeth Holland's chapter draws on their experience with facilitating resource management planning by means of a home-grown sustainable development community programme on Gau Island, Fiji. As such, their contribution also voices a wide-spread in-between space precisely where local peoples are mediating and portraying vernacular concerns in the lingua franca of scientific terminology, and through modernist policy document and funding cultures—an important interface that can entail eclipsing indigenous terms and disguising the “bottom-up” character of initiatives (Crook 2007b). For example, Veitayaki and Holland show that Pacific Islanders can respond proactively and positively to climate change forecasts, but only if communicated properly: the forecasts must be made to speak to existing local concerns and to acknowledge the many other drivers of change. According to Veitayaki and Holland, the English phrase “climate change” or a vernacular translation should not even be used in the initial phases of the project; it should be introduced later, once the community has already shown interest in drafting a community resource management plan. The value of the phrase “climate change,” suggest the authors, is its potential to help secure funding and to communicate local resource management plans in a way that outsiders can relate to. The Lomani Gau project, as it is called, does not attempt a clumsy separation of “climate change” issues from “environmental” issues more generally or from “economic” issues; all are integrated. Veitayaki and Holland reject the assumption that tradition is a panacea for climate change adaptation. On Gau, the customary exclusion of women and youth from formal decision-making bodies is detrimental to climate change adaptation. On the other hand, the *tabu* system by which traditional leaders may declare particular

resources off-limits is of great value for conserving particularly important resources and for encouraging compliance without outright enforcement.

Nalau Bingeding critically examines the response of Papua New Guinea, especially its government officials, to discourses of climate change. Bingeding's central argument is that the country's climate change agenda is externally driven, beholden to the requirements of donor organizations rather than citizens. The result, writes Bingeding, is that while numerous government programs are branded as "adaptation" or "mitigation," little if any benefit has been seen on the ground. Adaptation is pursued piecemeal, without coordination, or ignored entirely; the destruction of the country's carbon sinks—its forests—continues despite promises to curtail commercial logging; delegates are sent without any clear agenda to UNFCCC summits; REDD is pursued without adequately addressing the issue of green grabbing; and enormous potential for renewable energy development is recognized but not acted upon. Bingeding's case study is a sobering reminder that the embrace of climate change discourses is a far cry from a real conviction to reduce vulnerability and culpability. Climate science is a tool that can be used in many ways, as both a weapon of the weak and an act of symbolic violence by the powerful.

Elfriede Hermann, Wolfgang Kempf

2 “Prophecy from the Past”: Climate Change Discourse, Song Culture and Emotions in Kiribati

2.1 Introduction

Pacific Islanders frequently perceive discourses about climate change and what this is going to mean for the Pacific region as imbued with power—especially when statements to that effect involve projections into the future. They clothe their responses to such discourses in various expressive forms. This holds too, in fact especially, for the inhabitants of the State of Kiribati, which is situated in the Central Pacific and often referred to as an atoll state—since the overwhelming majority of its islands are made up of low-lying atolls or reef islands. In the course of contesting the diverse formations of statements about climate change and its consequences for Kiribati, the inhabitants of these islands—the I-Kiribati—have come up with discourses of their own that are accompanied by emotions; some of these discourses find expression in the lyrics of newly composed songs or in contemporary interpretations of the poetry of old songs. In light of these responses, we argue that songs and emotions represent modes of agency vis-à-vis climate change discourses in and about the Pacific atoll state of Kiribati. Songs in Kiribati culture are instruments for exercising power, which is why we now find them implicated in contexts of local debate over climate change. Their agency is especially strong when they evoke emotions able to mobilize audiences. In this context, songs and emotions help to manage a feeling of powerlessness, transforming this into an ability to induce change. In order to illustrate this cultural understanding, we examine a song text of outstanding interest, one long known but now reinterpreted to articulate such emotional discourses on coping with climate change. The efficacy of this song, linked as it is to emotions, stems from the fact that local discourse ascribes to the song a potential for anticipation—making it, from one I-Kiribati perspective, a “prophecy from the past.”

Discourses circulating in Kiribati about climate change as an ongoing physical process derive partly from external and partly from internal sources. The external discourses have reached Kiribati, more often than not, via visiting representatives of other states, internationally sponsored projects initiated by Kiribati’s government, foreign scientific bodies, international NGOs, internationally networked churches, foreign media as well as experts and private individuals who bring to Kiribati relevant knowledge from their travels. The internal discourses, which have resulted from

taking over the external ones, are mainly circulated by Kiribati government officials, national politicians and committees, members of local churches⁶ and NGOs, Kiribati film production and radio, newspapers published on the main atoll Tarawa, local experts, teachers, travellers, and anybody with a particular interest in the topic. These diverse discourses usually point to the availability of scientific knowledge on climate change on the international level; yet discourses of this kind offer information of variable complexity on global warming and its projected implications for Kiribati. The more nuanced discourses state that diverse scenarios of climate change impacts do exist. Chiefly cited among the projected consequences is a rising sea level, but other outcomes are also canvassed—such as an increase in the annual mean air temperature and a greater incidence of extreme weather events, with grave implications for available drinking water. The government of Kiribati, headed by President Anote Tong, has decided—within the framework of the internationally financed Kiribati Adaptation Program (KAP), phase I of which began in 2003—to launch a cautious initiative, the aim being to communicate an objective perspective on these possible consequences and to champion adaptation as a realistic option. The less detailed discourses are, however, predicated on dramatic developments as real as they are inevitable and unstoppable. They dwell chiefly on the existential threat facing Kiribati—a rising ocean that causes more and more land to be flooded. Since all these climate change discourses are ultimately based on findings by natural sciences considered to be objective and authoritative and legitimized by international and national policies, these discourses have taken on a hegemonic status, demanding consensus.

Since these external discourses of climate change first reached Kiribati via the English language, it happened that the term “climate change” was taken over into the vernacular. In the course of the Kiribati Adaptation Program, this and other related concepts were then translated into that same vernacular—thus “climate change” became *bibitakin kanoan boong*, which is literally rendered as “change of contents of days.” This neologism itself needed further explanation, if the Islanders were to make any sense of it. “Sea level rise” became *rikiraken iabutin tari* (literally: “increase of high tides of the sea/rising of the sea”).⁷ When the people of Kiribati, the I-Kiribati, encounter the content of such discourses, they interact with them differentially, processing them and interlacing them with their own commentaries. In the early years of climate change discourses, when these first began to circulate, a number of Islanders contested such discourses, citing environmental, religious, political or cultural counterarguments (cf. Teuatabo, 2002; Kuruppu and Liverman,

⁶ On the role of Pacific Christian churches in connection with climate change, see Kempf (2012).

⁷ See Rudiak-Gould (2012a: 46-7) on the fact that translating climate change vocabulary necessarily involves a shift of meanings and has implications for local perceptions of a threat in the Marshall Islands.

2011). Those who did accept the primary message of anticipated sea level rise, were greatly worried as a result and voiced fears for an uncertain future (cf. Kaiteie and Hogan, 2008: 17; Kempf and Hermann, 2014: 197, 201, 203). Yet many of the latter could not bring themselves to accept the contention, found in less differentiated climate change discourses, that Kiribati's very existence was in doubt. Often the I-Kiribati discern, in the one or other kind of climate change discourse, claims to knowledge that seem to them laden with power, and that in two respects: first, because it is knowledge about powerful and threatening consequences flowing from climate change; and second, because it is knowledge about the future. In view of the claims to truth conveyed by these diverse discourses, but also in view of the changes that I-Kiribati have observed and interpreted in the context of climate change discourses, a sense of powerlessness is now evident among them (cf. MacKenzie, 2004: 4).

Several recent studies examining the reception by local populations of discourses about present-day climate change have drawn attention to the factors of power and knowledge. Thus, Barnett and Campbell (2010: 2) have shown that a chief effect of the dominant discourse about climate change and Pacific island states consists in generally denying agency to local actors. Accordingly, they combine their critique of the hegemonic construction of this discursive formation with a plea for more attention to be paid to what the people of the Pacific region actually think, say and do (their problem awareness, their knowledge and value systems, the solutions they propose). While a number of anthropological studies have drawn attention to diverse forms of knowledge in local populations and how these are related to climate change (see Lazrus, 2012: 290-5), a general consensus exists that more research into the matter is needed. If we too, in this present study, embrace the maxim of focusing on the culturally specific discourses and practices of the Pacific Islanders, it is in order to analyse the potentials these possess for knowledge and power when dealing with discourses on and ramifications of climate change. Addressing the as yet little-noted thematic fields of songs and emotions holds the promise of considerable analytic gains. For purposes of examining songs, our operative assumption is that they are constituted by culture-specific discourses and are interpreted in context-specific fields of power and knowledge. And in our approach to emotions, we pay close attention to how these are articulated, not only in "emotional discourses" and "discourses on emotion" (Abu-Lughod and Lutz, 1990) but also in an "embodied" form and even in practices. In any case, we shall be considering the practice of social actors and their specific agency. In adopting such an analytic perspective, we are backing up, we would claim, other anthropological studies dealing with climate change that have called for no less (e.g. Hastrup. 2009: 20, 28; Lazrus 2009, 2012). The concept of agency deployed in this analysis was originally developed by Sherry Ortner (1999: 146-7; 2006: 129-53). Ortner insisted that what actors do and bring about through their acts has to be seen in a field of postcolonial power relations and in a field of cultural meanings. This approach asks us to consider the subjective meanings, as perceived by the actors themselves, i.e. to what extent their acts are intended (or authorized)

and to what extent these acts can be effectively unfolded. From this perspective, we wish to point out that the inhabitants of Kiribati’s islands use songs and emotions to articulate cultural knowledge that has significant potential for agency.

In order to illustrate facets of agency, as unfolded by I-Kiribati, we will present one of those songs that come with a long pedigree attached, but are now being recast as commentaries on the projected consequences of climate change and sea level rise.⁸ This particular song was composed by Tom Toakai and is known to many I-Kiribati under the name of “Koburake!” “Koburake!” can be translated as “Rise up!” In this imperative, we may see something of a counter movement, opposing the scenario of inundation and disappearance that is frequently invoked by those climate change discourses that are externally derived and rather less differentiated.

2.2 Song Culture in Kiribati

If our interest is chiefly drawn to songs, it is because we construe them as being poetic concretions of local discourses. We are thereby acknowledging that songs and dances, but also dramatic pieces, play a significant role in contemporary Kiribati culture. The contemporary practice of creating songs and dances is approached in two ways, which, despite being clearly different, do exhibit basic reciprocities. Essentially, these two approaches are different ways of responding to whether the I-Kiribati, in creating their songs and dances, can invoke culturally specific power-knowledge or not. Thus we can distinguish two categories of songs: the first are those many songs composed using ritual power-knowledge of a kind only available to selected experts. Composers with such access, who in Kiribati represent different, often competing schools, are usually referred to as *te tia kainikamaen*. The word *tia* means “performer”; *te kai* is “the stick” or “the twig”; and *kamaen* means the domain of ritual composition (cf. Lawson, 1989: 183). What these ritual experts share is that they need to complete a specific training, which will then let them enlist the help of spirits in composing songs, arranging dances, even healing sicknesses (see Bataua, 1985: 126; Hughes, 1957; Kempf, 2003; Kirion, 1985: 48-51; Lawson, 1989: 185, 264ff). All of these things—the training, the handed-down *kainikamaen* knowledge, the necessary ritual practices of the experts—are nonetheless, in present-day Kiribati, exposed to an ongoing process of change, from which highly differential degrees of specialization, practices, convictions, and representations result (see Lawson, 1989). The important point is that the efficacy of these ritually composed songs, i.e. the words used in them, are based on a concept of stipulating and projecting goals—goals to be achieved in the future. The specific and powerful poetics of the songs contributes, according to

⁸ W. Kempf, ‘Climate Change and the Culture of Song in Kiribati’. Paper presented in the session ‘Climate Change in Pacific Island Communities’, ASAO-Conference, Honolulu, Hawai’i, February 2011.

the composers, to enabling the convictions, viewpoints and goals enunciated in the songs to be implemented and actualized in future. It is this ritually empowered form of anticipation via songs that is of relevance for the account we offer below.

“Koburake!” to which we will turn in this contribution, belongs to the second category of songs—those composed without the aid of ritual power-knowledge. That this is so is mainly because Tom Toakai, the song’s composer, cannot reconcile the use of *kainikamaen* knowledge with his duties as pastor of the Kiribati Protestant Church (KPC). Instead, he can, and does, draw on the musical training he has received within the western tradition (especially notation and harmonics)—as is, indeed, customary within the Protestant Church of the land. “Koburake!” advanced over several decades from humble beginnings in a single church choir to become an integral part of the national song repertoire in Kiribati. Its recent linkage with climate change and sea level rise not only underlines its enduring popularity, but also paradoxically stresses what in its agency is primarily associated with ritual power-knowledge, namely the power of anticipation. We are inclined to the view that it is the context of the specific song culture in Kiribati that ultimately renders this articulation possible, thinkable, and plausible. Precisely the cultural knowledge possessed by the I-Kiribati about the power of songs is what lends “Koburake!” the anticipatory potential needed if Kiribati as a Christian nation is to rise up above the rising seas.

Before presenting this song, we wish to point out that songs in Kiribati are frequently, indeed typically, linked to emotions. The lyrics either contain direct emotive concepts—these can be expressed in the form of nouns, adjectives or verbs—or they evoke emotions in the singers and the audience. The latter is the case with “Koburake!” and this will now be the object of close scrutiny. Therefore, the next step is to review those emotions that are especially significant in the context of climate change discourses.

2.3 Emotions in the Face of Climate Change Discourse in Kiribati

Emotions play an important role in Kiribati Islanders’ reactions to news about climate change and its projected consequences.⁹ Among the emotions articulated in such contexts, those which we gloss as “love,” “worry,” “fear,” “sadness” and “pity” occur fairly frequently, while “anger” and “indignation” are shown rather more rarely. The frequently expressed emotions of love, worry, fear and sadness refer not only to the people but also—often, not always—to the land on which they live. The land, in the cultural logic of the I-Kiribati, is no less properly addressed in emotional terms

⁹ E. Hermann, “Emotions and Belonging vis-à-vis News of Climate Change.” Paper presented in the session “Climate Change in Pacific Island Communities,” ASAO-Conference, Honolulu, Hawai‘i, February 2011.

than the people are, since these two ideas are linked conceptually and even seen as twin aspects of an indissoluble, ideal unity. This nexus finds memorable expression in the vernacular term *te aba*, which carries the double meaning of “land/people.” Even when one of these meanings preponderates, the other is never entirely absent, operating as it were in the background. One emotion that does stand out in discourses on climate change is the love that is felt for land and people. The vernacular term in question is *te tangira*, which signifies, at once, liking and wanting. Expressing love of one’s land (and people) attests to the existence of close ties with it—no matter whether it is land belonging to a particular family, or the island on which one lives, or the State of Kiribati itself. Statements of worry (*raraoma*) and fear (*maku*) express the fact that both land and people are seen as facing a looming menace. When the I-Kiribati react to worst-case scenarios of inundation by voicing sadness for the land and those on it, they do so because they feel attached to both. The vernacular term for sadness is *nanokawaki*, which refers to *nano* or “heart/feelings/thoughts” giving rise to sorrow and affliction. When speculating about what climate change will do to their islands, the I-Kiribati voice a further emotion that is affiliated with *nano*: *nanoanga*, which, translated literally, means “giving heart/feelings/thoughts” but can also be rendered as “putting oneself in the position of others,” or, more simply, feeling “pity/empathy” (Hermann, 2011). Often it can be heard that this pity is felt in equal measure for people and land. But the I-Kiribati are insistent that they should not be the only ones to feel this emotion; they call on other nations to show empathy too.

All these emotions are far more than mere descriptions of inner states: they are meaningful articulations within the relationships the Islanders maintain with each other and with their land, but also—indeed especially—with those they maintain with people from the outside world. For this reason, expressions of emotions are to be seen as practices that are often articulated with a will to act or, alternatively, with a call on others to act. It is in this capacity that emotions can unfold agency (Hermann, 2004). In the process of interacting with external and internal discourses on the consequences of climate change and sea level rise, emotions have the potential to propel the Islanders to act and also to bolster their social resilience.¹⁰

2.4 The Song “Koburake!”

The particular song we single out in this paper has exemplary value; it will shed light on the general potential songs have for expressing knowledge and power (cf. Kempf, 2011). This song features prominently in a recent documentary film. This film was produced by a Kiribati-based video company and NGO called *Nei Tabera Ni Kai* (2010). It tells the story of a side event held at the climate change conference in Copenhagen

¹⁰ Hermann, “Emotions and Belonging.”

(COP 15) in 2009 and organized by a government delegation from Kiribati. The event’s declared goal was to alert the international community to the specific ways in which this atoll state was at risk from global warming. Part of the documentary shows members of the delegation summarizing where Kiribati’s government stands on this issue; there is also a video clip of then President Anote Tong explaining his own position; and we are treated to scientists presenting various computer scenarios of the possible flooding of South Tarawa, the aim being to paint risks and outcomes that this most densely populated part of the island state will have to confront over the next century.

The last third of the film foregrounds representative segments of Kiribati culture. First, we watch a female dancer perform at the side event in Copenhagen that we referred to; then the film takes a mythical and poetic twist with the announcement of the “Song of the Frigate Bird.” This song is the corner piece of the film’s next section, lasting some five minutes, in which the metaphorical language is rather different from anything preceding it. The clip begins with two sunset scenes, giving way to a shot of a frigate bird in flight and multiple vistas of seemingly endless open sea. A background commentary suggests a link between the song and the likely implications of climate change for Kiribati:

Ladies and Gentlemen. *Kam na bene ni mauri* and greetings. The frigate is one of our key national icons, the national bird of Kiribati. The song we will hear was written in 1978, many years before we knew anything about global warming, climate change and sea level rise. The story tells of a bird flying the ocean in search of food for its young. On her return she finds that her homeland has disappeared beneath the waves. This prophecy from the past reminds us of the uncertain future we face as a country and as a people. We are pleased to present the youth of Kiribati and the song of the frigate.

Then the song comes in. It is sung by a clear female voice in the Kiribati language. During it we watch a tracking shot of a frigate bird superimposed on an open seascape. These surreal sequences transport viewers into a dreamtime—or is it a vision of the future? Subtitles in English are given below:

*I a ukoukora mwengau
ma n tiriwetea arana - Kiribati
Ko mena ia?
Ongo banan au anene
Akea raou ae na buokai
A katukai boong ririki
Koburake! Koburake!
Ngkoe ae tunarin aonaba
Routiko rake—routiko rake mai marawa
Ba a na nooriko ake amena i keraroa
Koburake! Koburake!*

I am searching for my home
I call you by name—Kiribati
Where are you?
hear my call—hear my song
I have no-one to help me
I have been alone for so long
Rise up!
You the centre of the world
rise up rise from the depths of the sea
so you may be seen from afar
Rise up! Rise up!

This song evokes a land that has vanished beneath the waves; an entire nation, symbolized by the frigate bird, is searching for its lost homeland. This motif is accompanied by a call to soar upward, to rise up, so that the land can once again be seen from a distance. Then, as the song is repeated, this time in a slightly altered version, the singer, a young Kiribati woman, appears on screen wearing a traditional dancing costume. Next, we watch typical scenes of Kiribati’s land, people and culture, intended to underscore the uniqueness of this nation; also interspersed (in the form of a montage) are images of inundations, drawing attention to the acute dangers now facing this highly specific culture and way of life. The song is now sung by multiple voices. Subtitles are dispensed with this time. In the following, we reproduce and translate the text of the song as performed:

<i>I a ukoukora mwengau</i>	I am searching for my home
<i>ma n tiriwetea arana - Kiribati</i>	I call you by name—Kiribati
<i>Ko mena ia?</i>	Where are you?
<i>Ongo banan au anene</i>	hear my call—hear my song
<i>Akea raou ae na buokai</i>	I have no-one to help me
<i>A katukai boong ririki</i>	I have been alone for so long
<i>Akea raou ae na buokai</i>	I have no-one to help me
<i>A katukai boong ririki</i>	I have been alone for so long
<i>Koburake! Koburake!</i>	Rise up! Rise up!
<i>Ngkoe ae tunarin aonaba</i>	you the centre of the world
<i>Routiko rake—routiko rake mai marawa</i>	rise up rise from the depths of the sea
<i>Ba a na nooriko ake amena i keraroa</i>	so you may be seen from afar
<i>Koburake! Koburake!</i>	Rise up! Rise up!
<i>Koburake! Koburake!</i>	Rise up! Rise up!
<i>Ngkoe ae tunarin aonaba</i>	you the centre of the world
<i>Routiko rake—routiko rake mai marawa</i>	rise up rise from the depths of the sea
<i>Ba a na nooriko ake amena i keraroa</i>	so you may be seen from afar
<i>Mwemwerake! Kiribati</i>	Be lifted up and up! Kiribati
<i>Mwemwerake! Kiribati</i>	Be lifted up and up! Kiribati

Tom Toakai originally composed this song in the late 1970s, at a time when the State of Kiribati was moving towards independence from the British colonial power. In those days, he was venting his scepticism about the new atoll state’s viability. He had composed the original lyrics, which are slightly longer than the segment in the film clip, because he was convinced that Kiribati was over the long run far too weak and small to survive without securing help from the outside. Of significance in this connection is the call “koburake.” As Tom Toakai explained to us, the literal meaning of “koburake” is “bubble up.”¹¹ The picture he had in mind when composing was that of Kiribati being located at the bottom

¹¹ Our interviews with Tom Toakai took place on 9 September 2010, 3 October 2011 and 4 October 2013.

of the sea—a metaphor for the country’s remoteness. What he meant by using the idiomatic expression “koburake” was that Kiribati should rise up to the level of other countries in order to make itself known and so secure the help it needs from the outside world. In this sense, he affirmed, the term “koburake” may aptly be translated as “rise up.” It was this idea that the filmmakers had taken over, bringing the song—with the composer’s permission—into line with their own objective, which was to draw attention to the urgency of the threat facing Kiribati from climate change and sea level rise.¹² Without concessions and solidarity from the international community, but most of all from the industrial nations, Kiribati’s future looks bleak indeed—this is the film’s central message, finding memorable expression in this song.

“Koburake!” a.k.a. “The Song of the Frigate Bird” is now known to many I-Kiribati as a result of a DVD released by *Nei Tabera Ni Kai* in 2010. Some in the audience recognized the song as one originally composed shortly before the Islanders had gained independence; others recognized it as the song that had won first prize in a competition between various Pacific states around about the time of the Millennium. Many knew the song already from a book about Kiribati songs (Teaero and Tebano, 2008). To be sure, in the context of internal and external discourses of climate change, such recognition inevitably came with a new interpretation attached. Other I-Kiribati first encountered the song as part of the repertoire of a certain dance ensemble. *Te Waa Mai Kiribati* had choreographed the song for inclusion in a program on climate change that was staged in the United States in 2011.¹³

2.5 Anticipation and Emotions

If, in the discursive context of climate change, the song “Koburake!” is so important to the I-Kiribati, it is because they are convinced that its words, written back in the late seventies of the 20th century, anticipated the future now projected for their homeland. In this scenario, their land is being threatened on a massive scale, requiring them to draw attention to their plight in the hope of securing help from the outside world. The second prong of this scenario is that their survival will depend on Kiribati “be[ing] lifted up.” In this articulated statement, they see evidence of anticipatory power. This finds expression in *Nei Tabera ni Kai*’s film (2010), especially in the pointed words of the female commentator, who as an I-Kiribati is fully aware of the cultural logic

¹² See the film clip posted by Linda Uaan and John Anderson on YouTube: “Kiribati—The Song of the Frigate” <http://www.youtube.com/watch?v=xOcMLWVNims>

¹³ The tour was part of the project “Water is Rising. Music and Dance Amid Climate Change. Artists from the Pacific Atolls of Kiribati, Tokelau and Tuvalu” Director/Producer Judy Mitoma. See: www.waterisrising.com

of her compatriots and also—this time in the role of filmmaker—displays a talent for summing up their predicament: “This prophecy from the past reminds us of the uncertain future we face as a country and as a people.” These words, let us add, are spoken in the opening sequence of the film section on the frigate bird. But we found that other interlocutors too had, independently of each other, taken to associating the song’s poetics with the future. Also, two composers who had been inducted into the ritual power-knowledge, acknowledged, in respect of Tom Toakai, that even at the time of composition he had been able to foretell the future. Tom Toakai himself modestly conceded to us, when we interviewed him, that he was no prophet. He had, he said, only expressed at that time what was on his mind. But he conceded that from a bird’s eye perspective (ranging widely across space and time) the song can be seen “as a prediction of what was to come after independence”.¹⁴ In this sense, the song’s message is equivalent to a prophecy or *mamata* (“the power of seeing through to the future”).

Emotions evoked by the song confirm the anticipation I-Kiribati discern in its lyrics. When the lyrics say “I am searching for my home,” they feel induced, from the “I” perspective, to look out for the land of Kiribati. When in a following question they are asked about the whereabouts of this land, sadness overtakes them, since they have to assume that what is frequently thematised in climate change discourses has actually now taken place: the land has been swallowed up by the waves. Many show this emotion by facial expression; some even have tears in their eyes, as with one interlocutor, who was prompted by this line to the following comment: “I always hear on the radio: ‘Kiribati will be no more.’” Others prefer to mention it explicitly, which is what a dancer with the *Te Waa Mai Kiribati* group did in conversation with us, insisting that this makes them all sad, or *nanokawaki*.¹⁵ When the words then ring out, “hear my call—hear my song, I have no-one to help me,” I-Kiribati interpret this as a cry for help coming from their innermost core and appealing to people from other lands to show pity, or *nanoanga*. These outsiders are asked to turn to the Kiribati nation with their heart/feelings-thoughts, or *nano*, i.e. to put themselves in their situation, to understand the threat facing the Islanders, and to render all possible assistance. That this appeal is genuine was confided to us by no less than the composer himself: “Yeah, that’s where our hope is”.¹⁶

The verses “Rise up! Rise up! / You the centre of the world / rise up, rise from the depths of the sea / So you may be seen from afar” are understood by the I-Kiribati as a clear summons to action. But the verses are more than that: they are also words of encouragement, or *te kaunganano*, as various interlocutors assured us. After having been moved to sadness, their next reaction is relief. Thus a young I-Kiribati

¹⁴ Interview, 3 October 2011.

¹⁵ Ten T., 30 September 2012.

¹⁶ Interview with Tom Toakai, 3 October 2011.

noted: “The last verse is an encouragement to fight against the problem!”¹⁷ The encouragement the I-Kiribati draw from these verses confirms that the second half of the song is understood to be just as anticipatory as the first. Meaning that if it ever happens that the flooding arrives, then it will also be the case that Kiribati will rise up.

Nor is it the case that sadness and an appeal for pity (and encouragement) are the only emotions these verses evoke. Whenever I-Kiribati hear this song performed, they find other feelings for the land and its people also resonating. If the first questioning verses make them sad, this is also because they love their land, their community, and their nation, as witness numerous locutions in their everyday talk—and in their songs as well. Moreover, their sadness holds yet another dimension: pointing implicitly to the worry and fear engendered in them by discourses concerning the looming threat of climate change. Both the appeal for outsiders to have pity on Kiribati and the encouragement the I-Kiribati derive from a song like “Koburake!” also occur in more recent compositions dramatizing climate change, such as songs by Ten B. Rimon from the year 2010 and by Ten Nenem from 2009 (see Kempf, 2010).

In the I-Kiribati perspective, this song also evokes emotions among outsiders. Thus, it was reported by members of the delegation sent by the government of Kiribati to the climate change conference in Copenhagen (COP 15) that audiences watching a screening of the sequence of “Koburake!” (a.k.a. “Song of the Frigate Bird”) at a side event had been exceptionally moved by the experience. Also, members of the dance group *Te Waa Mai Kiribati* reported a similar reaction in audiences during their tour of America in 2011. A dancer who was in a position to know stated: “the audience really feel the song”.¹⁸ In his account, one woman was even moved to tears. What the I-Kiribati conclude from experiences like these is that external audiences do, in fact, develop empathy and will come to the aid of the land of Kiribati.

If audiences—I-Kiribati and others—are so moved by “Koburake!” this testifies to the song’s power and the emotions it is able to evoke. This assessment was also confirmed by a professional composer we consulted. In his view, everything alluded to in the song had already come true or else would in the near future. Leading members of *Te Waa Mai Kiribati* also saw the song in much the same light: “It says Kiribati is already protected by the ancestors. Kiribati could rise and not be affected by climate change”.¹⁹ These conclusions therefore reflect the logic of the song culture. If this song is able to unfold agency in the context of contemporary discourses of climate change, it is because—following the logic of Kiribati song culture—it is vested with potential for anticipation.

¹⁷ Ten F., 30 September 2012.

¹⁸ Ten F., 30 September 2012.

¹⁹ Discussion, 30 September 2012.

2.6 Conclusion

“Koburake!” forms part of a repertoire of songs letting the people of Kiribati engage with globally circulating discourses of climate change and sea level rise, doing so on their own terms. As is true of other songs, both old and new, that are now being interpreted in light of the present debate, this song evokes emotions wrought in the same discursive context. The representation of the song “Koburake!” is based on acceptance of scientific projections holding out the prospect of massive imperilment to Kiribati as a nation due to climate change and sea level rise. What this song does is profile itself as an instrument in an official cultural politics, in which the global community is called on to act responsibly and treat Kiribati justly as a country and nation, respecting its sovereignty and securing its safety.

“Koburake!” well exemplifies how the lyrics of songs are able to evoke emotions, articulating, and effectively engaging with emotional discourses on one of the burning issues of our time. Songs and emotions alike, we have argued, shed light on the spectrum of agency unfolded by the inhabitants of Kiribati in reaction to the anticipated risks to land, culture, and society in this atoll state. “Koburake!” along with other songs in that vein, supply ample testimony that composers have seized the initiative in encouraging their compatriots to act. Kiribati audiences too—so much their comments make clear—reflect on their capacities and display a will to act. They do not wish to end up mourning their losses. On the contrary, they combine encouragement with such emotions as love, worry, and pity for land/people, not to say fear at the repeatedly thematicized consequences—and it is these emotions that mobilize Islanders to meet the upcoming challenges. Given the encouragement they themselves derive from the song of “Koburake!” singers, dancers and other I-Kiribati are helping to communicate the message to other nations, hoping the latter will show empathy and solidarity. As the local people see it, performing this song to external audiences has already been effective in terms of drawing a positive response.

Given that the externally derived discourses on climate change are of a hegemonic kind, “Koburake!” and its related emotions are therefore properly seen as counter hegemonic. Discursive formations about this song and its emotions express the fact that the I-Kiribati are not content to submit passively to such hegemonic discourses; they have opted for an active stance instead, mobilizing all available resources to strengthen their social resilience. What is abundantly clear is that there has long existed in Kiribati a knowledge of how important it will be in future to profile their country and to actively build a relationship between it and the outside world. The people of this atoll state can now self-assuredly say that a song by a composer in their midst had already anticipated what the future was holding in store for them and what could be done about it. Faced with external climate change discourses that have thrown their full weight behind projecting future developments, they are now doing what they can to recapture their future by drawing on powers of indigenous anticipation. In this connection, songs and emotions are helping to transform a

feeling of powerlessness into a capacity for exerting influence over themselves and others in order to bring about change.

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Cecilie Rubow

3 Woosh—Cyclones as Culturalnatural Whirls: The Receptions of Climate Change in the Cook Islands

As noted by Mike Hulme, the idea of climate change is now to be found active “across the full parade of human endeavours, institutions, practices and stories” (Hulme, 2009: 322). Hulme stresses that this should not make us think that a homogeneous climate change discourse has spread out evenly everywhere; the terrains are rugged, we believe in different things, have different concerns, and know different things, and moreover, the scientific accounts and projections are continuously changed, adjusted and improved. Furthermore, the reception in local communities is, as Rudiak-Gould has expressed it, not necessarily “treated as an obvious truth already plainly apparent to the senses, but as a prophecy whose truth or falsity cannot be taken for granted” (Rudiak-Gould, 2011: 11).

In line with these observations, this chapter acknowledges that if it has ever been possible to understand society and nature as separate domains, then that is clearly no longer the case (e.g. Latour 1993). Climate change discourse and changes in the environment are continuously socialized and incorporated in social activities and human imagination, and the destabilization of known landscapes affects the sense of continuity. Thus, climate change is not just an object of study for the hard sciences, it is also a concern and a challenge for the humanities and the social sciences.

This chapter takes us to Rarotonga in the Cook Islands to explore responses to both climate changes discourse and first-hand observed changes in local weather patterns. First, I dwell on how five cyclones in 2005 became decisive in the Cook Islands’ early response to climate change as an observable reality. Secondly, I explore how this reception co-articulates with the whirling force and quality of the cyclones in order to reach an understanding of wider culturalnatural processes and the more recent, and somewhat surprising, changes in the predictions of cyclone activity in the South Pacific.

3.1 Stormy Weather

In February and March 2005, the Cook Islands were hit by five cyclones. Developing north and east of Samoa, cyclones Meena, Nancy, Olaf, Percy and Rae proceeded southeast for several hundred kilometres on a collision course with populated areas of the island nation. Cyclone alerts were repeatedly released in the news. Briefs were

held, boats removed from the harbours, roofs secured, the preliminary movements reported in newspapers and the local radio, the expected wind speeds projected by the meteorological officer, and the public reminded of the location of safety centres.

On Monday, 7 February, the *Cook Islands News* reported that “Meena misses main island” (Moeka’a, 2005a), namely Rarotonga. Nevertheless, in the following days the media brought news of extremely high waves, rocks and rubble swept onto streets, and widespread damage to buildings and vegetation. In Aitutaki, north of Rarotonga, most of the power lines lay on the ground, roads were littered with fallen trees, and fresh water had been contaminated. A positive side of the storm was also noted a few days later, since it had “cleaned the shoreline leaving sandy beaches clean and bright [...] the tourists will love this” (Kurai-Marrie, 2005). More ominously, there were also reports of two new low-pressure areas in the north (Moeka’a, 2005b).

Whereas Meena’s track wandered between the islands, the next two cyclones made landfall. Nancy and Olaf battered Rarotonga, ripped off roofs, washed small houses into the ocean, sent several hundred people to evacuation centres, and caused extensive damage to vegetation. It being the wet season—the time of year best suited to planting—the Ministry of Agriculture released an advertisement offering new seeds for a moderate price to “all the mamas and papas” engaged in home gardening (Aperau, 2005). At first Percy was assumed to pose no threat to the Cook Islands, but as it intensified, storm warnings were issued across the South Pacific. On 28 February 2005, Pukapuka and Nassau, northern islands home to more than 600 inhabitants, were lashed by Percy. Nearly all the houses were flattened, every means of communication was cut off, and a state of emergency was declared. Cyclone Rae formed closer to Rarotonga than the first four storms, releasing torrential downpours totalling 80mm within 24 hours (Greig, 2005).

The five cyclones caused no casualties, but they left an indelible mark on the environment and people of the Cook Islands. Surrounded by the detritus of the storms, with the costs of recovery ceaselessly rising, locals began to circulate theories about what exactly had happened. Five cyclones, four of them reaching category five (the most severe), causing such extensive damage, one after another with little or no time for recovery—all of this was highly unusual.

This chapter will explore the ways in which Cook Islanders have made sense of the cyclones using the scientific concept of climate change, and, conversely, made sense of climate change via the cyclones. Central to this local appropriation of climate science is the notion of culturalnatural objects and whirls. Hence, I will show how the cyclonic activity in the Cook Islands took on the shape of a particular culturalnatural phenomenon. Using the cyclones as a “theory-machine” (Helmreich, 2009) and inspired by both Bruno Latour’s (1993: 51-5) conception of hybrids or quasi-objects as culturalnatural, real and fabricated, and Annemarie Mol’s “praxiography” (2003: 31-3), the intention is to explain how the cyclones not only invaded the islands, but how they were “enacted,” and thus gained shape and strength in multiple ways. The main point is to show how the cyclones are not only something-in-themselves or a

pre-existing reality as weather systems, and to investigate how they come into being on the sea, at the shoreline and in human lives. The cyclones' form, size and physical nature, of course, make them well suited for a totalizing gaze, and they no doubt look awesome on satellite maps as giant rotating cloud systems. On the ground, though, when the powerful winds meet particular roofs, boulders, people, and expectations, they become heterogeneous events. Thus, a single cyclone may be said to be enacted in multiple ways, endlessly many ways, as it becomes a part of lived history in the homes, gardens and offices of, in this case, islanders of the South Pacific. In the same way, the totalizing, God's-eye-view discourse of "global climate change" appears grand and singular, but when that discourse is transmitted to specific societies and individuals, it becomes appropriated, interpreted, and enacted in different ways.

3.2 Climate Change Whirls

In the Cook Islands, among environmental NGOs and at the National Environment Service, one particular theory began to gain strength after the five cyclones of 2005. Since that time, an environmental officer told me in an interview in 2010, "climate change has been all over." Her statement is confirmed by numerous reports issued locally and internationally over the following years. This particular set of cyclones quickly turned into a sign of global warming. A 2008 report from the Food and Agricultural Organization of the United Nations states:

The Cook Islands has already experienced first-hand the adverse impacts of climate change and extreme events. In 2005, the islands were hit by five tropical cyclones within the space of one month, an event that has never been experienced in the history of the Cook Islands (FAO, 2008).

In the Cook Islands Second National Communication (NC2) to the United Nation Framework Convention on Climate Change (UNFCCC) in 2011, the link between global climate change and increased cyclone activity is also stressed and linked to expectations of future weather patterns:

There is growing evidence from a range of studies that the early impacts of climate change will result from an increase in the frequency, intensity and duration of extreme events such as tropical cyclones, floods and storm surges. Wind intensities could increase between 5-10% by 2050 and precipitation peaks could increase up to 25% (2011: 89).

These conclusions point to a remarkable shift. A decade earlier, in the Initial National Communication to the UNFCCC, it was noted that "the Cook Islands has encountered a significant increase in the number of tropical cyclones, seasonal around November-April, over the past decade" (2000: 38). Significantly, however, the higher frequency was *not* linked to global warming, and links between global warming and local fluctuations in rainfall and sea level were only very cautiously suggested. Rather, the

earlier report stressed that it is “recognised that development and social changes have placed pressure on sensitive environmental systems and sectors of the Cook Islands” (2000: 5). In other words, local impacts on the environment, such as overharvesting and the building of infrastructure, are emphasized, while global climate change is accorded only an uncertain and secondary role as a reinforcer in the future: “adverse impacts of anticipated changes in climate and sea level rise will further exacerbate the stress on these systems if they do eventuate” (2000: 5). NC2 in 2011, on the contrary, foregrounds global climatic processes. Now, a decade later, more than twenty socio-environmental issues had become framed as “climate change vulnerabilities,” among them coral bleaching, invasive species, drought, floods, crop diseases, food insecurity, coastal erosion, damage to coastal infrastructure, disruption of education and social services, and water pollution.

On a general level, the cyclone exegesis resembles the physicists’ account of the gathering of a rotating wind system. First, a jumble of random movements accumulates gradually. In the beginning the movements are few and small; later they may develop into large coherent whirls. To take a familiar example, this is the same as what one observes in a cup or in a bathtub. Social interpretations may gain strength in the same fashion, I would suggest. Theories, scientific and public, sometimes develop into giant rotating, intensifying discursive systems, stretching out in large networks—not necessarily because they are particularly coherent systems of explanation from the outset, but because they become persuasive by the assemblage of many different forces, voices and elements. Today, practically every environmental NGO in the Cook Islands writes within the idiom of climate change discourse when they seek funding. Years ago, land degradation, forestry or gender were steering concepts; now climate change forms the forceful discursive framework that summarises and reinforces every sort of environmental vulnerability. In that sense, climate change truly is “all over.” But our story has a twist: since 2005, against expectations, cyclones have been fewer, and the scientific predictions concerning the frequency of future storms have been adjusted downwards. I will return to this.

The point I hope to bring home is that this resemblance between discursive formations and waxing/waning weather systems extends further into an understanding of the opportunities and problems it poses for Cook Islanders as they attempt to navigate a potentially catastrophic future. The whirl-like character of the cyclone’s cultural/natural activities embraces something more comprehensive. When the cyclones hover over the islands and waters, the perspective that is brought to outsiders and insiders through the media is maps of cyclone tracks and satellite images of a grand white whirling weather system with the characteristic dark eye in the centre. We are thus placed above the atmospheric heat engine circling its way over the warm sea where it gains power. In contrast, a local on-the-ground perspective leads us to the coasts and hills along the paths of the cyclones that are notoriously difficult to predict with the precision desired by coastal authorities and dwellers. Here, the turbulence is less ordered, and the course of the wind less stable as it interacts with

roofs, people and plants. The noise of the gusts of wind sometimes peaks in shrieks, causing both mental horror and physical devastation. But as we shall see, there is also a more edifying potential when the winds and water shake the islands up and down.

3.3 A Double Cyclogenesis

Cyclogenesis is an extremely complex physical process with more factors at play than is presently understood (Terry, 2007: 1). Generally, though, cyclones originate when warm ocean waters meet colder air temperatures. Given certain favourable wind patterns, a powerful cyclone can develop from the condensation and convection of water vapour in the unstable and rising tropical air masses, a process first described scientifically as a total weather system in the 19th century (Emanuel, 2005: 7). What starts as a disorganised area of disturbance may form a low-pressure centre that begins spiralling as a result of the Coriolis Effect (caused by the rotation of the Earth).

This physical weather phenomenon is captured neatly in the satellite images that afford us a “global perspective” on the environment. Here we see an example of what Tim Ingold has persuasively characterized as a visual, distant, literal, exogenous spectacle (2000: 209-18) in whose wake efforts can be made to take calculated risks, to plan for disasters and issue warnings, to forecast and tally damages, and so forth. As valuable as this perspective may be, it is not the only one: there is, Ingold says, a complementary approach, the “spherical perspective,” in which the environment is experienced from the surface and depths of things, partaking in the natural lifeworld by resonating and listening to its cycles and rhythms (Ingol, 2000). There, on the ground, when sea and atmosphere evolve into a grand air and water pump, winds whip the waves white and force them into powerful cyclical movements that can reach 20 meters or more in the open ocean. Sea spray batters vegetation, rips foliage off trunks and branches and deposits them like a thick brown plaster on windward walls. In the low pressure on the ground, cars, roofs, stones, sand, windows, trees, doors and people enter an extreme, shaking state of culturalnatural hybridity in the Latourian sense in which humans and things are inextricably connected (1993). It may be possible to hold a “modern” or “global” perspective on things on a fine clear day, and at a distance to see a cyclone as a discrete weather-object. But when the loud howling noises, the invading waters and crushing boulders enter one’s house, the hybrid mess of things and humans is impossible to overlook.

In the Cook Islands a particular description of a cyclone passing Suvarrow Atoll stands out as this kind of smashing, clashing heaven-and-earth drama. American writer Robert Dean Frisbie, in the autobiographical *The Island of Desire* (1944), travels the northern islands with his four young children. During a stop-over at Anchorage Island in Suvarrow in 1942, together with two visitors from a small yacht in a tree-house measuring six feet by eight, a cyclone passes over the island. Frisbie describes “the ungodly roar,” reaching to shrieks, of the “almost supernatural” winds, thick

salty rain driving horizontally across the lagoon, a jungle in convulsions, towering combers crashing and devouring the land.²⁰ At night, he ties his children to large tamanu trees, offers them a splash of rum, and finds himself shifting between dumb horror and fascination with the uncanny forces in the inky blackness. With almost no belongings left in the morning, “we experienced something there is no name for in the vocabulary—a sort of insane exhilaration”:

For three hours we ceased to live on the familiar Earth; and perhaps that is why I find it so difficult to describe the wind, the sea, our own emotions. Vocabularies were built around the things of everyday life; this thing belonged to the frenzied life of delirium (Frisbie, 1944).

Nevertheless, the winds did die down. The jungle and several islets had been swept away—a ghost island is all there was left—but Frisbie notes that atolls “are living islands: it rebuilds the land the sea has destroyed.” The vegetation will spread again, and new islets will grow, new sand cays will build up; bush and trees will appear again. Cyclones rearrange the environment, tear it down, and build it up too, as they deposit tons of sediments.

The atoll island and its tiny population of frigate birds and coconut crabs were caught in a whirling and howling cosmos, as two intertwined spirals suspended in constantly intensifying movements. After the storm, Frisbie writes, “[w]hen a fern leaf springs up from the barren sand we hold a pagan holiday,” giving the sense of horror, relief and the unfolding hope, perhaps alluding to the fern as *koru*—the spiral, which according to Anne Salmond is a Maori carving motif often taken to represent the unfolding of new life in “double dynamism that moves into and out from the primal centre” (Salmond, 1985, cited in Henare, 1999: 52). Taking the meaning of the double spiral even further, Salmond locates it at the centre of Maori cosmology, as we may say, a double cosmological cyclogenesis:

Beginning with a burst of energy and thought, the exchanges that generate cosmic elements—winds, planets, the ocean, animals, plants and people—alternate between gift giving, amity and union, and quarrelling, enmity and exclusion, working towards equilibrium—although this is always temporary and contingent (Salmond, 2012: 121).

Aside from these perhaps speculative resemblances between spiralling forces and states of relative equilibrium, what societies in “normal” state of things try to keep in place—cars on the roads, trees rooted in the ground, and boulders placed for protection in harbours—is with cyclones dramatically shaken. The force seems otherworldly, Frisbie tells us, yet we may note that his lack of words for the extreme state of hybridity resemble the silences of the hybridities that are already there.

²⁰ Frisbie, 1944: [n.p.]. Available at Project Gutenberg Australia: <http://gutenberg.net.au/ebooks01/0100261.txt>

Trees have already been planted, tended, cut down and turned into partly human artefacts by processes of production; mangos have taken part in people's metabolic processes and new mango trees in processes of reproduction. Nature and culture are continuously dragged, wired and whirled together as composite objects. In that sense, every kind of weather is a culturalnatural event, a fact which has become obvious in the era of modern global warming discourse. People all over the world have always known it in their way, through keen observations and extended mythmaking, historically, the Pacific abounds with hybrids. The literature is rich in evidence of entities that are both person and animal, spirit and substance, and connections between actions and the quality of relations and particular effects on the landscape and weather. During cyclones, this truth becomes visible anew: "all are shaken" in these cyborg storms.

3.4 The Cyclones Multiple

Some are, of course, more shaken than others. Where Meena's main punch was from high waves on the north coast of Rarotonga, Nancy struck primarily through strong winds. With waves averaging 14 meters, Meena strewed rocks onto the coasts and almost completely destroyed some buildings—in the case of a prominent harbour front restaurant, only the shell was left standing. The roof of Matavera church on Rarotonga, further to the south-east, was less severely damaged, but what Meena left unfinished, Nancy completed by lifting off the entire roof (Padgett & Clarke, 2005; Moeka'a, 2005c). Reports by the news media, at dedicated cyclone webpages, and by diverse disaster management organisations, collected in various databases, swell with eyewitness accounts.

The socio-economic impact of the cyclones is well documented, and cannot be understated. The national economy of this small island state is under severe pressure, and personal losses are great. However, as Daniel Defoe long ago remarked in "The Storm"—an account of the great storm in England in 1703, to which I will return later—the price of tile spiked just afterwards, a fact he noted because of his recent bankruptcy which most unfortunately had forced him to give up his share in a tile factory. A cyclone is a loss to many, and business for some, and perhaps surprising for outsiders—to many plainly an exciting experience. Thus, in the margins of official reports, and at the centre of islanders' personal stories, there are positive accounts of the cyclones that point in more favourable, if twisted, directions.

After Nancy, the *Cook Islands News* printed a remarkable photograph of boys playing in explosive sea waves, with a caption that read: "Foolish children take risks with the waves at Avarua harbour" (Moeka'a, 2005, 16 Feb.). In interviews with Rarotongans in 2010 and 2011, I was struck by the many perhaps not so foolish, but perhaps rather adventurous children dotting the stories of damaged houses, people rendered homeless, and hard work. "We always tried to sneak out during storms

and cyclones” a woman told me, “we were rafting down the streams on one-off rafts and we surfed on the waves on old tyres that we secured with ropes.” When they did not manage to escape the admonitory parents, many people had childhood memories packed with the warm atmosphere of large families gathering in safe houses, sharing foods, songs and worries while securing all sorts of stuff and news from neighbours, friends and the extended family. Risks and warnings eventually transformed into memories of humour, intimacy and other positive emotions.

Former prime minister Sir Tom Davis describes some of these hybrid sentiments in his autobiography when he recalls 1987’s Cyclone Sally, one of the strongest cyclones ever to strike the main island. After the first coming, the centre of the cyclone passes over Rarotonga, and a peculiar still life unfolds in the silent eye:

In the belief it was all over, people came out to take in the sights. They wandered around downtown examining the damage and picking up damaged goods on the way. The youth were in great prominence and, for most of them, this was their first bad hurricane. They were obviously enjoying the experience as were most people... Only the moderate hiss of the surges from the ocean rippling through this conglomerated mess, the crackle of a motor cycle wading its way through the debris, and the sudden outburst of giggles and laughter from wandering bands of children and teenagers broke the silence... (Davis, 1992: 324-8).

The cyclones multiple are, in praxis, always events in consecutive, situational here-and-nows. The jumble of things, the mixed feelings of fascination and fear, make it impossible to neatly summarize the event unless oneness and certainty are artificially manufactured. This was also a point expressed by Daniel Defoe when he, after England’s great storm of 1703, collected, commented and printed first-hand accounts from all over the country. Defoe does not seem to have viewed the storm as an object of whirl-like coherence, a total cyclonic object that originated from the West Indies or off the coast of Florida. On the contrary, while acknowledging the grandness of the storm, in order to make an account of it as a writer he relies on “varied voices and multiple points of view” (2005: xiv). In a Latourian sense we might say that Defoe’s writing is not (yet) quite modern, mixed as it is with a hybridity of exact measurements, supernatural explanations, and wholly disparate viewpoints.

In the Cook Islands many more versions too are enacted. Tourist resorts and agencies beg customers not to overestimate the risk of cyclones and the severity of their effects; they work out emergency plans and evacuate guests, and in some cases the visitors are even praised for their help during and after a cyclone as in Aitutaki, in 2010, after cyclone Pat. As mentioned earlier, the remarkable clean-up that cyclones perform in lagoons and at beaches is also noted. The overtopping of high waves may flush out lagoon waters very effectively, thus sweeping out algae blooms, and dramatically rearrange tons of sand, creating both new islets and severe erosion. Prayers are whispered, and in some cases grand theories and fears of End Times are preached, and critically discussed as “inappropriate and anachronistic” as by an

outsider involved in emergency service (Taylor, 1999; see Rubow, 2009). Traditional leaders contribute with pre-Christian ecological knowledge and traditional means of protections and prediction (see Rubow, 2013). Thus, personal beliefs, church teachings and memories may merge in celebrations of the Lord's great powers, or in fabulous storytelling about cyclones and their smaller cousins, the whirlwinds. In an interview, a local Christian minister confided that, astoundingly, he had once been caught in a whirlwind in the middle of a large lagoon and gently taken to the shore several kilometres away. In many ways, cyclones and whirlwinds drag animals, people and debris together with great force. As Davis puts it, sheets of iron are turned into "hazardous missiles, flying through the air and brought to a stop only when they hit an obstacle around which they became firmly wrapped like passionate lovers" (1992). Winds and things, people and landscapes, are wrapped into each other.

3.5 Climate Projections and New Futures

After the five cyclones in 2005, Cook Islanders had taken up scientific discourses of climate change, and talks with NGOs, business people, farmers and fishermen around the island of Rarotonga in 2010 and 2011 formed my clear impression that a certain gravity was indeed formed around the expectation that climate change would become more real through more frequent and more severe cyclones. Simultaneously, however, another gravity developed around the critical position that the adaptation of climate change discourse perhaps more rightly should be seen as opportunistic strategy for entering the climate change hub of travel opportunities overseas, conferences and grants for local development projects—with or without any obvious links to "climate change." As reported elsewhere (Rubow, 2013), however, the perhaps most frequent response on the island among resident Cook Islanders was more hesitant. "We have to wait-and-see"—many people told me, pointing to the many uncertainties involved in interpreting the local signs and the global scenarios.

Illustrating the scaling difficulties in climate sciences de Scally et al (2006) has presented a historical database of 143 tropical cyclone occurrences and their impacts in the Cook Islands over two centuries, drawing together large amounts of meteorological data and eyewitness reports. Apart from this valuable systematisation of highly heterogeneous material, de Scally (2008) has also analysed the intensity and frequency of the cyclones, leading to the noteworthy result that the number of seasons with three or more cyclones had increased since the mid-1970s (2008: 455). This conclusion was in accordance with the observations made by many Rarotongans and in several vulnerability and disaster assessments and reports, and stressed in the National Communications to UNFCCC in 2011. The tricky thing about this increase in cyclones is that de Scally also shows that it coincides with the

beginning of satellite monitoring of cyclones, thus recording the frequencies more accurately. The Cook Islands covers a vast sea territory, and by acknowledging the variable quality of the reports over two centuries, cautions are raised about making direct comparisons before and after 1970. Thus, the apparent increase is, de Scally concludes, “almost certainly attributable to the beginning of satellite monitoring of cyclones” (2008: 455). In consequence, de Scally adds, in accordance with other central meteorological sources, “these increases cannot be attributed to global warming without a longer record and a better understanding of the role of cyclones in the general circulation of the atmosphere and ocean” (2008: 455).

Subsequently, late in 2011, new regional projections were published by the Australian Bureau of Meteorology, stating that between 1969 and 2010 “an average of just over one cyclone per season passed Rarotonga,” with the significant fluctuations being that cyclones occurred more often in years with El Niño, that is a natural weather pattern making the ocean warmer in the northern parts of the country. In conclusion, cyclones have not become more frequent. Furthermore, new projections from the Australian Bureau of Meteorology building on the findings of the 2007 IPCC Assessment Report, tend to show in the Cook Islands region not an increase, but “a decrease in the frequency of tropical cyclones by the late 21st century and an increase in the proportion of the more intense storms” (2011).

In 2005, it was surely an increase in *frequency* that was loomed in local minds as debated elsewhere, this situation extends to other regions as far away as the North Atlantic (Jonsdottir, 2012; WMO, 2006). Only six years later, the question of frequency is cancelled, and projected *intensification* of the cyclones is now seen to pose the main challenge. The 2005 cyclones turned out, after the fact, not to be so unusual in a numerical sense. Notwithstanding, larger cultural/natural processes were set in motion. Qualitatively they destabilized the known landscape and opened-up spaces for the imagination and strategies for coping with environmental and societal changes. Now, new assessments, new plans, and new processes of climate proofing and more advanced computational models will be issued, discussed and modified. New twists and turns will occur in the anticipation of future weather patterns and extreme events as cyclones.

The central tenet of this article is that climate change does not happen *around* people; it is taking place in the midst of their world. In that sense, it is uncontroversial to predict that some communities will tend to strengthen the conceptual and causative link to global warming, while others, continuously or temporarily, will interpret the storms in terms of religious prophecy or in close relation to certain political programs. These variations are already present in Cook Islands, and throughout the Pacific, as described elsewhere in the present book. What is important to highlight is that climate change discourse is not only *received* by different people in different ways, it changed and twisted every time it enters new cultural/natural environments. In 2005, as before, the cyclones are not merely “there”: bracketed and isolated as self-contained physical phenomena. Rather, the

course they take in each individual garden, lagoon and hilltop will be an enactment consisting of many components: mangos, roofs, families and shrieking, spiralling wooshes. Cyclones are more than extreme weather events. They are also great culturalnatural events curled into the life of islanders and visitors as they overtop the reefs and minds.²¹

21 This chapter is based on research in the Cook Islands in June and July 2010, and in June and July 2011, funded by the European Research Council. Thanks are owed to Tony Crook and Peter Rudiak-Gould for valuable comments.

Maria Louise Bønnelykke Robertson

4 Crafting Certainty in Liquid Worlds: Encountering Climate Change in Kiribati

4.1 Introduction

Societies have always read the weather for signs but generally they were signs of stable climates. Now, however, the weather is being read for its powerful, unpredictable ‘wanderings’, for climate instability.

(Szerszynski & Urry, 2010: 4)

Szerszynski and Urry suggest, using metaphors of orientation, that environments affected by climate change are lost, unfixed, with no destination ahead. They further point out that atmospheric science exposes the weather to technological intervention in order to reign in it (Szerszynski & Urry, 2010: 4). One could unpack Szerszynski and Urry’s passage and ask: What is the need for reading the weather if it is stable and predictable? And, conversely, how can one read the weather if it is absolutely contingent, uncertain, or chaotic? Reading the weather becomes a skill when the environment rests on principles of uncertainty *and* certainty, of contingency *and* stability.

In this article, I explore how people in the Pacific live in and make sense of changing environments. The navigation skills found in Kiribati will provide the empirical material for this purpose. I argue that both certainty and uncertainty are key to understanding how people navigate the oceans and predict changing weather patterns. Certainty and uncertainty exist, not in a dualistic relationship, but in an interconnected and organic relationship side-by-side. One does not exclude the other. And I show that engaging in understanding how the environment works and anticipating how the future will unfold are still important to people living in environments affected by the unpredictable wanderings of global anthropogenic climate change.

Places impacted by global climate change have been described as increasingly uncertain for the people living there as the environment is dramatically reconfigured (Crate, 2011: 179-80). Hence, tremendous scientific efforts are invested in modelling the impact of climate change in the future. But numerous uncertainties and unknown factors are unavoidable (see for example Barnett, 2001: 982; Hulme, 2010: 271; Mitchell & Hulme, 1999: 59; Szerszynski & Urry, 2010: 1-2). In fact, Michel Callon et al point

out when examining controversies in scientific and technological advancement that “scientific and technological development has not brought greater certainty. On the contrary, in a way that might seem paradoxical, it has engendered more uncertainty and the feeling that our ignorance is more important than what we know” (2009: 18-19).

Anthropologist Susan Crate claims, in a review of anthropological engagements with global climate change, that climate change disrupts local environmental skills making folk weather forecasting unreliable. She highlights how adaptation practices are destabilized and cultural orientations and symbolic frameworks are challenged when people face the volatility of global climate change (Crate, 2011: 179-80). Populations across the world are losing “the very totem plants, animals, and landscapes that are central to their spiritual orientation” (Crate; Crate & Nuttall; Cruikshank; Nadasdy; Nuttall et al; Rhoades et al; Salick & Byg; in Crate, 2011: 180). From this position Crate implies a loss of orientation when climate change disconnects environments into unknown configurations.

While there is no doubt that climate change has dramatic effect across the world I want to revisit and question the assumption that people become lost in a changing world. Instead I will echo Katharina Schneider when she explains the openedness of fishing movements among the Saltwater People in Papua New Guinea. Movements on the ocean are often unpredictable and surprising (2012: 40) indicating that islanders with their intense orientation towards the ocean inhabit the world not despite of, but because of, fluctuations.

In this analysis certainty and uncertainty should not be considered as in a contradictory relationship. Empirically and analytically they are difficult to single out and isolate from each other. They morph into one another, and the one is merely the other emerging. However, as Boholm reminds us, when she outlines the scope of an anthropology of uncertainty, “[u]ncertainty has to do with what is unpredictable in life [...]. Uncertainty concerns the future [...]. Uncertainty implies recognition of change and awareness that states of affairs are not static; they can alter drastically for better or worse” (2003: 167). I examine how people engage with uncertainties when living with new emerging weather patterns by exploring two different modes of connectivity. John Dewey’s ideas on the relationship between nature and experience—in which experience is not superimposed upon nature, but is situated in a natural environment—will establish the backbone of this analysis. As Dewey succinctly puts it:

[E]xperience is *of* as well as *in* nature. It is not experience which is experienced, but nature—stones, plants, animals, diseases, health, temperature, electricity, and so on. Things interacting in certain ways *are* experience [...]. Experience thus reaches down into nature; it has depth. (Original italics, 1958: 4a [sic]).

According to Dewey experience is situated in the interactions surrounding us. Humans as well as non-humans are places in a network of interactions, and it is from here we

engage our experience of what might be called nature or the environment. That is, experience is internal to, not separate from, nature. So, humans are simultaneously part of a network, as well as busy making sense of it. Connectivity, then, denotes both an idea that humans partake in shaping and forming the world around us, but also denotes an experiential position of how to make and remake the world through our connections to it.

4.2 The Reception of Climate Change in Kiribati

The uncertain future was indeed a concern in Kiribati, a small atoll nation in the central Pacific. Anxiousness about the future prevailed here. One of the main concerns was that the sea levels are rising and encroaching on the shores of the small islands. Scientific assessments suggest that climate change will make the islands uninhabitable within this century (Barnett & Adger, 2003; Storey & Hunter, 2010). And data collected and represented in models on the government's homepage shows that temperatures, rainfall, sea levels, and ocean acidification have increased in the last 50 years.²²

Climate change was discussed in the churches, on the national radio from where most people received their daily news, and the issue of climate change was high on the political agenda. Yet, even if climate change was a major political concern on these islands this knowledge was not distributed evenly among the I-Kiribati people. The church, especially the Catholic Church, often referred to the rainbow promise where God promised Noah that the earth would never again be flooded and through this argument rejecting the existence of climate change. And when the President addressed the village elders, which he did during government elections taking place during my fieldwork in 2011, rumours had it that it was more important to bring bags of kava in order to secure votes rather than discussing the pressing issues of climate change.

Also in 2011, the I-Kiribati government arranged a Climate Change Summit where all the Ministries, NGOs, and village chiefs in Kiribati debated how to integrate the issue of climate change into the national development plan, and President Anote Tong announced that climate change will have to be considered in every political decision in the future. This may seem contradictory when the churches, which are considered important institutions, were not aligned with this mission, and, furthermore, when you still find that people did not know about the issue of climate change. However, on the political level Kiribati depended on aid from donors, and that required working within a specific development framework and operating with a global climate change discourse. Among the villagers, on the other hand, it was not as straight forward.

²² See <http://www.climate.gov.ki/changing-climate/>. Accessed 28 June 2013.

Here, global climate change was entangled in place-based concerns about religious or chiefly authority.

But, nevertheless, people still tried to understand the environment. They tried to make sense of its emerging patterns. And when the question was raised, during the Climate Change Summit in 2011, whether there are any traditional ways of managing environmental change a representative from one of the NGOs answered “If the big waves comes we all go down to the beach with our knives, and show the waves that we are not afraid of them. We can do something like that.” This suggestion might seem bizarre. Waves do not care for knives. You cannot cut a wave in half. But considering that in Kiribati it has been believed that with appropriate rituals, such elements as the sun, the winds, the tides, the sea, and the rain could be influenced and used for the benefit of man:

Natural signs like lightning, cloud formations, and the behaviour of birds were interpreted by the priests and prophets and used by the sorcerers (McDonald 1982: 12).

So even if the data collected the past 50 years shows a clear trend, and even if the scientific projections for these islands seem convincing, there was no single way the scientific data and knowledge were received among the people living in Kiribati. Rather, this was a matter for empirical investigation. In this chapter I examine the skills of one particular person, Teueroa. She is an I-Kiribati navigator who can travel between islands in the Pacific Ocean, and she can read the weather. Her skills rest on generations of knowledge carefully passed down through family lines. The skills have continually been tested and adapted to changing natural and social conditions, enabling interaction with the environment and between islands throughout history.

What caught my attention about Teueroa’s skills was that, despite being an authority on environmental knowledge in Kiribati, she entirely refused the scientific idea of global climate change, and, even more surprising, she rejected the idea that the environment was changing in new and unfamiliar ways. To her, the uncertainty of the future was not as much a concern as it was an existential condition. This was surprising to me, and I wanted to understand her rejection: How can a woman who is sensitive to the slightest change in her surroundings, who has intimate knowledge of the waves, the wind, and the currents reject the idea of global climate change? Teueroa’s stories and skills illustrate that the increasing technoscientific intervention, monitoring changes in temperature, precipitation patterns, and sea level rise, is not the only way of understanding emerging weather patterns. There are many other ways people are attuned to the ways the world is changing. And I furthermore show that skills and knowledge are not simply undone with the onset of climate change. In fact, these ancient skills play a part in crafting certainty in places undergoing climate change.

4.3 The Navigator: Skills for Reading the Weather

Tabouea: ‘The families who have the skills of navigation they keep them to themselves. And the person who has the skills will choose very carefully who of their children they will pass the skills on to’.

Maria Louise: ‘What kind of character are they looking for?’

Tabouea: ‘They are looking for someone who is quiet and don’t talk too much. Someone who is shy’.

It was Tabouea and her husband Mauia, an I-Kiribati couple in their early thirties, who explained to me how people are chosen to receive the skills of navigation. At first, I interpreted this quality of shyness in the navigator to only serve the protection of the secrecy of the skills (Grimble, 1931, 1972). However, as I came to know the navigator, Teueroa, I began to understand that to become a navigator required someone who could enfold the skills, someone who would devote themselves to the skills. When Teueroa began telling me stories about her life I learned that often it was the skills themselves, which to a large extent shaped Teueroa’s course, not just on the ocean, but also in her life. Teueroa was an elderly lady, suffering from Arthritis and type 2 diabetes, like so many other aging women who had lived arduous lives on the island, and so her journeys on the oceans had become more and more seldom.

The navigation skills are considered family property, and, as I was explained, navigators would rather die with their skills than give them to someone undeserving. I heard stories of researchers interested in navigation arriving in vain and leaving empty handed because they found no navigator willing to talk to them. When I explained that I was interested in learning about the navigation skills people answered that no one could teach these skills, and that the navigators guard their skills as a secret. However, Teueroa had a desire to give the skills away, something that was unusual, and so she was different from the impression many of my respondents had given, namely that they were a select few, both shy and unwilling to share the secrets of navigation. The reputation of navigators were such that locals knew Teueroa was one of the most skilled navigators on Tarawa, but had no idea what she looked like, or where she lived. Perhaps this was so because Teueroa was truly so reclusive, or perhaps my informants knew more than they let on, and tried to protect the secrecy of the navigation by not sharing any information they might have had about her with me.

It was the family I lived with during my fieldwork who arranged the first meeting between Teueroa and I. They knew Teueroa as a relative from their extended family. Even so, arranging this meeting took more than one month, as it required a formal invitation and Teueroa’s lengthy consideration. Since that first meeting, despite her age and deteriorating health, she made her way to the family where I lived every Sunday to teach me the navigation skills. Sitting inside one of the thatched huts (*kiakia*), and with small pieces of wood representing the stars and the moon arranged on a board, she demonstrated how celestial bodies travelled across the night sky.

Teueroa opened all our lessons (*reirei*) by making food offerings to stars and smoking the local tobacco to honour the stars. She explained that in Kiribati the stars are considered ancestors, and these acts of offerings pleased them. When I asked her why she did not teach me by directly observing the night sky and the stars, which she showed so much respect, she simply replied that I was not ready to learn in that manner. This echoes other accounts of how navigators learn their skills inside the huts as opposed to under the open sky. The navigator Biria from the island Butaritari had to learn inside the public meeting house “178 stars, constellations and nebulae; to indicate their relative position [...] and to say at what height above the eaves (i.e. the horizon) anyone of them might be seen at sunrise or sunset at different seasons of the year” (Grimble, 1972: 218). Even if I was not aware of it at the time, Teueroa was not simply explaining her knowledge to me, she was more generally teaching me. In this she was a woman of authority. For hours, Teueroa, the family I lived with, and I sat cross-legged in a circle, and in Teueroa’s solemn but patient way she taught me the skills and told me stories. If nearby children made too much noise she glared at them and shushed them. If they continued she never hesitated to slap them across the arm or the thigh. She alone decided what I could learn, and what knowledge was too secret to be shared. And she constantly tested me by seeing how well could I retell the stories she told, or identify various stellar constellations in the sky at night.

As argued earlier Teueroa’s skills as a navigator not only served to keep her on course when travelling the oceans; they also shaped the course of her life and the contours of her personality in many ways. In the following I will explore one particular event in Teueroa’s childhood. Throughout her life she had to endure several tests to demonstrate her worthiness as a navigator. Some of these tests were more straightforward than others. It could be naming stars and constellations in the communal meetinghouse (*te maneaba*) in front of village elders. But as a young girl, the first test she had to endure was being thrown in the ocean and abandoned there by her father.

4.4 If You Are Going to Be a Traveller...

On these small atolls the ocean and its rhythms, the endless sound of the waves breaking on the reef, and the tides, constantly contracting and expanding around the islands like a heartbeat, feature in most aspects of daily life. Navigational skills have allowed a handful of people from these islands to align themselves in this ocean world and to predict sailing and weather conditions. Navigators have interpreted the formation and colour of clouds to identify islands over the horizon. Birds and certain species of fish would give an indication of the distance to land. Star paths were followed when travelling greater distances. Most impressively, ocean swells, reflected from far away islands and reefs, would echo through the

canoe and its navigator, and would be recognised like the face of an old friend (Akerblom, 1968: 116). However, several I-Kiribati got lost at sea during my eight months of fieldwork, and from time to time you can read astonishing stories of how I-Kiribati fishermen have survived long periods of drifting lost at sea.²³ So however much can be understood and learned about travelling the ocean, navigation in the Pacific remains a risky activity made hazardous by unsuspected waves and reefs, strong currents, and outbreaks of bad weather.

Teueroa's father passed on the navigation skills of his ancestors to her, including knowledge of the stars, the weather, and the currents used for sailing. But, more than this, from an early age Teueroa was also taught how to *be* in the environment. She had to *know* the ocean, how it felt, tasted, and behaved, when it would be welcoming, dangerous, or deceitful:

The first time I learned to travel I was 14. I was on the local canoe with my father from the island Maiana. My father asked me to pick up something at the bottom of the canoe, as I leaned down my father pushed me into the sea. So I fell into the sea and you know how I tried to survive. I was crying and calling my mother, but my father sailed away. I can't really remember how long I was in the sea for, but when I looked at the canoe, it sailed away and disappeared. I was crying in the middle of the ocean, calling my mother. The ocean there is very dark and deep. But that was a test for me to overcome the fear of the sea, because if you are going to be a navigator, if you are going to be a traveller, you cannot be scared of the sea. My father came back. He put me on the front of the canoe and then he said: 'tell me, where is the land?' I pointed, and when it was wrong I got smacked. Then I tried to remember again what I had learnt. So I identified the land according to the cloud.

When Teueroa's father threw her in the water, time was momentarily suspended as she found herself floating; this unknown space created nonlinear time. She could not say how long she spent in the ocean even though her memory of the event was vivid, and every detail was conveyed. In that moment her senses were sharpened, and her mind absorbed all impressions.

Human geographer Nigel Clark argues for the idea of excess, which can unpack Teueroa's experience in the ocean. He draws on Deleuze's criticism of transcendence, arguing that all forces or energies are immanent or enfolded in the material world, and Lovelock's Gaia hypothesis, a theory maintaining that it is the collective role of the world's biosphere which maintains the atmosphere in states far from equilibrium, never totally ordered, never totally chaotic. Clark suggests that we can never totally account for any forces or events. In other words, they are irreversible, and he views the human as embodying something:

²³ See for example 'Kiribati Fishermen Rescued After Four Weeks Lost at Sea,' ABC News 8 May 2013, <http://www.abc.net.au/news/2013-05-08/an-fishermen-rescued-after-four-weeks-lost-at-sea/4676278>

of the other-than-human: traces of storms that have been weathered, stirrings of the earth that have been ridden out, poisons and infections that have been stomached. And the echo of events in the solar system and the wider cosmos. Some of these forces and processes, as we now know, come back to us bearing our own imprint (2005: 179).

With this approach in mind, that the connections making up the world are always more than we can imagine, they are irreversible, unpredictable, and echoing earlier connections I want to raise the question: why does Teueroa's father throw his daughter in the ocean? What kind of cruel exercise is this? We can only speculate, as Teueroa's story does not reveal an answer.

Teueroa learned much of her knowledge through repetition, memorisation, and models. But being thrown in the ocean was a very different lesson indeed. Her father maintained certainty through repetition of patterned connections in his teachings, but also instilled uncertainty by abandoning his daughter in the ocean. I argue that he was teaching her about how the world works, and his lesson was that the world can be treacherous, unreliable, and uncertain. Teueroa's experience in the water underscored the "volatility and unpredictability of many of the physical processes that human beings and other living things rely upon" (Clark, 2010: 32-3), as waves washed over her, and the current dragged her body along. There was no *one*, or no single *thing* controlling this event. There is no centralized hierarchical direction, as John Urry would put it (2003: 10; 2005: 8). While floating there at the mercy of the forces surrounding her, she was no doubt connected to and learning about the environment. Not by quantifying it or observing its parts, but by qualifying it, being in it, feeling it on her frail, young body.

I suggest this exercise was a demand on her father's part to remain humble in her connection to the environment. He demonstrated that navigators too loose their way, their orientation, and their ability to align themselves in the ocean world when they find themselves in connections that cannot in any easy way be reversed. He reminded her that she was not over and above the environment simply because she could make abstractions of it. She was not a spectator describing nature from the outside (Prigogine & Stengers, 1986: 300). More precisely, she was part of and in fact immersed in an animated, unpredictable physical world (Hastrup, 2012: 21). She learned that you cannot trust without the possibility of betrayal, and you cannot be certain without the possibility of uncertainty.

However traumatic this experience was for Teueroa as a child, she actively used what she had been taught in her role as a navigator throughout her life. In 2009 Teueroa was called upon for assistance when a ferry capsized on its way to Maiana, one of the outer islands. The Royal New Zealand Air Force sent an aircraft, and the government patrol boat was sent out to rescue the 55 passengers. Teueroa was also asked to be the captain of a boat that collected survivors and bodies.

Many of them could not be taken back. They had been half eaten, or large parts of their bodies were missing. The government patrol boat went west, but I guided my boat east, and there I found a lot of bodies as soon as I found the current. Once we were in the current, I said to the crew 'let us turn off the motor, let us float'. In this way we could hear if anybody screamed for help.

Teueroa did not know the course of the boat, nor even what her destination was. Nevertheless, she found what she was searching for. Even with her authority as a Captain, Teueroa did not attempt to direct the boat. In other words, she is not attempting to master the situation—she is wandering, as Szersynsky and Urry put it in the introduction. Floating is once again the theme. She accepts that the forces surrounding her cannot be known, and she used this mode of connectivity to find the bodies of the capsized ferry.

The idea of connectivity is not foreign to anthropological literature on Oceania. In what has become a modern classic "Our Sea of Islands" (1993), the Tongan and Fijian anthropologist Epeli Hau'ofa attempts to reconceptualise the dominating Western view of Pacific islands as "much too small, too poorly endowed with resources, and too isolated from the centres of economic growth for their inhabitants ever to be able to rise above their present conditions of dependence on the largesse of wealthy nations" (Epeli Hau'ofa, 1993: 4). According to Hau'ofa, this view overlooks the myths, legends, and oral traditions that by no means conceive of the world as fragmented, tiny, and poor in resources:

The world of our ancestors was a large sea full of places to explore, to make their homes in, to breed generations of seafarers like themselves. People raised in this environment were at home with the sea. They played in it as soon as they could walk steadily, they worked in it, they fought on it. They developed great skills for navigating their waters, and the spirit to traverse even the few large gaps that separated their island groups (Hau'ofa 1993: 8).

In a conceptual move away from a view of fragmented Pacific islands, Hau'ofa advocates a view of a sea of islands connected through kin, exchange, and voyaging routes. Also concerned with connectivity, Carlos Mondragón explores how the Torres people of Vanuatu understand and represent the connections and transformations of themselves and their islands through ancient exchange cycles with other islands and, since then, through the contact with non-Oceanic people (missionaries, colonial administrators, and plantation recruiters) (2009: 117). He describes the maritime and insular milieu of Melanesian life in the Torres as a complex interweaving of land- and sea-scapes, personhood, and topogeny (2009: 116). In Mondragón's words:

(Is)lands and their maritime milieu are visualized as interconnected media through which a tracery of aquatic roads and bush paths are constantly being renewed or made redundant by the ongoing circulation, the ebb and flow, of persons and things (2009: 123).

But through Teuerao's other accounts and stories I learned that being embedded in irreversible environmental connections was not the only way she was attuned to the world. Teueroa explained that *Bakoa*, the shark and the spirit of the ocean, and *Tabwakea*, the sea turtle and the spirit of the land, had since the beginning of time been in a competitive and struggling relationship. However, there exists important ways to reconcile their struggle with each other or to correct imbalances:

Teueroa: "Sometimes when you want to go to the sea, you bring Tabwakea, and when you come out from the sea you bring Bakoa".

Maria Louise: "What do you mean?"

Teueroa: "I mean all the natures of Bakoa, you bring it to Tabwakea, just to try and make them friendly with each other."

Maria Louise: "What can you bring from the ocean for example?"

Teueroa: "Some of the grass from the deep ocean, like trees [seaweed] from the deep ocean. You bring it onto land. And you bring the flowers from the land and give them to the ocean."

There were other taboos that Teueroa had to adhere to as a navigator. The sea turtle, Tabwakea, the spirit of the land, but also, paradoxically, the spirit of the navigator (see also Teiwaki, 1988: 36), was forbidden for Teueroa to eat. One afternoon when a sea turtle was caught by a villager nearby, and everyone was engaged in eating its bright red meat I realized that this taboo not only applied to Teueroa. As she was teaching the skills of navigation, it also applied to me. She explained to me that if I was ever lost at sea Tabwakea could guide me home, and therefore it was important that I always declined to eat the sea turtle.

In addition, during one of our first meetings Teueroa told me was that when she was born her father took her umbilical cord and sailed into the ocean where the current ends, that is, where the ocean is very deep. He put the umbilical cord into his mouth, jumped onto the outrigger, and then proceeded to jump into the water. After swimming for a while he spat out the umbilical cord, and allowed it to sink into the deep ocean. He swam in a backwards motion to the canoe and sailed home. The story is rife with puzzling elements. Teueroa was never able to provide an answer as to why her father had left her umbilical cord in the ocean. She did however offer an explanation as to why he had swum to the canoe backwards: "It was so that he could keep an eye out for the creatures of the ocean." Her father's ritual is a variation of a well-known ritual in Kiribati described in "Kiribati: Aspects of History":

When the [umbilical] cord fell off, one of the baby's grandfathers wore the cord on his right wrist for three days. It was then carefully wrapped and put away in a safe place. It was believed that if a rat ate it, for example, then the boy would be mischievous in later life. In the case of a baby girl, the cord was worn by one of her grandmothers. This was done so that the child would follow in the footsteps of its elders (Tito et al, 1979: 15).

Teueroa's father did not tie the umbilical cord to an older female relative as a way of connecting and grounding her within the extended family. Rather, he allowed it to descend into the deep ocean connecting and grounding her in this fluid space. He managed to effortlessly combine two apparent opposites: after establishing an intimate kin-like relationship between Teueroa and the ocean, he still made sure to keep an eye out for the creatures of the ocean—thus combining loyalty and betrayal, the secure and the treacherous. The landscape is then not a neutral background to human activities, but is a relationship of exchange as equally family and enemy.

In the accounts the connectedness between ocean and land, spirits and humans appear, not as irreversible, surprising, and with no element of control, rather the navigator can correct imbalances and influence the way connections interact. Philippe Descola's examination of the Tukano tribe of the Amazonian north-west can illuminate this variation in connectedness. Descola uses a thermodynamic model to describe a cosmos as an immense yet closed circuit encompassing the entire biosphere. In order to avoid entropic states in this cosmos exchanges of energy have to be carefully organised:

For example, when a Desana [one of the sixteen tribes that make up the Tukano group] hunts and kills an animal, a portion of the potential of the local fauna is cut off and is transferred into the human domain when that game becomes food. It is therefore necessary to ensure that the needs for human subsistence do not endanger the good circulation of the flows of energy between the different sectors of the world. And it is the responsibility of the Desana to keep watch on the situation and compensate for the losses that are caused by what they take from non-humans (Descola, 2012: 482).

So it is a balanced flow of energy that ensures the survival of the world, and if the balance is off, if too many animals have been hunted, this imbalance can be corrected through sexual abstinence or through the exchange of souls, that is, sacrificing a member of the tribe, in return for game (Descola, 2012: 482-3).

Descola describes a finite circuit humans can tinker with and adjust in order to ensure that it works well, contrary to Clark's idea of (infinite) excess outlined above. However, the idea of correcting connections into balance cannot account for Teueroa's experience of being abandoned in the sea. The oceanic connections she suddenly found herself embedded in were entropic and irreversible and could not be controlled or appeased, neither cognitively nor spiritually, in any meaningful way. Rather, it was a mind-independent uncertain reality, and there is no way of organizing it to rein it in. However, when Teueroa performed rituals to reconcile *Bakoa* and *Tabwakea*, refrained from eating the meat of the turtle, or when her umbilical cord was given to the ocean, it was exactly the kind of tinkering Descola describes, which ensures that the world worked well. So Teueroa was attuned to the world in more than one way. I want to momentarily dwell on what takes place after Teueroa's father returned to her in the ocean as it illuminated the transition from one mode of connectedness to another. As he rescued her from the water, he demanded her to set the course and take

them home. A difficult task when the world seems entropic. When Teueroa was wrong he slapped her face, as if to say: “Wake up! Assume another position in the world.” He insisted that she engaged all of what he taught her about how the world worked.

In the following I will explore Teueroa’s forecasting skills, as yet another way of connecting (with) the world. However, while the connections were uncertain, irreversible, and mind-independent while Teueroa floated in the ocean, and that she could balance connections through ritual practices, the skills used for prediction are certain, reversible, and mind-dependent.

4.5 Crafting Futures: The Certainty of Navigation

How then does navigation actually work? If the lesson of Teueroa’s father’s was that world is uncertain, and you never know when it will betray you, how can you predict the weather? How are the connections made between stellar constellations in the sky, the journey of the moon, and the weather and ocean around the islands of Kiribati?

Oceanic navigation is a skill found across the Pacific Islands, as it is crucial for connecting people in a region scattered across the largest ocean in the world. While there are many commonalities among the various traditions each is also particular to an island, sometimes even to a single family or individual. Keeping in mind that these are non-written knowledge systems I will briefly outline some of the basic principles by which navigators conceptualize lengthy inter-island canoe trips. Common across the Pacific has been the reliance on knowledge of the stars, sailing directions, and how to read the waves and predict weather (Goodenough & Thomas, 1987: 3). Navigators constructed charts. Different versions are found across the Pacific, including stick charts made of palm ribs bound together with string of coconut fibre and used to model swell phenomena and their interaction with islands, or star compasses made of sticks and stones showing rising and setting navigation stars (Akerblom, 1968: 105, 117). Living seamarks—a “tan shark making lazy movements, a ray with a red spot behind the eyes, a lone noisy bird” (Goodenough & Thomas, 1987: 8) could reveal navigators’ positions in the vicinity of islands or midway between them. Living seamarks did not serve as markers in navigation, but they were encountered when lost at sea, so that the navigator who had lost his bearings could align himself once more in the island world (Goodenough & Thomas, 1987: 8).

In the Caroline Islands navigators use the *star compass* consisting of the four cardinal points and between 28 and 36 additional points indicating the position of rising and setting navigation stars. The stars are so selected that during a sailing season “several stars can constantly be observed at different heights above the horizon” (Akerblom, 1968: 103-105) allowing sailing throughout the sailing season and throughout the night. In the Marshall Islands navigational knowledge is also astronomical, but special attention is paid to the changes in the direction and configuration of swell and waves. The change and configuration of swell indicates

direction to land and determine the navigator's position in relation to surrounding islands (Akerblom, 1968: 116). In Kiribati very few accounts of navigation exist. There are two reasons for this. Firstly, Kiribati has received less ethnographic attention than many other Pacific islands (but see Gilkes, 2009; Grimble, 1931; Osmond, 2007). It has even been questioned whether the few accounts that do exist, especially those of former Governor Arthur Grimble, who only studied navigation on the island of Butaritari, can be said to be representative of all of the Islands in Kiribati (Akerblom, 1968: 134). Secondly, navigational knowledge is a skill that is considered secret and therefore not easily shared with non-family members (Grimble, 1931: 198).

The few accounts that do exist suggest that instruction in navigation was carried out in a communal meeting house (*te maneaba*), where the great roof substituted for the sky, and where stars could be imagined in its thatch. Later when sailing on the ocean, the navigator would refer to the sky as "the roof of voyaging" (Grimble, 1931: 197–8). Imagining the sky as a roof, the eastern and the western roof plates make up the entire night sky, and rafters and beams supported this imaginary roof. "Lying across these rafters, like the steps of a ladder up the sky, the astronomer imagines a series of three equally-spaced cross-beams [...] on each slope of the roof" (Grimble, 1931: 198). The beams allowed the navigator to express the altitude of the star, and the rafter allows him to measure its declination (Grimble, 1931: 199).

Teueroa used a method called *te raranga* to predict the weather. *Te raranga* literally means *the weaver*, as when you weave a sitting mat from pandanus leaves. It consisted of 28 small pieces of wood, representing a lunar month, in the shape of a square, with each side of the square consisting of seven pieces. The square was balanced on one of its tips, pointing north, south, east, and west. Teueroa manipulated three additional pieces in the square: the moon (*Namakaina*), Scorpio (*Rimwimata*), and the Pleiades (*Nei Auti*). The configuration in which these three elements appeared indicated how the weather would unfold. The moon travelled clockwise and faster than the stars, which travelled counter clockwise, reconfiguring the moon, Scorpio, and the Pleiades every day. When the moon appeared in the east of *te raranga* it indicated full moon, in the north it indicated first quarter, in the east it indicated new moon, and in the south it indicated third quarter.

The small pieces of wood indicated the constellations' location in the sky. Therefore, in order to use *te raranga* for navigation it was imperative to imagine oneself inside it, looking up at the sky and towards the horizon, not outside it observing as a privileged learner. Teueroa's story of being thrown in the water as a child was crucial here. Simply learning about the navigation skills through *te raranga* would leave the student with the impression that navigation was only a matter of fixing connections and imposing order. Instead navigation was both about imposing order, through *te raranga*, and about floating within a network of elements with their own forces. This was the interstitial space between certainty and uncertainty where the navigation skills emerged. Teueroa made sense of a changing world through these two methods simultaneously.

A prolonged drought affected the island during my fieldwork, something many referred to as global climate change. Others referred to the La Niña phenomenon cooling down ocean surfaces thereby limiting evaporation and precipitation. I wanted to talk to Teueroa about the missing rain, and whether she thought it was connected to climate change. It was then I realised that Teueroa did not know anything about climate change. “What is climate change?” she asked through my interpreter. I explained that human pollution of the air and the atmosphere changes weather patterns and makes the climate change, that temperatures and the oceans rise, changing patterns of rainfall and changing the coastline for example through erosion. Teueroa looked at me confused and shook her head. She could not believe such a thing. In one way, I was not surprised to find that Teueroa was not familiar with the scientific knowledge about *global climate* change. This was true for a number of the informants I spoke to. However, I was surprised that Teueroa had not at least noticed any *environmental* change, the absent rain, the rising temperatures, or the changing coastline. So, I asked her about the missing rain:

Teueroa: ‘I already predicted last year that there will be no rain for seven months. This is the time for rain, but it depends on the moon and the stars, then the dry will continue. There will be a change if the moon and Rwimimwata meet close together on the third day of full moon this will indicate another six months of drought.’

Maria Louise: ‘Do you think the drought has anything to do with climate change?’

Teueroa: ‘No, this has nothing to do with climate change; this was already in the stars!’

Firstly, if we try to see climate change as an imbalance in connections as Descola outlined among the Tukano, where humans have endangered the good circulation of the flows of energy between the different sectors of the world (2012: 482) then accepting this flawed circulation would threaten Teueroa’s skills and her whole world. Secondly, for Teueroa drought was not an anomaly. Change, irregularity, and uncertainty were already accounted for in Teueroa’s skills. There was a particular certainty, time, and space for drought. Teueroa crafted connections between stars, islands, and oceans to make a world where fluctuation was not a symptom of chaos and unpredictability, but an environment that unfolds, in all its variability, according to a careful order.

4.6 Concluding Remarks

I have explored how Pacific Islanders make sense of changing environments through the skills and experiences of a navigator. Through Teueroa’s accounts she positions herself comfortably between two different philosophical positions. The notion that the world is made of relationships, engaging in known and unknown ways,

fixing and unfixing, always struggling and co-operating, and the world emerges in these connections. And the notion of organised exchanges of energy, which allows individuals to engage with systems and correct imbalances that could otherwise be said to be out of their control (see also Hayles, 2010: 325).

These two positions allow Teueroa to alternate between different modes of connectivity in which she attunes herself to the world around her. These two modes of connectivity are organised around certainty and uncertainty: as a decentred human, mercilessly at the forces of the world surrounding them; as a subject able to correct and maintain a certain balance in the environment through ritual practices; and as a subject at the centre, which is the one connecting and mobilising a specific network of actors.

Certain connectivity and uncertain connectivity are in themselves two different ways of being in the world. They do not add up. They teach two different things. Yet, they simultaneously do not contradict each other. People inhabit the world through both certainty and uncertainty, and both are a commitment to understanding the environment. Enormously skilled craftsmen, the navigators, perform their work in a hazardous space, the ocean, and their ability to align themselves in the larger universe is impressive. It is as much about crafting certainty and accepting the uncertainties as it is about competence, about devoting a lifetime to understanding the forces around you from the celestial bodies in the skies to the deep blue ocean.

I would like to return briefly to the name of *te raranga*, the weaver, because it's very name underscores the point I make. The idea of a weaver suggests neat patterns and order. Weaving also requires someone to do the weaving. It requires mastering and making your way towards a known end by crafting specific connections. Throwing a young girl in the Pacific Ocean was also a critical lesson in becoming a navigator. Floating in the ocean does not denote ideas about mastering or order, but rather it denotes ideas about entanglement, of being at the mercy of the surrounding forces, of accepting a place as just another being in the physical world, and of "orderly disorder."

While climate change no doubt severely affects the Pacific Islands, their coastal areas, their natural resources, and their public infrastructure, it is difficult to say anything in general about how notions and knowledge of climate change are received in these societies. Marching to the coast with knives to face the threatening ocean or using the skills of navigation in order to craft certainty are two ways in which the I-Kiribati make sense of the changing climate. I have shown that people are not simply lost in a changing world of global climate change, but that they continue to engage with the world, tinkering with and attuning to change. I have also shown that even if people are authorities of environmental knowledge they may not know about the scientific notion of climate change, and they may even disagree that the environment is changing in new and unfamiliar ways. This raises important questions for anyone involved climate change adaptation or mitigation. How can we best assist people in the challenges they are facing related to climate change without debunking the knowledge and skills, which have allowed them to live on these islands for generations?

Emilie Nolet

5 A Tsunami from the Mountains: Interpreting the Nadi Flood

5.1 Introduction: “A Tsunami from the Mountains”²⁴

In Fiji, recent large-scale flooding events have brought growing attention to climate change in both political and public areas. This paper will examine how climate change is both present and absent in popular accounts of early 2012 floods in Nadi (Western Viti Levu), as well as local understandings of perceived environmental changes and acceptable coping strategies.²⁵ Fiji is exposed to a range of geological, climatological and hydrological hazards, but suffers especially from cyclones, which sweep the country during the season extending from November to April. In addition to damage caused by strong winds, cyclones and tropical depressions tend to generate floods of variable intensity (McGree, Yeo and Devi, 2010). There is a general scholarly consensus that climate change may contribute to an increase in the frequency and/or intensity of extreme weather events in Fiji and other Pacific islands groups in the near future (Barnett and Campbell, 2010; Government of the Republic of Fiji, 2012; Koshy, 2007). Episodes of high intensity rainfall combined with increasing population pressure and ongoing changes in Fiji’s watersheds (through deforestation, intensification of agriculture, urbanization, expanding tourism, etc.) may result in intensified flooding (Chandra and Dalton, 2010). Furthermore, coastal erosion and storm surge inundation are expected to worsen as a consequence of sea level rise (Gravelle and Mimura, 2008).

On the 29th and 30th March 2012, a tropical depression bringing heavy rains caused widespread flooding in Fiji, particularly in the Western Division. Several people were killed and 15,000 sought shelter in evacuation centres. These floods resulted in extensive damage, amounting to at least US \$40 million, which does not include the estimated cost of damage to houses (OCHA, 2012: 3). The town of Nadi,

²⁴ The expression “tsunami from the mountains” is cited by M. Wise in an article published by the *Fiji Times* (1 April 2012).

²⁵ This text was written shortly after ESFO Bergen’s conference (November 2012), before the passage of cyclone Winston, which caused massive destruction in Fiji in February 2016. For this reason, cyclone Winston is not mentioned in this chapter.

the third largest urban centre and tourist capital of Fiji, was severely hit. Nadi is located on the western coast of Viti Levu, the biggest and most populated island of Fiji's archipelago. The town had a population of 42,284 in 2007, but it also hosts a large transient population of foreign tourists from the nearby international airport. Nadi is situated at the junction of two major river systems, which merge in the town, and most of its surface lies 6 metres below mean sea level. The existing flood risk could be now worsened by various factors, including climate change induced sea level rise (*Fiji Times*, 15 April 2012), land use practices leading to soil erosion and river sedimentation (like agriculture and forestry business) and increased development in flood paths (*FT*, 7 March 2011). Nadi's flood victims have stressed the extreme velocity of the water rise, which caught them off guard and, in parts of the town, caused "utter and complete" devastation (*FT*, 2 April 2012a; *Agence France Press*, 3 April 2012). The shock was amplified by the fact that Nadi had already been flooded from the 21st January till the first days of February 2012, and was in the process of recovering. In January 2009, the town had also suffered devastating floods, whose economic consequences were still being felt in 2012.

Over the past fifteen years, a growing number of studies have focused on the socio-economic impacts of environmental hazards in Fiji, on local policy and practice in disaster management and on existing or potential options for climate change adaptation and resilience to disasters.²⁶ Climate change has become a priority for the Fijian government (GRF, 2012) and a great deal of effort has been devoted to assessing its effects and raising awareness among the public and stakeholders. However, little research has been carried out on the processes that mediate perceptions of environmental risk and influence response (or lack of response) at a community level. How is Nadi's population interpreting such a striking succession of large scale flooding events, the scientific concept of climate change that is being disseminated, and the possible link between the two? To what extent do popular views diverge from government and experts' approaches, question them or converge with them? Are the floods seen as an inevitability or as a phenomenon which can be fought, stopped or contained? What are the solutions finally recommended or already adopted at the community level to cope with floods and climate change—actual and anticipated? We will explore these topics using a case study conducted in Narewa, a village community close to the town centre of Nadi.²⁷ Narewa is a mostly indigenous Fijian (*iTaukei*) village and the place of residence of the Tui Nadi, a high-ranking traditional chief who

²⁶ See for instance: Holland, 2009; Lal, Singh and Holland, 2009; Méheux, Dominey-Howes and Lloyd, 2010; Méheux, 2007; Mataka, Koshy and Nair, 2006; Veitayaki, 2006; Veitayaki and Sivo, 2010.

²⁷ The field research in Narewa was conducted in December 2011 and May-June 2012, and was funded by a post-doctoral grant from the AXA Research Fund. We will also draw upon field research conducted in the northern Yasawa for the French Laboratory of Excellence "Coral Reefs Facing Global Change" (Labex Corail). Interviews were conducted in English and all quotations in this chapter are drawn from fieldwork materials.

has authority over nine villages.²⁸ The Narewa clans are the traditional landowners of Denarau, a tourist complex built on a group of artificial islets, which features a high-end residential development and several luxury hotels. Government approval had also been given for a casino resort project, expected to open by October 2013 but which has been delayed ever since. The tourist complex provides substantial leasing income to Narewa village and is also a major source of employment for its inhabitants. The data collected may help to explain how the influence of climate change is perceived in urban Fiji, particularly in relation to other anthropogenic stressors such as urban development, intensive agriculture and mass tourism, and why some Fijian communities may consider relocation in the name of climate change a far worse option than “dealing with disasters.” It may also provide information on existing coping strategies and on the combining of traditional and “modern” skills or resources (such as tourism) in order to resist the impact of increasing flooding and respond to forecasts and present realities of climate change.

5.2 Explaining the Floods

The January-February and March-April 2012 events have caused widespread concern and triggered a nationwide discussion about the root causes of flooding, especially in the Nadi area. The government and media have both portrayed global climate change as a major culprit and stressed the need for global political action for mitigating climate change as well as local adaptive strategies: for the scale of the havoc following the floods would seem to hint at future devastation, should Fiji fail to adapt. In September 2012, Fiji’s Minister for Foreign Affairs, Ratu Inoke Kubuabola, addressed the 67th United Nations General Assembly as follows:

In Fiji, we experienced our worst flooding on record during the months of January and April this year. [...] as a people who live on a group of small islands in the South Pacific, we feel particularly vulnerable. The ongoing failure of the international community to seriously address climate change means we will all see more frequent and more intense weather events (Kubuabola, 2012).

After the floods, repeated calls for national vigilance and a stream of suggestions for improving preparedness were made. Nadi’s residents, in particular, were urged to become more risk-conscious and, if worst comes to worst, to anticipate a massive relocation of the city (*FT*, 12, 15, 16 and 20 April 2012). On the national scale, efforts to improve public understanding of climate change issues have also led to the

²⁸ Ratu Sailosi Dawai had just been declared the new Tui Nadi when this research was undertaken. However, he passed away in 2016. His younger brother, Ratu Vuniyani Navuniuci Dawai, was confirmed Tui Nadi by the *iTaukei* Lands and Fisheries Commission in April 2017.

endorsement by the Fiji Cabinet of a *iTaukei* Climate Change Glossary, translating foreign expressions such as “climate change” (*draki veisau*) and “carbon dioxide” (*kaboni dokosaiti*) into the vernacular idiom. Furthermore, the floods have raised concern about the fast-urban development in the Western division: some have denounced the influence on flooding of soil erosion, poor drainage, unsustainable farming practices or land reclamation (*FT*, 7 February 2012; *Fiji Sun*, 21 April 2012). However, this argument has been opposed by the Nadi Chamber of Commerce, whose president publicly claimed that climate change and heavy rain were the primary causes (*FT*, 10 April 2012a). Moreover, some officials and journalists have alleged that Fiji’s population was underprepared for natural disasters and that a lack of awareness and negligence or complacency had worsened the impact of flooding (*FT*, 1, 2b and 3 April 2012).

Narewa, which is located along the Nadi river, was severely touched by both flood events, the last one being unanimously qualified as the *worst ever* in local history. According to witnesses’ statements, the March-April flood was exceptional in several respects. Firstly, it occurred after a short period of rainfall following a clear day, not after a prolonged period of heavy downpour as was usual. Secondly, the rise of the water was unexpectedly fast, taking only two to three hours to completely flood the village. Lastly, the water reached exceptional levels: informants talked of six to seven feet on the village green and up to five feet in private houses. The damage was severe and the army had to intervene to clear the enormous amounts of silt and debris left by the receding floodwaters. For many inhabitants, such a series of floods could not be seen as a regular, understandable natural event, but instead indicated a rupture and disorganization of the natural order of things. While small-scale flooding is said to have positive effects (like bringing new plants and cleaning the land), the last floods have been described as unexpected, destructive events that local traditional lore was unable to circumvent. A tourism activities leader reckoned that Narewa was indeed a “dry place” (contrary to others like Rewa, in eastern Viti Levu, where inhabitants “have been wet all the time”) and that the present reversal of conditions had caught the population largely unprepared: “when it’s wet, people are lost.” The urban location of Narewa village and very good access to public media have certainly favoured the awareness of global climate change among the inhabitants (which seems to be lower in rural eastern Viti Levu. Cf. Lata and Nunn, 2012; Nolet, 2016) and, during the field study, various potential manifestations of global climate change were mentioned. For example, one resident assumed that “climate change” had caused a decline in the productivity of mango and banana trees and yams, while taro (which, he said, could not be grown properly in the past and had had to be brought from humid areas like Naitasiri and Suva) was now growing locally. Hence, climate change was seen to contribute to a change in local eating habits and to the undermining of the cultural knowledge associated with them. Yet changes in marine ecology, such as the disappearance of the *babale* shellfish used in traditional medicine, were attributed far more often to coastal activity and the tourism industry than to global

climate change. Equally, while many respondents believed that climate change was a contributing factor to the floods (by influencing the rain pattern or increasing flood levels through sea level rise), only two young people considered it to be the main cause. As will be seen, others invoked a range of social, economic, political or even spiritual malfunctions to explain the increasing floods. A middle-aged man, very involved in church activities, even stated that global climate change was non-existent and that floods were ordinary natural manifestations experienced since time immemorial: “I don’t believe in climate change. It has been the same all over. Day comes, and night goes. It rains, it goes. It’s still the same world God puts us in.” Such a refusal of climate change may involve the idea that human agency (through greenhouse gas emissions etc.) cannot profoundly alter the world God created, or reshape creation. In a sense, accepting climate change scientific narrative would be tantamount to endorsing an alternative explanation for what only God can do.

On the contrary, some other villagers saw in climate change and extraordinary floods a clear expression of God’s power and agency (which climate change scientific narrative thus contributed to reaffirm). For instance, it was argued that an increase in extreme weather events was reminiscent of events described in the Apocalypse and possibly announced the imminent coming of Judgment Day. Such a divine origin would make technical preparation or relocation pointless, even dangerous, as no one is supposed to go against God’s will. One elderly man thus admitted that he did not leave his house at the height of the floods because he intended to submit to God’s plans. “It’s in the Bible. Some they run away and they search a place to hide. You can’t go. You can’t go away. [...] I was sitting just down here and sing, and pray, and thank God.” This apocalyptic focus has been echoed both in the national press and on various websites run by expatriate Fijians: “Rumour has it that Nadi is reliving biblical history, and will suffer the same fate of the two infamous cities in Lot’s time. But I find comfort remembering God’s promise to mankind after Noah’s flood” (*FT*, 27 April 2012a). Other interpretations involving supernatural agency have been recorded in Ba province. In Vuake village (Matacawalevu, Yasawa), informants asserted that the Christian God used extreme weather events to attract man’s attention and that the recent floods were a punishment for the “Western” style of life of Nadi’s population, the focus on capitalistic development and less commitment to traditional and Christian duties:

That is God teaching them. God’s telling them: ‘You have plenty money and you forgot me’. In Nadi. Because they have plenty money. Everything in Nadi. Everything. Hotels, Airport... ‘Well, you have money but you forgot me. You have to change, come back, I love you, come back.’

In this rural location, but also by some of its own inhabitants, Nadi tends to be considered the epitome of modernization gone haywire. This belief implies an unprecedented preoccupation with money, idleness induced by leasing income, a severing of community ties due to disputes over land tenure and chiefly titles, and a

breaking with some central *iTaukei* values: honouring chiefs, customs and parents, and respecting Christian morals. Some have even wondered whether the floods could represent a spiritual cleansing or *veivakasavasavataki* process (similar to those undertaken by the Methodist Church)²⁹ to wash away Nadi's sins (*FT*, 27 April 2012b). Similarly, a person writing in the *Fiji Times* suggested that the floods may have expressed "nature's disapproval" of the casino project, which has been believed by some to bring immorality to Fiji and to go against Christian teachings (*FT*, 4 April 2012). However, such an idea was never encountered in Narewa, whose inhabitants own the land where the casino was supposed to be built and where some talked of easterners' "plain jealousy" of Denarau's good fortune. No one in Narewa mentioned either the idea that the floods were an ancestral or divine testing of the military government³⁰ or a spiritual punishment for the abolition of the Great Council of Chiefs,³¹ arguments which could be found on the websites of opponents to the military regime in 2012.³²

Religious interpretations are combined with others focusing on the characteristics of Nadi's rivers and streams, ecological deterioration and the impact of coastal development. A former village headman of Narewa (*turaga ni koro*) was one of the few to suggest that Nadi's river should be straightened and widened to be able to properly drain rainwater running down from the mountains. A vast majority of informants also mentioned the influence of soil erosion on the river system through deforestation, construction, aggregate mining and poor farming practices. The responsibility would lie with insufficiently controlled or cynical developers, but also with *iTaukei* communities who would neglect their land while working in cities and "going the Western way":

'They are not planting anymore trees, too. They are just building more houses, houses... No one is planting anything, they are all going to work. No one wants to plant trees, do the hard job. They all want to be modernized now.'

Here again disaster is understood as a consequence of the *iTaukei*'s changing lifestyle, which is viewed by many as a corruption of identity that is coming to a head in western Fiji. This analysis is reminiscent of the classic opposition made between

²⁹ According to G. Pigliasco, Methodist officials in Suva would rather use the expression *veivakavoui vakayalo kei na veivakaduavatataki* or "spiritual renewal and reconciliation" (2012: 51).

³⁰ In December 2006, Commodore Voreqe Bainimarama overthrew the elected government of Laisenia Qarase, which he accused of corruption and racial discrimination against the Indo-Fijian population (Fraenkel, Firth and Lal, 2009). A military government was in power from 2006 to 2014. Voreqe Bainimarama won the general election of September 2014 and was sworn in as the Prime Minister of Fiji.

³¹ The Great Council of Chiefs (*Bose Levu Vakaturaga*) was an institutional body of traditional chiefs with wide constitutional powers. It was suspended by the military government in April 2007 and abolished by decree in March 2012.

³² See Tomlinson, 2013: 82-4 on religious argumentation against the coup and Commander Bainimarama's political programme.

the “way of the land” (that is the traditional, genuine *iTaukei* style of life, based on kinship, giving and community duties) and the “way of money,” which characterizes Western societies (Toren, 1989; Williksen-Bakker, 2002). In a sense, working in town and constant pressure to make money are thought to alter indigenous Fijians’ relationships to their ancestral lands, with disastrous consequences: the ancestors’ heritage is neglected, even rejected entirely, and clan members are gradually forgetting how to make use of their own natural resources, trapping themselves in monetary exchange and the need for imported food products. A middle-aged man thus believed that a general change in lifestyle and the modernization of village infrastructure had led to ecological deterioration in Narewa: various food trees and medicinal plants which used to thrive in this village were disappearing because of a lack of care and interest (“nobody uses them anymore”), while the nearby river was becoming heavily polluted and unsuitable for bathing and fishing because of sewage spilling into it. It was also said that drainage work which used to be done by the villagers was no longer carried out, with possible consequences on river sedimentation and flooding impact. While the responsibility of communities was often mentioned, some asserted that the Fijians could do very little to protect their own environment, all community efforts being spoiled by heavy polluters and dishonest developers who should be “the ones to pay” to reverse the current ecological damage.

On the other hand, in Narewa this rarely leads to frank criticism of tourism, which is by far the primary source of income,³³ even if unwelcome effects are widely recognized. Some regretted a weakening of village taboos through daily contact with tourists and the introduction of Western ways, others a disappearance of hunting and picnic areas now converted into residences, golf courses and hotels. It was even claimed that the villagers had lost their “food chain” due to the building of Denarau (which was described as highly fertile land before construction works and as the former “fish supermarket” of Narewa), and that local men were weaker, smaller and less virile than their forefathers as a consequence of the change in their diet (cf. Clark, 1989, on “shrinking” feelings of Wiru men of Papua New Guinea as a consequence of missionary proselytization, and Tomlinson, 2004). Moreover, the constant passage of cruise liners or dive boats combined with hotel activity and waste disposal is thought to impact the coral reef and fish stocks. One villager also considered that the leasing system could foster community tensions and lead to a distressing splitting up of families: “it’s better in Rewa, somewhere where there is no hotel, because people are still eating together there.” Regarding flood risks, some were of the opinion that extensive removal of mangroves and coastal urbanization may have caused drainage problems and led to flooding. However, only one woman openly supported the current assumption that the Denarau complex itself could be the ultimate cause of flooding, by

³³ A middle-aged hairdresser from Narewa thus explained: “It’s good, they come, it helps our country [...] If they stop tourism, I don’t think that we will survive.”

hampering the river's ability to discharge water into the sea (cf. *FT*, 8 June 2011). Finally, residents invoked human failures to explain the particular severity of the March-April flooding. While some accused the National Weather Office of not issuing a proper warning, many mentioned that an accidental or deliberate opening of Vaturu dam's spillway gates could have been responsible for the flood: "This kind of current that came, it was different. It was like man-made."³⁴ Equally, poor-planning, insufficient funding and a lack of coordination between various development agencies were seen as having resulted in bad drainage and contributed to flooding throughout the Nadi area. In summary, environmental changes are mainly interpreted as the result of inner malfunctioning and chiefly lead to self-blame, societal criticism or the denunciation of local politics. In Narewa climate change narrative is present but secondary, or even encapsulated into a religious interpretative scheme making weather change a spiritual sanction or message, responding (again) to local dynamics.

5.3 Coping with Flood Risks

On the national scale, two main solutions to Nadi's flooding have been put forward. The first one is a partial diversion of the Nadi river, once said to be considered the "best option" by Nadi's business community,³⁵ but which would necessitate the evacuation of two villages (*FT*, 15 May 2012; *FS*, 17 July 2012). The other, the relocation of Nadi's city centre and other vulnerable areas, has been supported by scientists and climate change activists. For instance, Prof. Patrick Nunn, professor of oceanic geoscience, has argued that dredging rivers, diverting the mouth of Nadi's river or replanting trees would not solve a flood problem caused chiefly by climate change-induced sea level rise and that relocation was "inevitable" (*FT*, 15 April 2012). On the other hand, in Narewa, an overwhelming majority of residents have agreed that relocating the whole village or their own family or clan was hardly feasible, nor desirable. During the field study conducted in 2012, only a handful of residents wanted to resettle in a higher, safer area, almost all being women and men from other villages married to locals. An elderly man from Narewa who stated that village relocation was the sole viable solution, since sea level rise would keep worsening flood risks in the future, was a notable exception. Such statement was obviously based on scientific predictions concerning global warming, which are conveyed by the Fijian media and local or foreign environmental organizations. However, while many people in Narewa were aware of such scientific discourse and interpreted some perceived "natural irregularities" through it, few inferred that global climate change could lead

³⁴ Popular rumour was strong enough for a statement denying it to be made in the national press.

³⁵ In the aftermath of floods, the president of Nadi's Chamber of Commerce argued that the relocation of Nadi town was "an impossible task" and unacceptably costly (*FT*, 10 April 2012b).

to resettlement in a close or distant future. More precisely, although migration may be considered a suitable solution by some Pacific communities, scientists or political leaders,³⁶ it is certainly the worst option for Narewa people (this even leading some to underestimate the level of environmental change or to dismiss climate change as an important issue). Financial and logistical barriers were invoked, but most inhabitants also stated that they were used to the place and that leaving would perhaps be worse than staying and enduring chronic losses due to floods, especially because it equated to a shameful abandonment of ancestral lands. Strong ties exist between indigenous Fijian clans and the particular territorial areas (*vanua*) they are identified with. Relocating would mean breaking links with ancestors buried on these communal lands, as well as abandoning their *yavu* (ancient house foundations), which express the antiquity of family lines and their respective status. The land itself had come to hold *mana*, or spiritual power, over time. As a resident put it: “the further you go from this village, the crops don’t grow nicely.” Some have stressed the difficulty of taming a new environment and the cultural erosion which could result from relocation. It was even suggested that relocation would cause a loss of customary identity and upset social order:

Now everything is good because they know where they come from, what *mataqali*, what *yavusa*, what *tokotoko*,³⁷ and they are very sure with that, but if they gonna move, everything gonna be misplace.

Furthermore, inhabitants have argued that staying in Narewa offered them both easy access to the town centre and an inexpensive lifestyle, with the possibility to plant their own crops and to mobilize kin solidarity whenever needed. Such a perfect combination of village and city life, each with its own practical advantages, would not be easily found elsewhere. Moreover, the present position of Narewa is very close to the Denarau complex, which is extremely convenient for the many tourism workers, especially for night shifts. A young educated man argued as well that relocating was pointless, because “even going to another place, you will still face the same thing,” referring to the extensive flooding of the Nadi area. For many, relocation seems difficult to accept, but neither do river diversion and straightening raise much hope (“unless they make it big like Mississippi,” added a resident). Most inhabitants were sceptical about the possibility of controlling such a large mass of water and reckoned that the floods would not cease, whatever the government tried, because as one man put it: “nature, you can’t go against it.” Equally, most people considered dredging as an

36 See the case of Napuka islanders in the Tuamotu archipelago (French Polynesia), who recently sought asylum from the neighbouring Marquesas islands where their ancestors originally came from. Chaumeau, 2011.

37 These are clan and sub-clan units.

insufficient, costly option, which had already demonstrated its limits.³⁸ Such fatalistic statements seemed to rely only partially on the scientific discourse on climate change and its irreversibility, and far more on concrete observations of a constant worsening of floods and of an upsetting of the local natural balance: both being the result of an array of factors, of which sociocultural changes were not the least. The March-April flood, indeed, was widely considered as an irresistible giant wave not originating from the outside but from the interior, from the nearby mountains and, one would say, from societal factors such as land misuse and spiritual corruption (thus involving a political and spiritual response before a diplomatic or technical one). Even if pessimism dominates on the grounds that water levels have kept rising in recent years (although some added the reminder that “Only God knows”), a vast majority of residents are determined to stay, seeing Narewa not as an unsafe environment, but as land which must be cared for, protected and occupied whatever the cost:

We have decided to say that it's part of life, that we will have this kind of situation [...] So this is where we will be for the rest of our life, [we] just face it, learn from it, live with it, accept it, move on.

For a majority of respondents, the best option would be to stay on the same area of land but acquire a two-storey house, which is believed to offer sufficient security even during the biggest floods. One may even wonder whether the brave and humble acceptance of current flood risks is considered by some a virtue and a part of the needed response to God's warning expressed by the recent floods.

While few people seemed to trust large-scale technical solutions, interviewees from Narewa appeared highly confident in their own ability to recover from floods, relying on their own social or moral resources. The villagers did not usually claim to be culturally prepared to face the floods, as do the people of Rewa province (Nolet, 2016), but believed kinship and traditional relationships (i. e. ceremonial and political links between clans and land units) would prove powerful tools for recovery: kin and fellow clans linked to the Tui Nadi can offer material help and shelter to affected families, while expatriate Fijians are strongly expected to send money. Both tourism income and *iTaukei* customary solidarity are counted on to provide a certain security, helping villagers to endure chronic losses and to continue occupying the land of their forefathers (who are also the original source of their rights to the village's treasure, Denarau island):

Our hotel, the industry, has provided a lot of money too in the village. Every day. Every week. [...] And Fijian custom, when you work, you're not only working for you. You work for everybody.

³⁸ The villagers of Lomanikoro, Rewa (South-East of Viti Levu), expressed very different views about the efficacy of dredging during an anthropological study that we conducted in 2011. Contrary to Narewa, this flood-prone village had not experienced a large flood event for some years and dredging was widely considered there to be a useful protective technique.

[...] If you get \$300, \$200 a week, you can go shopping \$100. The rest of the hundred will go somewhere else. Like \$20 for the death, \$20 for the new-born child that side, and the aunty came and asks for \$10, and you have to buy salt and kerosene for grandfather. We have to do it like that. That's why life in the village rolls on. It doesn't stop.

It was stated as well that residents had learnt, through experience, how to quickly return the village to its normal state and to clean it up efficiently. And indeed, the village was impressively clean and neat of debris only six weeks after the flood. One resident was even convinced that the villagers had inherited from their ancestors a physical capacity to resist flood impacts: "The people are used to this, even small children [...] they have a system that works well with the flood, it can stop them from getting sick and all [...] Our body is just accustomed to everything about the flood, we are used to it." Additionally, some inferred that the villagers had gained in patience and humility through their recent experiences of disaster, as if the successive floods had taught them how to live with fewer material possessions and how to be less emotionally affected by their losses, this contributing as well to resilience in the widest sense.³⁹

Over here we are used to it. Even when the flood comes, never mind we lose our stuff, we laugh and smile, because we are used to the flood [...] We can't see anymore people buying anymore settee, like this. We don't wanna buy lots of beds. People are just careless, now. [...] Better you just put the mat, everybody sleep on the mattress, we gonna lose, lose, lose, all the time [...] Because in Fiji every house we want to fill it up with all the necessities. But now we change our mind, keep us free, it's better.

Therefore, even if certain specific actions and improvements are expected from the government, especially tighter controls on urban planning and drainage, villagers seem to rely heavily on their own resources to face future flooding hazards. This coping logic (which contradicts an often-heard accusation of "State-dependency" at the community level) appears to rely on various grounds, such as: the utmost importance of staying in the traditional village site; scepticism about the possibility of controlling the flooding process in the short-term; submission to a divine agency; a deep trust in the adaptive power of *iTaukei* culture; and even a cultural tendency to consider dangers and hardships only once they have materialized. Tourism is also considered a possible coping strategy. Some villagers have proposed to convert Narewa into a tourist centre which would offer the full spectrum of *iTaukei* culture to overseas visitors. Proposed attractions included a guided tour presenting village life, cultural shows like firewalking, popular resort entertainment such as *meke* (dancing), massages, hair braiding, *lovo* (earth oven) feasts, and more. The core idea is to take

³⁹ In a sense, floods are thought to have a purifying effect, leading or forcing people to live in a more Christian manner: they don't only punish or warn, but provide the conditions for moral improvement through poverty, the strengthening of community ties or the overcoming of existing conflicts.

advantage of the large transient population of foreign tourists (many of whom converge on the Manamuca and Yasawa island resorts after a short stay in Nadi) and offer them a cultural experience adapted to expected Western taste, which may not be found in package resorts. One of the project developers did not see the tour as a possibly destabilizing factor or threat to village taboos but, on the contrary, as an opportunity to “liven up” the village, upgrade infrastructure and bolster cultural knowledge while “making money.” Such a project would help to build financial resilience to the floods, but it would also provide autonomy vis-à-vis the foreign companies which have invested in Denarau and their uncontrollable financial dynamics and relations with the government. This project is reminiscent of other initiatives to develop community-based tourist enterprises and economic self-reliance through *vanua* resources, in which the combining of Western entrepreneurship and the village ethos (a life lived “in the way of the land” or *vakavanua*) can turn out to be a major challenge (Farrelly, 2009). In Narewa, some seemed to consider that a small-scale community project under local leadership could be a far better option than dependence on large foreign companies which can easily “outrun” both landowners and employees.

5.4 Conclusion

Arguably, the 2012 floods highlighted the issue of climate change more forcefully than ever before in Fiji. For some, especially in the political and media arenas (where the influence of climate science is strong), the floods “made visible” the devastation potentially awaiting this oceanic country in the near future, should the Fijians fail to react promptly. Apocalyptic visions were omnipresent both in the national press and in government rhetoric, but the situation also offered an opportunity to illustrate and foster national unity through interethnic solidarity during recovery operations. However, there are still conflicting views about the cause of these floods, the part played by global climate change and even on what global climate change is all about. Whereas most community members interviewed were conscious of the reality of global anthropogenic climate change (even citing precise local effects), floods seemed to be chiefly seen as the result of internal Fijian dynamics, in particular environmental and societal deterioration. Both in Narewa and in the northern Yasawa, many assumed that flooding was a direct consequence of land mismanagement, excessive coastal urbanization, poor development choices and the corruption of local customs and values, whether this was expressed within a religious framework or secular one. It is fairly clear that the 2012 floods have been incorporated into a cultural frame of reference linking natural disasters to social disruptions, and promoting self-transformation or patient acceptance as possible responses, but also that they have intensified popular questioning about Fiji’s economic destinies. At the community level, the floods appear to have revived a longstanding debate about the proper limits to development and Westernization, and the balance to be

achieved between the “way of the land” and the “way of money.” For some, the floods even represented a violent reality check, reminding Fijians that caring for their environment, ceasing to fell and burn forests indiscriminately, had become a crucial challenge. This is far from leading to a general rejection of Western forms of economic development: in the Nadi area, tourism is even considered to be a recovery tool and an asset in coping with the current environmental threat. Nonetheless, some pleaded for better political control of local and foreign companies and for the development of community-based enterprises, which would preserve some key aspects of *vanua* culture, offer job security and even give tourism “back” to village-dwelling Fijians. Furthermore, we have observed that the floods served to foster critical thinking about consumerism and aggressive commercial pressure to acquire comfort goods in urban areas: some villagers explained that the floods had encouraged them to keep “free of things,” so as to improve their resilience and practical effectiveness during emergency operations. Finally, it has appeared that many were sceptical about the solutions under discussion at the municipal and national levels for improving flood preparedness and resilience. In particular, we have seen that most villagers consider relocation impractical or inappropriate, even worse indeed than property loss and a present sense of insecurity. Some community members pleaded for an in-depth review of urban planning and ecological assessments, while others advocated social or ritual readjustments, for instance a reviving of the Christian spirit and religious activity. In the aftermath of the March-April flood, Narewa community members seemed to pin their hopes first and foremost on their own ability to cope with floods and not on the authorities’ capacity to inverse or control the process, through large-scale technical measures or political advocacy on the international scene. In a sense, the scientific discourse which is conveyed by the media seem not to have led (at least for the time being) to a conversion of local challenges into the global challenge of climate change, and to a pure externalisation of responsibilities and solutions: instead, potential manifestations of global climate change are considered indicative of internal imbalances and as showing the way to local improvement.

John Connell

6 Nothing There Atoll? “Farewell to the Carteret Islands”

6.1 Introduction

The Carterets are a portent of catastrophe to come—not only for the other low lying atolls of the South Pacific, but for low-lying coastal communities across the world, from Bangladesh to New Orleans ... These are the Carterets, the islands at the beginning of the end of the world ... Some time next year the islanders will become the world’s first climate-change refugees; within a few years, barring a dramatic reversal, their home will literally go down in history as the first inhabited territory in the world to be swallowed up by global warming (Parry, 2006).

A small number of Pacific islands, notably Tuvalu and the Carteret Islands (henceforth “CI”), have become iconic sites in contemporary chronicles of global warming and sea level rise: the “canaries in the coal mine” and synecdoches for future change. The most anticipated physical impacts of sea level rise (SLR) on islands are coastal erosion, flooding and salinity intrusion, reducing the resilience and viability of small island ecosystems, so stimulating migration. By far the most popular image with regard to climate change is that of disappearing islands and populations forced against their will to become environmental or “climate refugees” (Farbotko, 2010). In the media, but also in various academic accounts, the CI have been widely depicted as the first islands whose population must be relocated owing to climate change and thus the first “climate change refugees” (Connell, 1990; Edwards, 2013; Luetz, 2008; Morton, 2009). So strong has this linkage between the CI and disappearance become that when “Carteret Islands” is put into Google, the automatic categories offered in response are “Carteret Islands Sinking,” followed by “Climate Refugees” and “Relocation.” In 2010 Papua New Guinea issued a set of four “climate change” stamps all featuring the CI. There is an extraordinary national and global fascination with a few tiny islands disappearing beneath the waves (Farbotko and Lazrus, 2012).

The Carteret Islands in the Autonomous Region of Bougainville (Papua New Guinea) consists of a single coral atoll, with five populated islets, none more than three metres above sea level (Figure One). That may already suggest a difficult future, but can there then be no other way of thinking about these islands—so frequently doomed to disappear as sea level rises? This chapter examines this perception, seeks to account for the iconic status of the CI—far beyond what might be expected of a tiny island with fewer than two thousand people on the extreme fringes of an already globally marginal Pacific state—and analyses the way in which Western and Carteret Islander activists alike have applied

scientific discourses of climate change to the CI. In short, the chapter queries how the complex history and multiple stressors at work in the CI have become a monocausal, monolithic narrative based on “climate change,” and then offers alternative perspectives.

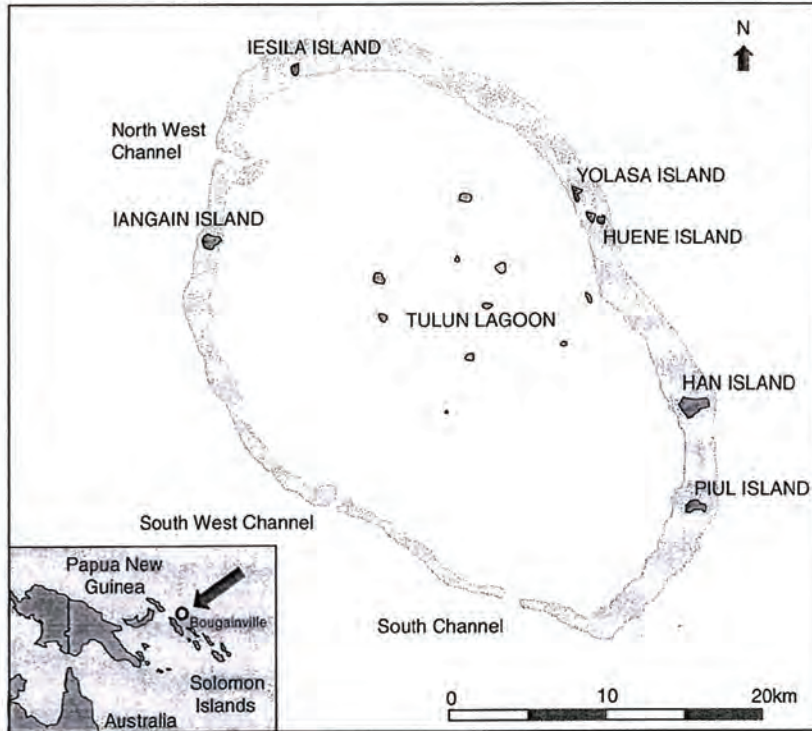


Figure 6.1: The Carteret Islands, Papua New Guinea.

6.2 (Mis)representing the Islands?

In several reports, from sources distant from the western Pacific, the CI—a single coral atoll 85 kilometres north-east of Buka (Bougainville, Papua New Guinea) (Figure One)—have already been abandoned. In a fairly typical example, the UK Minister of State, while visiting Papua New Guinea in April 2013, stated: “In 2007 the Carteret Islanders, in the Autonomous Region of Bougainville, became some of the first in the world to be forced from their homes by rising sea levels and extreme weather.”⁴⁰ Similar emotive and inaccurate statements have been made many times about Tuvalu, rather more

⁴⁰ <https://www.gov.uk/government/speeches/foreign-office-minister-hugo-swire-talks-to-port-moresby-chamber-of-commerce>

iconic in constituting an entire nation (Barnett and Campbell, 2010; Connell 2003; 2013). Since only a handful of households have been formally relocated from the CI, and the problems and complexities of resettlement have become longstanding issues, more informed statements about the CI simply focus on problems caused by sea level rise and the urgent need for resettlement.

A suite of quotations follows somewhat similar lines to those of the opening quotation. For the western Pacific, an Australian academic writes:

The people of Tuvalu and Kiribati in the north Pacific, Takuu (Mortlock Islands) and the Carteret Islands in Papua New Guinea, and Australia's Torres Strait Islanders, are now voyaging towards an uncertain future. Rapidly rising sea-levels and massive king tides are encroaching on their villages and salt is affecting arable land. The mass migration of entire island communities is imminent (Cochrane, 2010: 93).

A British academic describes CI as follows: more than 60% of the territory has fallen below sea level; two uninhabited islands disappeared in 1999 and the island has been cut into two by the sea (Blitz, 2011: 441). In this way, the CI have repeatedly been singled out, with islanders typically being described, here from the Australian Climate Institute think-tank, as “the first direct climate change refugees with islands inundated and damaged, gardens and water supplies destroyed by salt water intrusion and evacuation announced in 2005” (Roper, 2009). A decade ago a British journalist reported:

For more than 30 years the 980 people living on the six minute horseshoe-shaped Carteret atolls have battled the Pacific to stop salt water destroying their coconut palms and waves crashing over their houses. They failed. Yesterday a decision was made that will make their group of low-lying islands literally go down in history [...] the Carterets' people became the first to be officially evacuated because of climate change. Starting as soon as money is available to the Papua New Guinean regional government, 10 families at a time will be moved to Bougainville, a larger island 100km away. Within two years the six Carterets [...] will be uninhabited and undefended. By 2015 they are likely to be completely submerged (Vidal, 2005: n.p.).

The phrase “literally go down in history” by then had become repetitive (Connell, 2013)—as had other similar phrases—while 2015 was soon to become a familiar date for reports on the CI, despite no known scientific or other rationale for this date. Typically “scientists expect the islands to sink back into the sea by 2015” (Anon 2008), while “the 1,700 or so Carteret islanders may be among the first people to move. That's because scientists estimate the islands will be drowned by 2015.”⁴¹ Who the mysterious scientists were has never been revealed.

⁴¹ Keith Jackson. http://asopa.typepad.com/asopa_people/2011/08/the-climate-refugees-of-the-carteret-islands.html

In 2009 the prominent British journalist, George Monbiot, in a report entitled “Climate change displacement has begun but hardly anyone has noticed” claimed that, two weeks earlier, “a momentous event occurred: the beginning of the world’s first evacuation of an entire people as a result of manmade global warming” (2009: n.p.). As stated in a report from the NGO World Vision International:

There has been reluctance to leave, especially among older islanders, but after fighting a losing battle against the ocean for more than twenty years (building sea walls and planting mangroves) it appears the islanders have given up hope, resigned to be among the world’s first “climate change refugees” (Luetz, 2008)

This and similar reports and comments copied, built on and cross-referenced each other, in the absence of formal studies of socio-economic and physical changes in CI, or alternative perspectives. Though such reports have a veneer of accuracy, few indicate that their authors had travelled within a hundred kilometres of the CI, let alone visited the islands themselves. With internet search engines rendering these comments immediately accessible to anyone seeking to make statements on the CI, it is inevitable that the “imminent end” narrative was rehashed many times over. These sources include seemingly reputable (e.g. UN) sources, academics, journalists, film makers and NGOs.

Yet “[t]he vulnerability of the [Pacific] islands is a symbol used by researchers who need problems to investigate, journalists who need problems to sell and NGOs who need problems to solve” (Barnett and Campbell, 2010). For NGOs especially, small islands are sites and sources of refugees, and places that demonstrate the harmful effects of greenhouse gas emissions and overconsumption in the developed world: frontline victims of the excesses of capitalism. Media reports, building on each other and without real local understanding, not unexpectedly invariably attributed environmental problems to climate change and sea level, as they did elsewhere (Connell, 2003; Farkbotko, 2005). Yet only the CI were going down in history at a fixed time, so ensuring their unique iconic status.

The drama of disappearance depicted in media reports is accentuated in pictures and films. Typical photographs from a variety of sources are shown with their original captions in Figures 6.2 to 6.6, all emphasising the fragility and vulnerability of small islands and their populations. Photographs highlight sites of devastation, where islanders wade through what was once dry land, where coconut trees are eroded or fallen, and where water has cut in two the island of Huene in the CI: apparent visible proof of an atoll whose end is near. Documentary films have similarly lingered on disruption, attaching particular significance to high tides and flooding and eschewing residual normality.



Figure 6.2: “The View of Han (Huene) Island from Yolasa Island, both part of the Carteret Atoll. Han used to be one island but has now been bisected by rising sea levels. Fallen coconut trees in the foreground were caused by the erosion of the coastline” (IRIN Asia 8 June 2008). Photo Credit: Pip Starr.



Figure 6.3: “A mother takes her young family to drier ground.” Proto Credit: BBC World Service, “A World Underwater,” 2009.



Figure 6.4: “Rising sea levels have eroded much of the coastlines of the low-lying Carteret Islands situated 50 miles from Bougainville Island, in the South Pacific.” Photo credit: Jeremy Sutton-Hibbert /Greenpeace.



Figure 6.5: “The two halves of what was once Huene Island, which was cut in two in the 1980s. Its twin, lolasa, is going the same way. When the tides rise stingrays and sharks swim around. Then when the water goes down, the place is wet and stinking. Then the mosquitoes breed and the children get malaria and diarrhoea.” Photo credit: Jeremy Sutton-Hibbert.

Photographs, their captions, and films are dramatic depictions of a disappearing island and people and a graphic visual substitute for the absent science: “simultaneously scientific denotations of global warming and cultural connotations of danger and vulnerability” mirroring wider apocalyptic scenarios of catastrophe, hopelessness, misery and doom (Manzo, 2010). Moreover, disappearing islands seem idyllic. PNG’s own study records: “islands, which, from space, look like the beads of a necklace lying on a turquoise background” (Memafu, 2011). The *Times* depicts “the Carteret Islands—among the smallest, most beautiful and most remote inhabited islands in the world” (Parry, 2006: n.p.).

6.3 Thinking About Sinking

The Carteret Islands group consists of an oval-shaped atoll, ranging from approximately 10 to 20 kilometres in diameter, with six main named small islands and an entire surface area of about 0.7 sq. kms (70 hectares). Sea level rise in the western Pacific is faster than in most parts of the world, but the highest recorded rate in the region—close to Tuvalu—is 5.1 mm per year, and that rate has only occurred in recent years. No good records of sea level rise exist for CI, or nearby islands; it is unlikely to be more than that of Tuvalu but probably in excess of the average 3.1 mm per year recorded for the Western Pacific, and almost certainly increasing (Connell, 2015). While that is significant for the CI, in itself and for the time being sea level rise creates few problems.

Short term cyclical events have had a much greater local impact on environmental change than sea level rise. The CI are outside the normal cyclone belt but occasional storms produce storm surges (sometimes called king tides) that create overwash, as waves traverse the islands. More significant for short-term climatic events is the El Niño Southern Oscillation (ENSO), a quasi-periodic climatic pattern that occurs across the Pacific roughly every five years, and has occurred for centuries (well before significant greenhouse gas-induced global warming), changing sea surface temperatures and air surface pressures. At the peaks of ENSO cycles more extreme weather occurs. During these periods sea levels are unusually high, storm surges more frequent and overwash more common. Overwash can reduce potable lens water to a brackish water supply unsuitable for drinking for more than six months, and destroy fresh food supplies (in taro beds) for at least as long. That was the situation during 1989 and in mid-2008, when La Niña was in place, partly accounting for problems that brought in the media at critical times of obvious disruption.

Distant source wind-waves, emanating from the eastern Pacific and not associated with regional circumstances, have been an occasional source of inundation of low-lying areas; late in 2008 swell created considerable damage in the CI at a time when regional sea level, due to La Niña conditions, was unusually elevated (Hoeke et al,

2013). The impact would have been greater had it arrived during a peak of spring tides or in stronger La Niña conditions.

Relative sea level rise, both cyclical and irregular, is considerably influenced by tectonic change, and particularly strong vertical movements around the nearby convergence of the Australian and Pacific plates. Geophysical data on movements on the plate boundary are extremely scarce, other than in the Torres Islands (Vanuatu), where between 1997 and 2009 the islands subsided by about 117 mm—one of the highest recorded subsidence rates in the world, effectively quadrupling more gradual sea level rise, resulting in considerable flooding and local resettlement (Ballu et al, 2011; Siméoni and Ballu, 2012). Similar explanations account for parallel changes in other parts of the Solomon Islands and PNG, all close to the plate boundary, and for changes in CI (Duguman, 2009; Connell, 2015).

Human impacts from the construction of seawalls, removal of mangroves, and sand mining have also had significant impacts on erosion and coastal change (Connell 2003, 2013, 2015). There is little information on such factors in CI, though they are likely to have made some contribution to localised coastal erosion. Monbiot (2009) did note that there were “compounding factors—the removal of mangrove forests and some local volcanic activity—but the main problems appear to be rising sea levels.” Parry also stated “there is no doubt that the islanders have unwittingly made their own contribution to the problem. Unlike many tropical reefs, the Carteret atoll seems little damaged by bomb fishing—but the mangroves that once formed a natural sea wall around the islands were stripped away for firewood a generation ago” (Parry, 2006). Dynamiting of reefs occurred when the population grew during the Bougainville crisis of the 1990s (Regan, 2010). Various sea walls have been constructed at least as early as the 1960s and a survey team in 1964 reported that, already, “erosion is a constant menace in these islands” (quoted in O’Collins, 1990). Erosion has been greatest and most visible in the more modified parts of atolls, especially where people lived at high densities. On many Pacific atolls, islanders are conscious that erosion is part of a “normal process”—more of the same—and have long taken steps to modify and defend eroded areas and secure land elsewhere, at least as early as the 1970s (Bridges and McClatchey 2009; Connell 2015; Pam and Henry, 2012; Rubow, 2013). While Carteret Islanders have not apparently commented on past changes, and present changes may be substantially greater than at any time in the recent past, some contemporary changes are the outcome of cyclical and recurrent environmental changes.

6.4 The Carteret Islands: A Recent History

Carteret Islanders reportedly fled from Buka in pre-contact times to settle the island and displace a previous Polynesian outlier population (Mueller, 1972). Difficulties in maintaining livelihoods were frequent in other nearby atolls in the nineteenth and early twentieth century (Bayliss-Smith, 1975), and it is highly likely that this was also

true of CI. In post-war years the island periodically experienced food shortages of varying severity, at least since the 1960s, associated with a steadily growing human and pig population, and the increased conversion of coconuts into copra to generate income, so reducing local food supplies. Between the 1960s and 1980s administration patrol reports regularly remarked on food and timber shortages, and occasionally made reference to malnutrition, while CI were often singled out as the Bougainvillean atoll with the most severe development problems (e.g Kukang et al, 1987). Some islanders worked away and when the Bougainville Company no longer took crew from the Carterets for their ships “they cut the people short of everything” (Mueller, 1972). In the 1950s and 1960s the islands were known to be subject to occasional inundation during storm surges, especially during strong wind conditions.⁴² Resettlement was considered by the colonial administration at least as early as the 1960s (Mueller, 1972). By the 1990s very little land was cultivated and the main foods eaten were fish and coconuts, alongside imported foods such as rice and flour. People were dependent on driftwood and timber brought from Buka for construction. An agricultural survey in 2002 recorded at a time when the population was still increasing:

There are clear indications of stress in the Carteret Islands. There are serious and chronic food supply problems. ... so severe that it is possible that inadequate nutrition is inhibiting children’s mental development. There are also clear signs of environmental stress. The area on Han Island which was previously devoted to swamp taro production was flooded by sea water several years ago. The small areas of swamp taro pits were then abandoned. These problems are not new and have been reported for up to 40 years (Bourke and Betitis, 2003)

Breadfruit, swamp taro, sugar cane and bananas were all produced in the recent past but bananas died during the late 2000s. Stress has been recurrent.

Adequate demographic data for the CI are absent. The resident population is likely to be around 1,200 and the number of Carteret Islanders living elsewhere is likely to be about 300, but there is no means of being sure. The Admiralty Handbook recorded the CI as having a population of 440 in 1940; after the war that had grown to 574 in 1954 and 864 in 1970 (Mueller, 1972). The resident population at the time of the 2000 census was 979 people giving a population density of 1224 people per sq. km, the highest of any Bougainvillean atoll and the highest density in PNG (Bourke and Betitis, 2003). To remain at home in the islands as conditions worsened was regarded as relative deprivation, and by then roughly a third of all Carteret Islanders lived on Bougainville. The closure of the mine and a decade long period of civil war, violence and deprivation across Bougainville resulted in return migration to the CI and increased pressure on local resources, particularly as opportunities for trade were especially limited during this time. By chance that coincided with the initiation of global and regional concerns over climate change and sea level rise (Connell, 1990).

⁴² <http://ianmott.blogspot.com.au/2007/03/rising-sea-levels-or-just-sinking.html>

The following two decades were unusually difficult. In the 1980s cash incomes were erratic and unreliable since the sale of copra, shells, bêche-de-mer and other marine products was dependent on fluctuating prices and irregular transport to Bougainville (O’Collins, 1990). During the Bougainville crisis transport worsened considerably, and remained difficult thereafter as Bougainville only slowly returned to normality and “outer islanders” (a neologism) were further marginalised. Various Carteret Islanders live off-island, mainly in Buka (Bougainville).

Formal resettlement from CI has had two phases. The first resettlement began in 1984, with a plan to relocate Carteret Islanders to an area north of Arawa in Bougainville (adjoining a similar settlement for migrants from the other Bougainville atolls), but this scheme ended in 1989 with the outbreak of conflict. Several households had been established, and garden food was being sent back to the CI, but the resettled households returned to the CI during the crisis. In the twenty-first century, after the resolution of the crisis, a second attempt at resettlement began. That phase sought to relocate 50% of the island’s population by 2020. Neither the government of PNG nor that of the now Autonomous Province of Bougainville gave this priority or purchased land for resettlement, leaving the task to a local CI organisation, Tulele Peisa (“Sailing the waves on our own”) with some support from the Catholic church in Bougainville. Tulele Peisa regularly reported relocation being needed because of “rising sea levels.” The lack of state-provided land meant that an “ideal opportunity for securing land for some of the world’s first climate change displaced persons was lost” (Displacement Solutions, 2012: 18). Obtaining any land beyond the 81 hectares donated by the church, let alone suitable land for successful relocation, was extremely difficult, and Tulele Peisa had no financial resources to secure land or develop a settlement (Edwards, 2013). By 2011 no more than ten households had relocated to Bougainville, and there were frequent disputes with nearby landowners. Resettlement was unusually difficult because of the unwillingness of Bougainvilleans to relinquish or lease land, the tensions of a post-conflict period in which employment opportunities were scarce, and the absence of kin to facilitate the kind of migration that has occurred in other atoll contexts. Despite frequent stresses, and several attempts, Carteret Islanders have been unable to establish multi-sited livelihoods.

Making a livelihood on atolls has always been regarded as precarious: “coral reefs with their low sandy islets provide the most limited range of resources for human existence and are the most tenuous of habitats for man [sic] in the Pacific... Maintaining a livelihood is a considerable task” (Thomas, 1963). In pre-colonial times atolls achieved sustainable development partly through extended geographical ties, typified by socio-economic linkages across atolls and between clusters of islands. Elaborate exchange systems and reciprocal regional and local socio-economic-political ties contributed to sustainability (Alkire, 1978; Bayliss-Smith, 1982), though sometimes involving feuds, warfare and violent conflicts over land, resources and fishing grounds (D’Arcy, 2006, 2009). Survival necessitated external ties. Small islands could not afford to be insular. Without mobility and migration life could be particularly difficult.

Nearby Nukumanu atoll experienced a considerable population reduction in the 1870s following overpopulation and famine, though overpopulation was unlikely to be the sole explanation, and adjoining Takuu experienced a similar decline, prompting administration interest in resettlement (Bayliss-Smith, 1975; Moyle, 2007). Migration became a widespread household strategy, for diversifying sources of income to minimise risks, resulting in the establishment of a culture of migration and dependence on remittances (Connell, 2008, 2013, 2015). Pacific atoll islanders established their own settlements on central high islands, such as Guadalcanal, Pohnpei and Chuuk and Guam, or moved to central urbanized atolls such as Funafuti, Tarawa and Majuro, in search of superior incomes, education and health services. Unlike so many other atolls the CI were unusually disadvantaged, particularly evident after the Bougainville crisis and the dual failure of resettlement schemes.

6.5 Inside the Garbage Can

Small islands offer sites where the great global narratives of climate change can be comprehended, interpreted and made tangible and visible, and where “proof” of the reality of climate change can supposedly be constructed from indigenous testimonials (Farbotko, 2010). Environmental knowledge in the CI is a product of history and culture, influenced by scientific analysis, but mediated through the media and local transformation. Carteret Islanders, like Tuvaluans (Connell, 2003), are not passive in the face of science but actively construct their own environmental knowledge based on both observation and knowledge transmission. The science to which they have been exposed, limited as it is, confirms exactly what they have observed. Local fears and distant perceptions confirm, enhance and emphasise each other, so eclipsing the space for local causalities and explanations.

With the exceptions of Monbiot’s reference to “compounding factors” and Parry’s reference to islanders’ own contribution to the problem, in both cases seen as secondary to sea level rise, no reference to recent environmental changes in the CI has suggested an origin in anything other than climate change. Climate change and sea level rise embrace the totality of observed changes and scientific explanations. Nothing else is possible, resulting in a “garbage can logic” where unusual, seemingly inexplicable, changes have occurred, and a confluence of factors have been condensed and simplified into a narrative of monocausality. With scientific studies quite absent in the CI, “climate change” (or “sea level rise”) has become the sole source of environmental change: a “garbage can anarchy” where once separate and complex phenomena have become systematically interrelated (e.g. Connell, 2003; Corlett, 2008; Hulme, 2010). It would be almost impossible to imagine any environmental phenomenon less directly observable, more remote from daily experience and more dependent on science for its “truth” than climate change. The science and data of climate change are constantly contested and its effects can neither be accurately predicted nor spatially or temporally

determined. Any influences on climate change occur far from the island Pacific, and cannot be attributed to local activities, hence perceived physical changes that may have alternative explanations can still be attributed to climate change and sea level rise: instances of “promiscuous corroboration” (cf. Rudiak-Gould, 2012a, 2013a).

Media and occasional NGO accounts are replete with romanticised statements such as “Island chief John Kela doesn’t understand the science of climate change. But he sees that the ocean surrounding his island is rising” and “Even as the last veneers of organic matter are pushed out to the ocean, Tobasi [in Han] prays daily for his island. He knows that life on the atoll is coming to an end” (Luetz, 2008: 17, 20). Science is constantly given short shrift. Ursula Rakova, the CEO of Tulele Peisa, frequently returns to this theme. While noting that she has heard alternative explanations for local problems, from volcanic activity to tectonic change: “We don’t know much about science; all we know it’s happening all over the world” (quoted in Oxfam, 2008). Later: “We do not know much about science but we watch helplessly as the tides wash away our shores year in and year out” (Rakova, 2012). Distant causes absolve local people from responsibility. Among Carteret Islanders there is only a single recorded dissenting voice to the monocausal climate change narrative, and this dissenter appears to have been quashed: “I used to think that it’s because of unreligious activities of the people. They seem not to be following the Ten Commandments” (Dreiling, 2009). Climate change is the sole culprit.

Physical changes are considerable and eminently visible. The leader of Piul observed: “When I was a small boy this shore began out there” Mr Tubin [sic] says, pointing to a spot 150 metres out to sea. “One year ago it was five metres out from here. There were houses here, and fruit trees” (quoted in Parry, 2006). Some sites are particularly striking. “Chief Bernard Tunim of Piul Island points to a decaying coconut stump nearly 200 metres offshore ... ‘That used to be our shoreline only ten or 15 years ago. Look how the sea is eating us away. We are only a small island, the king tides have already swamped our gardens and soon we will have to leave. The future of my island is now only for fish, not people” (Bohane, 2009). Various films of the CI, and other atolls such as Takuu, and the numerous films of Tuvalu, are replete with local people demonstrating the disappearance of their land, usually by wading where it was. “We are right where my grandfather’s house was ... out there were coconut trees and some other fruit gardens” (CNN, 2007). Little can be more dramatic than food gardens and coconut palms—the basis of livelihoods—awash in the ocean. Nothing more is needed for the media to apply the “refugee” label. Small islands are thus marginalized through the creation and reiteration of emotional geographies tied to particular named sites, such as burial areas, to remembered places that have disappeared, to the particular island and the atoll as a whole.

Before erosion life was good, and vestiges of that remain, especially to those people who have no wish to migrate. On Huene, where only two families still remain, Selina Netoi pointed out: “I may not go. You can sleep outside and no one comes to disturb you. I like to watch the wind blowing in the palm trees. I don’t have to pay

anything, everything is free” (Tweedie, 2009). By contrast “On the mainland you can’t get something for nothing” (Redfearn and Metzger, 2010). Selina also observed “You do not get lonely here ... There is the sky and the sea and the trees, all changing. And there are people over there [nearby Iolassa]” (Redfearn and Metzger, 2010).

For a fifty-year-old man:

Here we are simple fishermen. We love fishing. If you go fishing and catch many fish, you would come and share what you have with me, and I would do the same. We look after each other, here on these islands (Tweedie, 2009).

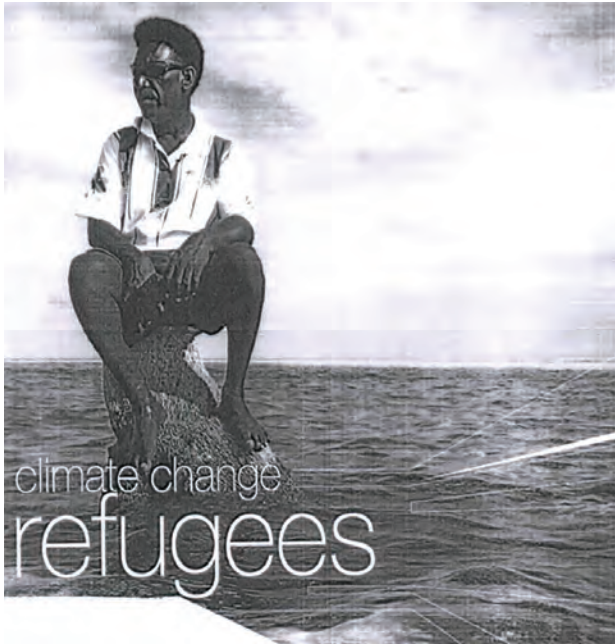


Figure 6.6: Climate change refugees.

For a younger man in Han:

It’s a holiday island, paradise. When you wake up you think about fishing. You can just sit and relax. Check if your coconuts are growing. You don’t have a hefty workload (in UNU, 2009)

Since the cause is evidently climate change, as the ‘chief’ of Piul has stated:

We are frustrated and we are angry at the same time. We are victims of something we are not responsible for. We believe that these islands are ours, and that our future generations should not go away from these islands. I think it’s about time these industrialized countries realized that these island countries in the Pacific are taking the toll. We are bearing the brunt of these [greenhouse] emissions (quoted in Westwood, 2008: 37)

This theme is repeated in almost every account: local people, with no capacity to influence climate change, victimised by distant forces. An anonymous Islander said: “We have mixed feelings of anger and sorrow at the same time. We don’t want to lose our ground. Losing our island is losing our lives, losing our identity, losing our custom and whatever we have” (Dreiling, 2009). Living on Bougainville would necessitate abandoning some aspects of culture (notably material culture) and adapting to new livelihoods in a different physical, cultural and linguistic environment. Despite the threats to livelihoods in the CI, only some of the Islanders, mainly younger families, wish to go. Becoming part of a wider world is not without emotional costs: “home” remains on the atoll.

6.6 Conclusion: 2015 and All That

Contrary to recent journalistic and local commentary, the CI face multiple problems, only one of which is climate change. Sustainable livelihoods have been under extreme pressure for more than half a century while expectations for development have increased. Sea level rise, though posing a serious problem in the future, is yet to have a significant influence on environmental change in the CI. Flooding and coastal erosion have been the result not of climate change-induced sea level rise but of tectonic changes, seismic events, ENSO-related tidal and storm surges, cyclones, wind-driven waves, and local actions. Indeed, significant physical changes were occurring on coral atolls long before the late 1980s when the first news of the “greenhouse effect,” climate change and global sea level rise reached the Pacific region.

But once this scientific concept did arrive, both on the CI and in Western newsrooms, it became possible for a complex historical, ecological, and social situation to be brushed aside in favour of the “grand narrative” of climate change (see Farbotko and Lazrus, 2012; Kuruppu and Liverman, 2011; Rudiak-Gould, 2011, 2012a). Disappearing islands and people—climate refugees—are emotional matters, drawn on by NGOs, journalists, and islanders themselves to encourage global mitigation and adaptation and to draw attention to the excesses of capitalism. While catastrophic narratives of inundation, flight and loss may be unhelpful for Tuvaluans and Marshall Islanders, who largely favour in situ adaptation over relocation (Farbotko and Lazrus, 2012; Rudiak-Gould, 2013a), in the CI, where environmental degradation is unusually severe and migration opportunities few, this rhetorical gambit provides a moral context that might shape a desired diasporic future. Not surprisingly Islanders have no wish to be “tectonic refugees,” where no human influences exist, and morality is absent. Likewise, whereas in most atoll contexts climate change is a distraction (Gaillard, 2012) from the necessity of achieving daily livelihoods, and climate change induces a sense of powerlessness, what might otherwise be powerlessness has been transformed in the CI into a potential means of gaining new livelihoods.

For centuries atoll islanders have diversified livelihoods by migration. Islanders themselves and colonial and post-colonial authorities recognised migration and resettlement elsewhere as a means of alleviating poverty and food insecurity, and formal resettlement schemes were sometimes put in place. In many other islands, islanders developed their own strategies for migration, colonisation or resettlement elsewhere. Maintaining an adequate local livelihood and achieving sustainability on the CI has always been difficult, and has worsened with increased population pressure and detachment from Bougainville during and after the crisis. During both the crisis years and the extreme weather condition of the late 2000s the CI needed greater connectivity to diversify local livelihoods. A growing culture of migration and significant environmental degradation increasingly emphasise each other.

As elsewhere migration and resettlement are entwined with ambivalence between the desire for migration and possible superior living standards and a preference for holding on to the security and certainty of home. Not all Carteret Islanders wish to leave, anchor populations will remain, and, should depopulation occur, the islands will become fishing grounds. Tulele Peisa hope to retain a small population in the Carterets but not “most of those with income-earning potential” (Displacement Solutions, 2012). Migration simply provides necessary flexible and productive livelihoods. Islanders are not impotent but, because of land and political issues in Bougainville, have limited migratory options. Local agency is not passive, but in difficult circumstances has effectively moulded global forces (through the narrative of climate change and disappearing islands and people) into external concern and widespread acceptance of the necessity for resettlement. A negative climate change discourse has been turned into both a romantic essentialism of place and a weapon of the weak (Scott, 1995). Carteret Islanders face a difficult future in a troubled nation but a “natural” hazard has provided one means of overcoming the challenges of development on an unusually small, densely populated and resource-deficient island: despite the “scientists”, most Islanders will still be there long after 2015.

Jennifer Newell

7 Weathering Climate Change in Samoa: Cultural Resources for Resilience

Whether or not it has to do with climate change, Samoans have been adapting for a very long time.
Leasiolagi Malama Meleisea, National University of Samoa, 2013

Julie glanced around the circle of workshop participants at the Museum of Samoa, the door behind her open onto a warm breeze and the ginger flowers decorating the entrance porch. She took a breath. “Look,” she said:

we are the generation that is really going to have to deal with climate change. Losing the *fale samoa* is a pity, because we are losing our cultural gift, but for me, it is OK. We will have to adapt. We have to do what we have to do to survive.⁴³

The *fale samoa* is the traditional house of Samoa (Figure 7.1). Open walled, with sturdy, smooth wooden pillars placed in an oval, holding up a high reaching, domed roof, all lashed together with strong coconut fiber, thatched thickly with palm leaves. Mata’afa Autagavaia, a Talking Chief and one of the Ministry of Education’s cultural specialists, is particularly attached to the *fale* and all it stands for. He was part of the workshop circle. He leaned forward, into the challenge within Julie’s summation of the issues pulling back and forth within everyday life in Samoa. “But,” he said, “the *fale* is a safer house in a cyclone than a European house”:

In a cyclone the palm fronds fly off and fly about, it is fun for kids. The sheet metal on the *fale papalagi* roof flies about and kills people. The *fale* in a cyclone sways—the sennit allows flexibility. The European house falls flat with no time to get out. Don’t think that living in a new European house will make us safer. It won’t.⁴⁴

This statement is echoed in official circles: the sheet-metal fatalities of recent cyclones prompted the Head of State to call for beach *fale* resort owners to “build back better” after disasters, with safer, traditional pandanus roofing. Samoan doctoral student Anne Godinet-Milbank, working on a UNDP research project on Samoan architecture, found

⁴³ J. L. L. Saia in discussion at “Rethinking Home: Climate Change in New York and Samoa” workshop, Museum of Samoa, Apia. 14-15 November 2013.

⁴⁴ M. Autagavaia in discussion at “Rethinking Home: Climate Change in New York and Samoa” workshop, Ministry of Education, Sport, and Culture (MESCC), National Government of Samoa. Apia, Samoa, 14-15 November 2013.

traditional lashed arches and high-pitched roofs to be stronger in a cyclone (*Samoa Observer*, 25 September 2013). A UNESCO report stated the *fale* is “highly resistant to cyclones” (UNESCO, 1992: foreword). The *fale samoa*, strong and intricately-bound, can be seen to be a reflection of the strong and intricately-bound nature of Samoan society. Samoans think of themselves as part of a closely-connected whole, a strong structure of family and village, wrapped with cords of obligation, belonging, stories, histories; like the intricate patterns of the sturdy coconut fibre cords, *’afa*, lashing together the *fale* roof (Figure 7.2).



Figure 7.1: *Fale talimalo* (house for receiving guests) built by Laufale Faanu for the Tiapapata Art Centre, Apia, 2014. Photo: Steven Percival.



Figure 7.2: *’Afa* binding on the roof structures in the *fale* at the Tiapapata Art Centre, Apia, 2014. Photo: Steven Percival.

Dionne Fonoti, a visual anthropologist at the National University of Samoa, said to me recently, “Samoans don’t do anything alone.” This is both good and bad; a network of safety, security, and identity—and a web of surveillance, weighty expectations, restrictions and pressures to conform (Goodman, 1983; Lay et al, 2000). I am interested in finding out how these tightly-knit communities are approaching their climate changed world. What cultural resources—what pillars of strength—do Samoans have to support their wellbeing, in the way the pillars of a *fale*, the *pou*, hold up the roof? These questions have been at the core of the project “Rethinking Home: Climate change in New York and Samoa,” a partnership between the American Museum of Natural History (New York) and the Museum of Samoa (Apia). The project, part of the U.S. State Department’s Museums Connect program, has linked two coastal communities who have lived through severe tropical storms: Hurricane Sandy (October 2012) and Cyclone Evan (December 2012).

Moving beyond the usual focus of researchers on infrastructure and economic resources when considering a community’s resilience to climate change, our project has been exploring how cultural and community structures provide psychological and social resilience. The cross-cultural learning from the project has been considerable, and is being published elsewhere.⁴⁵ This chapter is a reflection on what we have learnt on the Samoan side. I should clarify that the “Samoa” I am talking about here is Independent Samoa, the ten islands (four inhabited) formerly known as Western Samoa. Most of the people we spoke to are on the island of Upolu, which holds the bustling capital, Apia, on its northern coast. Some of our informants were from Savai’i, the more forested and rural island. To the east of Samoa is American Samoa, fundamentally Samoan and the post-1900 intertwining with the US readily apparent. My research in Independent Samoa has begun recently: I have visited four times over 2013-2014, while working on the “Rethinking Home” project. I do not yet speak Samoan and I am fortunate that a wide range of people—villagers, university students, government employees and officers of NGOs—have been willing to speak to me in English.

Low-lying atolls have understandably been a focus of media attention and scholarship on climate change in the Pacific; Tuvalu and Kiribati have become poster children for the “front line” of climate change.⁴⁶ However, communities on high islands are also experiencing radical life changes and wide-reaching impacts on lifeways, health and wellbeing. In Samoa, there are changes being felt in the higher tides eating into the land in which ancestors are buried, in the dying reefs, reducing the availability of food species, in the increasing heat and rising rainfall, in the droughts and the growing force of the cyclones hitting Samoa’s coasts, washing

⁴⁵ See www.amnh.org/our-research/anthropology/projects/rethinking-home

⁴⁶ For important reflections on this issue see Orlove et al, 2014: 249-75.

forests down hillsides and tearing through villages. In all of these are challenges to the way Samoans live on their land (Samoa Meteorology Division, 2013).

Like the inhabitants of Kiribati and Tuvalu, Samoans have been questioning how they should be living within their land. How to rebuild after a destructive event, how to adjust to fast-paced environmental change are issues that Samoans can't avoid. Climate change is also a very visible part of the Samoan administrative environment. The Secretariat of the Pacific Regional Program (SPREP) has its headquarters in Apia, and they distribute funds flowing into the Pacific from "Annexe 1" countries (those recognized under the Kyoto Protocol as the highest emitters). These nations send in funding for projects of assessment, mitigation, and adaptation. Each of the projects brings a swathe of consultants for surveys and climate change impact statements that need regular renewal.⁴⁷

The Samoan Government has been distributing internationally-framed, locally corroborated information about climate change to the local population through radio, newspapers, posters and brochures, essay competitions and courses at the National University of Samoa.⁴⁸ Messages focus on explaining climate change, strategies for mitigation and adaptation, with some statements about what it means for Samoa now and in the future. The issue of who is to blame is not centre stage.⁴⁹

Samoa has signed the UN Framework Convention on Climate Change since 1992 (Government of Samoa, 1992, 1999). The Minister of Natural Resources spoke in Warsaw at CFCCC COP 19, November 2013 on Samoa being in the process of putting its "own house in order," with a National Greenhouse Gas Abatement Policy, and a target of being carbon-neutral by 2020.⁵⁰ The Government has already exceeded its National Energy Policy target for renewable energy sourcing. After describing the intense tropical storms and other impacts of climate change Samoa is weathering, Dr le Tumaalii stated: "Climate is therefore an existential issue for Samoa".⁵¹ Climate change is experienced as a thoroughly "visible" phenomenon in Samoa, far from the "invisibility" that the global scientific community has long insisted upon (Rudiak-Gould, 2013b).

⁴⁷ M. Moneo, personal communication, Environment, Climate Change and Crisis Prevention and Recovery offices, United Nations Development Programme, Apia, 11 July 2013.

⁴⁸ L. Apelu, personal communication, Museum of Samoa, Ministry of Education, Sport, and Culture (MESCC), Samoan Government, Apia, 10 July 2013 and F. Latu, personal communication, National University of Samoa, Apia, November 2013.

⁴⁹ On blame as a key dimension of how people engage in the issue of climate change, see Rudiak-Gould, 2014a.

⁵⁰ F. Tumaalii, Statement to the High Level Segment, 19th Conference to the Parties to the Framework Convention on Climate Change, UNFCCC/CMP9, Warsaw, 21 November 2013.

⁵¹ Tumaalii, Statement, 2013.

7.1 Sources of Resilience

Resilience to climate change can be seen as a combination of *cultural* and *ecological* resilience (Peterson, 2000; Adger, Brown, Nelson et al, 2011). Cultural resilience encompasses the ways a society and its individuals are fitted to deal with environmental changes and challenges by virtue of their cultural mores, belief systems, their social, religious, economic and political relationships and capacities. Ecological resilience comes down to the capacity of an ecological system, including its people, to bounce back from a changing set of physical parameters.

I am most interested in cultural resilience, and within this, the capacity that Samoans (or any other group) have to manage their “interior” (psychological) world and manage their “exterior” (physical) environments, to deal as effectively as possible with climate change. By managing their interior world, I mean managing their wellbeing as individuals, families, villages and as a society as a whole. This encompasses the extent to which at each of these levels people maintain senses of security, solidarity, identity, clarity of purpose, and other positive feelings.

Samoans recognize that an important part of their resilience is contributed by their culture, “The Samoan Way”: *fa’a Samoa* (see Meleisea, 1987). *Fa’a Samoa* is a particular, Samoan, approach to living. It is at heart the strong social cohesion; ways of relating to each other and to environments; customs and material culture; long traditions of being both rooted in land and effective in migration; and a capacity for adaptability.

The conversation between Julie and Mata’afa reflects the extent to which climate change is heightening the challenges that “modernity” poses to *fa’a Samoa*. While there is a sense that the environment has always been full of dangers, there has been a slow rise over the past few decades of an extra swathe of serious threats to families, homes and landscapes, and a threat to the practice of customs.⁵² People are assessing their safety and security, and how they lead their lives, now and into the future. Here, as elsewhere, climate change is a “threat multiplier” (Crate and Nuttall, 2009).

How each family approaches these increasing threats—what blending of holding onto traditions, or adopting new ideas and things—is variable. A physical manifestation of the fluid and contested nature of how a Samoan individual can be in the world can be seen in the way *fale* are a fluid and contested form, especially now that people are feeling the need for more physical security. Many Samoan families retain at least one traditional-style *fale* on the family land, in its open-walled, shady, breezy structure made of local materials, offering open hospitality, a public monitoring of behaviour, and embodying a sublimation of individual life to the larger family (Franco and Mageo Aga, 1997). Often the other houses on the family land are

⁵² L. Duffy-Iosefa, interview with J. Newell at Conservation International main office, Apia, 10 July 2013.

built with iron roofs and more protective, private, enclosing walls of concrete blocks and glass windows.⁵³ One of the participants in the “Rethinking Home” workshop at the Museum of Samoa had energetically defended the centrality of the traditional *fale* for maintaining Samoa’s cultural strength and social accountability, but said quietly to me afterwards, “actually, I couldn’t live in a *fale*. I have to keep my children safe.”

One can see these dynamics in terms of an interplay between, on the one hand, a conceptual “pathway” from the land and from the past, which brings traditional ways of being (and which is generally given the moral high ground), and on the other, pathways from across the ocean, bearing different ways of being, thinking, and a degree of kudos attached to cosmopolitan attainments.⁵⁴ These new pathways have arrived over time on canoes from other Pacific islands, tall ships from Europe, steamers from America, warships, airplanes, with travellers, traders and invaders. The original Samoan conception of the universe being contained within a dome of the sky, ending at the horizon (Lay et al, 2000), was broken through by white *papalagi* voyagers in the 1700s.⁵⁵ Since then the paths from the outside world have offered up ideas like Christianity and Western science; techniques like timber milling and wage labour, and goods of utility and desire: cotton cloth, tinned beef, cars, sunglasses and mobile phones. These things fall into a category that is spoken of locally as “modernity,” *papalagi*, or more casually *pālagi*. How one walks the ancient path from the land, and whether one merges or ignores the paths that have landed from overseas, has long been the subject of energetic debates, discussions, and individual, everyday accommodations. It has always, and perhaps always will, cause a sense of loss for many Samoans when new ways cover over the old. As a character in Sia Figiel’s *Where We Once Belonged* says: “Each time a child cries for Coca-Cola instead of coconut-juice the waves close into our lungs. Each time we choose one car, two cars, three cars over canoes and our own feet, the waves close in further...” (Figiel, 1996: 234).

The ways that people are thinking about climate change in the Pacific often has at heart a consideration of these paths, in any community you might travel to, amongst any group of people you might sit down and talk to or tune into on the radio or online. Peter Rudiak-Gould’s work demonstrates it is this dynamic between tradition and modernity that is at the heart of how Marshall Islanders are engaging with climate change (2013a, 2014a).

⁵³ For a discussion of the changing form of the Samoan *fale*, see relevant chapters in: Rensel and Rodman, 1997; Neich, 1985; Allen, 1993.

⁵⁴ See Thomas (2010) for the history of Samoans and other Pacific Islanders engaging with the outside world, especially through travelling, and their complex negotiations between the value of the local and the exotic.

⁵⁵ According to Kramer, *papalagi* means literally “sky breakers”—from *pā*: to penetrate, break forth, and *lagi*: sky (Kramer, 1994: 27). However, whether the missionaries who originally recorded this term misunderstood it is a matter of discussion by historians. See particularly Tcherkézoff, 2008: 187-202.

7.2 “Nothing New”: A Tradition of Adaptability

While many Samoans might find the losses of tradition and continuity that accompany climate change are upsetting, one of the key features that Samoans identify within themselves, with pride, is adaptability. This is seen as a pan-Pacific trait, entailing a capacity to manage living in a difficult, changing environment. Leilani Duffy-Iosefa, Terrestrial Program Manager at Conservation International, has said:

Climate change is nothing new: it is just a Western concept now being put onto environmental changes. People have always adapted to changes.⁵⁶

Samoans feel they have maintained an ability to make adjustments to ways of life, and also to take on the changing potentials offered by the wider world, incorporating them into the *fa’a Samoa*. There is some hope and some sense of control that can be gleaned from both holding onto old ways and embracing technology from the outside world: cleaner energy and transport systems, “climate proof” houses and roads, seawalls—industrial solutions to the blight caused by the industrial age.

Many people see taking on new technologies as an important part of the capacity of Samoans to observe, predict, react to a changing and increasingly unpredictable environment: “we need our high technology, our machines – our warning systems,” as one of the students at our workshop said.⁵⁷ Filomena Nelson, director of Samoa’s Disaster Management Division in the Ministry of Natural Resources and Environment, has talked about a recent study showing Samoan *fale* to be more resilient than *fale pālagi*. She said she understands this, but also understands the impetus to adopt the new:

... it’s also because we’re becoming westernized; we can’t really be isolated from what’s going on. We’re connected through technology and everybody wants to be like other people in other countries.⁵⁸

As we saw in Julie and Mata’afa’s comments, modernization is seen to be both shoring up *and* eroding the capacity of Samoans to cope with climate change. Many villagers choose to use funding from international bodies to install solid, tangible defences against the encroaching waters. These are reassuring. But this intervention changes existing hydrological dynamics, slowing the release of flood waters, creating more serious flooding.⁵⁹ One commentator stated:

⁵⁶ Duffy-Iosefa, interview, 2013.

⁵⁷ S. Lemalu, discussion at “Rethinking Home: Climate Change in New York and Samoa” workshop, Museum of Samoa, Apia, 11 June 2014.

⁵⁸ Interview with J. Lacey, Ministry of Natural Resources and Environment, Apia, 22 November 2013.

⁵⁹ Moneo, personal communication, 2013.

There is so much funding out there for Small Island States for Climate Change, but it deals with a short time frame. Sea walls are funded—but these create more damage. We need to concentrate on trees. I’d seriously encourage more natural solutions. If people could focus on their cultural values that would help, looking to what worked in the past to adapt.⁶⁰

This approach is one that is increasingly being promoted in Samoa and more broadly. A leaflet produced by SPREP on “Ecosystem-based adaptation” describes “natural solutions for resilience” such as ensuring plant cover on slopes and shorelines for protection from natural disasters and supplying a range of “ecosystem services,” compared to no adaptation, or “hard engineering” adaptation options such as dredging and sea walls—which can damage biodiversity and coastal ecology (Figure 7.3). It will be interesting to see how well this proposed program plays out; it at least has the advantage of being more likely to be effective as it relies on the knowledge and activity of the people most intimately connected with the place, rather than being entirely dictated and directed by outsiders (Crate and Nuttall, 2009).



Figure 7.3: Brochure. “Ecosystem-based adaptation.” Secretariat of the Pacific Regional Environment Program (SPREP), 2014.

60 Duffy-Iosefa, interview, 2013.

7.3 It is Not ‘I’ but ‘We’

When you ask Samoans about what helped them cope with the recent intense storms and floods, and the 2009 tsunami, they immediately cite their family. The centre of life in Samoa is the extended family and the surrounding community: cohesive, coherent, co-operative. That it is not about “I” but “we” is often mentioned to outsiders.⁶¹ It is a state of being that Sia Figiel, in her novel *Where We Once Belonged* (1996), lays bare in her protagonist’s moment of crisis: “Alone. For the first time I am alone. I am alone. I am ‘I’ in its totality—‘I’ without ‘we’.” (Figiel, 1996: 236). Filomena Nelson, director of Samoa’s Disaster Management Division, said:

Samoa is a communal society and that’s a safety net for us in times of crisis. We value the support of our families and from our neighbours as well. It’s part of our culture, it happens every day on a day-to-day basis.⁶²

Belonging to a multi-generational family and close-knit community provides a strong sense of identity, a clear framework and sense of purpose for the individual to fit into. It also provides an easily-coordinated body of people to deal with a crisis, a range of able-bodied people to care for young and old, and a structure for managing every day matters. The main building-block of this structure is the *‘aiga*, the extended family, a lineage (Lay et al, 2000; Meleisea, 1987). The larger one’s *‘aiga*, the more power and security one has. A collection of *‘aiga*, working together in one place creates a *nu’u* (village). The head of each *‘aiga* is the *matai* (chief) (Lay et al, 2000). The *matai* represents the family on the *fono*: the village council. These leaders meet under the roof of the large village *faletele* to resolve disputes, mete out punishments, organize events, keep the village working. The head of all the *matai* is the high chief, the *ali’i*. There are also *tulafale* “talking chiefs,” or orators, and the *pulenu’u*, like a mayor, is an intermediary between village and government. The primary binding for this community cohesion is respect for elders and leaders (Lay et al, 2000).

7.4 A Higher Power

The respect for leaders extends to include the leaders of the church, the *faife’au* (pastor). Samoa is a very Christian nation. From the 1830s the religion had the support of the high chief Malietoa from soon after the arrival of missionaries (1830), as there had been a prophecy about the arrival of a new “kingdom of heaven” (Henry, 1980). Churches of various Christian denominations are a dominant and visible part of the

⁶¹ Apelu, personal communication, 2013.

⁶² Nelson, interview, 2013.

village landscape, sitting tall amongst the *fale* (Figure 7.4). Sundays are dedicated primarily to worship, the community attending church dressed in white. As in any religious community, the presence of a divine force is a great source of confidence that things are under control, providing a sense of being looked after. Our discussions at the Museum of Samoa made clear the extent to which, across multiple generations, the Church provides significant psychological wellbeing for dealing with natural disasters and the stresses of a changing environment.



Figure 7.4: Village church, northern coast of Upolu, Samoa, 2014. Photo: Jennifer Newell.

7.5 Skilled Voyagers, Rooted to Place

One question I had at the start of the “Rethinking Home” project was whether Samoans see themselves as being part of the great tradition of Pacific voyaging, and if this can be seen as one of the cultural pillars supporting them as their land comes under increasing threat. I wondered if they feel connected to a Pan-Pacific voyaging heritage, gaining strength and a sense of being able to feel at home in any part of the “Sea of Islands” as Epeli Hau’ofa advocated (Hau’ofa, 2004), rather than being isolated by colonially-imposed boundaries.

Being Pacific voyagers is not something that sprang immediately into words for those I spoke to. A bit more questioning, however, revealed that many were aware of, and valued, their voyaging ancestry. There is a sense of a continuum in voyaging, and that while Samoans are rooted to place, they are skilled in modern modes of voyaging. Being able to travel around the world, to migrate effectively, to keep the link to *‘aiga* and home alive, to be successful wherever in the world they may go—is an ongoing part of what it is to be Samoan. Lumepa Apelu, my colleague at the Museum of Samoa, has said:

Samoans are quite proud of being skilled migrators—that we can say there are Samoans in Alaska, there are Samoans all over the world. It is something we have always had—voyaging across the ocean...that ancestry is still within us. Voyaging was to trade, and we still do that. We trade, send back money and things, all for the *'aiga*.⁶³

For Dr Anne-Marie Tupuola-Plunkett, like many others of Samoan heritage, her grounded yet mobile connection with her homeland is central to her identity. “I’m a New Zealand-born Samoan, raised in Auckland, living in New York”—the poetic litany of connections underlines the way Pacific islanders have always lived. Annual inter-island long boat races (Lay et al, 2000) and the Samoan Voyaging Society in Apia reinforce this viewpoint. With their voyaging canoe *Gaualofa*, members of the Society were part of a fleet that travelled around the Pacific in 2012, supporting the revival of ancient navigation techniques and promoting the respect and care of the ocean.⁶⁴ While voyaging heritage might not be a major part of the way Samoans see their armoury for dealing with climate change on the ground, a capacity to conceive of themselves as being able to stay connected despite moving away does contribute to how people approach the question of whether to stay or relocate. This could be seen as part of the concept of *Va*, or the space of connection *between* things: between people, between people and the Creator, between people and the created world (Van der Ryn, 2007).

7.6 On Family Land

James Clifford has spoken of the extent to which people are now part of the world not so much as citizens of their singular nation as participants in routes between places that they trace throughout their lives (1997). It can be said that the strong role given to routes within the heritage of Pacific Islands makes it a trope that supports rootedness to home. In Samoa each *'aiga* is deeply grounded and to a profound extent defined by a plot of ancestral land (Lay et al, 2000; Meleisea, 1987). The profound depth of connection that individuals possess in family and the family’s land provides a deep-seated capacity to voyage well. They depart, but, in essence, they don’t leave. Connections are kept alive through regular trips home, through phone calls, email and Facebook, through things sent home to support the *'aiga*. Connection to family is also maintained for all those travelling by virtue of there being someone in the role of *tausi 'aiga*, the person who stays on the family land (*tausi* means “looking after”).⁶⁵

⁶³ Apelu, personal communication, 2014.

⁶⁴ http://www.unesco.org/new/en/apia/about-this-office/single-view/news/gaualofa_crew_voyaging_across_the_pacific/#.U7-pwRZ8Pel

⁶⁵ Apelu, personal communication, 2014.

The depth of the roots in both ancestral lands and in voyaging makes traveling away more possible to achieve with equanimity, with a sense of reinforcing and honouring a way of being and one's own identity. This can be seen as a cultural resource, a form of resilience that might swing into play in the future, when conditions can be expected to become more challenging.

The flip side of this is, however, that the ability to remain connected to family land, depends on being able to revisit—to pay respects to the esteemed ancestors buried in the front garden (Figure 7.5), to have the generations, living and dead, being kept together. If one cannot, in time, live on that land, voyaging takes on a different tenor. Becoming not a temporary stretching of the bond but a severance, a deep and irretrievable loss. This is a rising issue on low islands. “Failing to appreciate the uniqueness and irreplaceability of the islands,” says Peter Rudiak-Gould, “is a common outsider’s error” (2013a: 160). In the Marshall Islands, he writes:

Locals give disarmingly straightforward answers to the question ‘Why is land important to Marshall Islanders?’ It is survival, people say; that is all we have. For an outer islander, seeing your land destroyed would be like a westerner seeing his home burned down, being fired from his job, and losing his savings account all at once (2013a: 160).



Figure 7.5: *Fale* with family grave in the front garden, northern coast of Upolu, Samoa, 2014. Photo: Jennifer Newell.

This sense of looming loss of everything is something that is not unknown in high islands. One of the environmental science students in our “Rethinking Home” group, when I asked what she imagined life would be like twenty years in the future, said it would be sad, because Samoa would be under water, many Samoans will have left, and those that couldn’t leave will have drowned.

Samoans are negotiating these dilemmas, and taking up their positions. Faainu Latu, Environmental Science lecturer, NUS, has summarized this process, and the resources that people have for taking steps:

Obviously there are people...people who have given up already: 'let's go, let's move, let's migrate to NZ /Australia, we'll be safe there—if we stay here in Samoa we're just going to lose our land, we're going to sink'. But there are on the other part of the scale the people are willing to adapt and do things like move inland. And it won't be so bad because we'll do things that will enable us to survive... Now our greatest assets are our people. ... [there is] our knowledge, traditional knowledge—and if you haven't noticed, there's a bond especially within families and between families...⁶⁶

All these bonds have implications in a place increasingly threatened by natural disaster. One of the members of our Samoan group laughingly said, of the Cyclone Evan evacuation order: "I'm not the evacuating type. No, I didn't go—I needed to stay and look after the family land." She survived being in the heart of the storm and floods; others didn't. A research group recently found villagers expressed an unwillingness to move from increasingly dangerous areas for two key reasons. One, attachment to place: "we can't relocate—this is our land from our ancestors" (Male resident, Siumu West. Govt. of Samoa, 2013). Two, there was a lack of other options: "I am not sure where to go" (Male resident, Falefa, Anoama'a. Govt. of Samoa, 2013). Anyone who arranges to relocate to another family's land lives as an exile, uncomfortable, "not free".⁶⁷ Dionne Fonoti, anthropologist at NUS, has said it could be argued that it is precisely:

because Samoans feel like land is their inheritance they move around, whether it's underwater or not. I'm not convinced that Samoans will leave Samoa or move because they're afraid of the elements. I think they're more apt to move because of their conviction that this land has and always will always be theirs and no matter what happens they can always come back to it.⁶⁸

7.7 Managing the Tangible World

Aspects of the *fa'a Samoa* that support the effective management of the tangible, changing environment help people and their environments to bounce back from environmental disaster and protect existing systems (such as terrestrial and marine ecosystems and food production systems). Having the *matai* to oversee work on the lands belonging to the village, along with the village "workgroups"—the *'aumāga* (untitled men) and *aualuma* (unmarried women) (Franco and Mageo Aga, 1997)—to

⁶⁶ Latu, personal communication, NUS, Apia, 2013.

⁶⁷ Apelu, personal communication, 2014.

⁶⁸ Fonoto, personal communication, 2015.

coordinate efforts to re-establish mangroves or to clean up after a cyclone, is an effective management approach, often operating in consort with government programs.

As we saw above, Samoans are deeply rooted in their landscape. Their original, pre-Christian legends of the creation of the island and the powerful beings that animate it might have receded in their potency, but there is still a foundation of awareness of the landscape being created by a pantheon of gods and other sacred beings. While these beings tend to now be classified as “demons” and young people report that their parents will get angry if they ask about them the legends are still part of the bedrock of conceptions of the island.⁶⁹ Some commentators report on a continuance of an integrated system of understanding, with ancestors at its core: Penehuro Fatu Lefale writes: “Samoans view the environment as a total, integrated system, with many weather and climate phenomenon being directly caused by activities of ancestral beings” (Lefale: 323).⁷⁰

Certainly, some conception persists of the ancient, mutually-generative, intermingled, lustily intertwining couplings, and devastating battles between spirits, animals, people, rocks, sea, land. Writing of gods, Sia Figiel explains Pili could manifest himself “in any state of godliness he wished...manifesting love in the form of a pigeon, lust in the heart of a hibiscus, strength in the eye of a wind, or beauty in the form of man” (1996: 139). Some Samoans talk of there being malevolent spirits that continue to live on in the environment, that are particularly present in forests and abandoned houses, that can creep up on you, and cause sickness, *ma'i aitu*.⁷¹ “People are frightened to venture into forests,” Leasiolagi Malama Meleisea told me; “there is a proverb: ‘We love the forest, but we fear the spirits’.”⁷²

There were once ways of indicating these presences and living with them safely, as well as managing the consumption of food species sustainably; at the Pitt Rivers Museum, Oxford, there is a set of “signs” of palm leaf plaited into a variety of shapes, some with strips of *siapo* (barkcloth) or coral incorporated (Figure 7.6). They were hung at the edge of an area that a chief was protecting through instigating a *tapu* (taboo), such as reserving a fishing area at a particular time, or placing a turtle nesting ground out-of-bounds (Luna, 2003). Retribution for transgression could be expected from the animals and spirits of the area.⁷³

69 “Rethinking Home” workshop, Museum of Samoa, June 2014.

70 While some of his sources are historic, his understanding of Samoan conceptions has grown out of years talking to several chiefs in Savai'i.

71 Apelu, personal communication, 2014. *Ma'i* meaning sickness, *aitu* meaning ghost.

72 Interview with J. Newell at Center for Samoan Studies, National University of Samoa, Apia, 9 July 2013.

73 The signs were collected in Samoa by the missionary Rev. J. E. Newell, in 1887. He donated them to the Pitt Rivers Museum, with notes, in 1888. The practice of protecting a fishing ground or grove of trees or other food sources by marking the area with coconut leaf signs and keeping it protected by dint of the owners' status and the threat of attack by resident spirits can be seen across many parts of the Pacific. The practice of marking areas or species as *rahui*, restricted, is well documented in Tahitian history (Newell, 2010) and is an ongoing practice in the Cook Islands (Tiraa, 2006). There are signs on the coast of Rarotonga marking bays that are, at certain times, *ra'ui*.



Figure 7.6: *Tapui au*, palm leaf figure of a gar fish (*rar-aku*) placed on trees or land by the head of a specific 'aiga, to protect a fishing area against theft. 87cm x 7cm, collected by Rev. J. E. Newell, London Missionary Society, Nov. 1887, Acc. No.1888.5.3, reproduced courtesy of the Pitt Rivers Museum, Oxford.

In a threatened environment, an ongoing, intimate, relationship between plants, animals and landscape, people and spirits, which involves the heart as well as the mind, can be seen to be an important resource. A relationship of closeness and respect for the power of things residing in the landscape is more likely to be a mutually-supportive relationship, arguably more likely to lead to people treating their environment with respect.

Traditional environmental knowledge (TEK) is a foundational resource in Samoa—as it is for many indigenous societies around the world (Crate and Nuttall, 2009; Nilsson, 2008). A recent study suggests that TEK is still important in Samoa for understanding and living with their changing environment.⁷⁴ The MNRE has held workshops with elders to “pass on their knowledge...to share the knowledge that ancestors depended upon to forecast the weather, tides and other natural changes, before modern science took over.”⁷⁵ Their observations of signs such as cloud formations, bird calls, the behaviours of insects and marine creatures are being recorded for a reference book “to complement the knowledge of modern day climate studies” (Lefale, 2010; *Newslines*).

7.8 Undermining the *Fale* Pillars

There are aspects of the way Samoans tend to approach their world that erode the pillars supporting the wellbeing of their environment. Some of the academics, government and

⁷⁴ The Study was conducted by the Samoan Government and the National Institute for Water and Atmospheric Research, New Zealand; see Lefale, 2010.

⁷⁵ *Newslines*, 25 August 2013: 2, see also <http://media.bom.gov.au/social/blog/61/bureau-wins-awards/>

NGO workers working on climate change in Samoa have expressed a very real frustration at the ‘blind spots’ that many Samoans maintain. They feel there is a side-stepping of responsibility, and a shutting-off of previously-felt connections to the environment in order to engage in the timber industry, to fish on a large scale, to put in cash crops, to squeeze more money from the land and sea. Mata’afa Autagavaia (MESOC) has said that in the past Samoans “were careful about using the environment...We got food from the forest. The forest was our factory. The trees are our brothers and sisters.” He spoke of his sadness over the arrival in Savai’i in the 1960s of timber-getters from Oregon:

Our people rushed to get jobs. Cutting down the trees. The foreigners sold the bodies. Those that were not good enough were left on the ground to rot. It was like a graveyard. No birds...the land was desolate, like a battlefield.⁷⁶

People are seen to be handing over responsibility to two higher forces: God and Climate Change. One academic expressed frustration at the changes in conceptual frameworks that accompany Christianity that allow people to abrogate responsibility:

The environment is not seen as something that needs to be preserved.... Samoans attribute natural disasters—storms, flooding, etc—to something supernatural...If you think the environment is controlled by God, then your relationships to the environment can be quite destructive.⁷⁷

It is not uncommon for Samoans to feel that whatever happens is the will of God and it is not for people to try to change this decree. In a Samoan-made Youtube documentary about climate change, a manager of a beach *fale* resort stated: “Climate change is not man made but God’s will. It is the nature of things and Samoans have come to understand this” (Lal, 2009).⁷⁸ Many people feel that they should not be concerned about climate change: they are confident in God’s promise to Noah, confident the world will not be flooded again.

Sunny Seuseu, chief climate scientist in MNRE’s Meteorology Division, has said: “One of the difficulties and challenges that we face is communicating science to a very Christian nation and people”.⁷⁹ When he talks about climate change projections he is sometimes asked “about the confidence that can be placed in this,” and also if he is “doing God’s work”? He has to be “really innovative” and make clear links

⁷⁶ Autagavaia, 2013.

⁷⁷ Anon, Apia, 2013.

⁷⁸ Feagaimalii Leupolu, manager of the Taufua Beach *Fales* (Lalomanu). He mentions that they were wanting to relocate the *fales* away, to avoid unpredictable disasters like cyclones and tsunamis. As it happens, the family had started work on an uphill residence, but it was incomplete when a tsunami hit Lalomanu, two months after the documentary aired. There was great loss of life, including many members of the family that runs the Taufua Beach *Fales*.

⁷⁹ S. Seuseu, interview with J. Lacey, Meteorology Division, MNRE, Apia, 18 November 2013.

between the scientific narrative and what communities are “feeling in their day to day lives”.⁸⁰

7.9 Climate Change as a Cultural Resource

The environmental workers in Samoa I spoke to feel that the concept of climate change has become a useful prop for people. On the one hand government bodies and villages can deploy the term to leverage funding from international funders. If a new road is needed, said one conservation worker, a village only has to say it is for climate change adaptation to secure funding. Climate change, as a label and an idea, is itself a useful resource for resilience to climate change, providing a way of supporting mitigation, flexibility and a way of dealing with a more constrained access to resources.⁸¹ The term is a convenient way for people to side-step personal, traditional, “ordinary” environmental responsibility. The Marine Program officer at Conservation International sees climate change being used as a “catch all,” blamed for “everything from deforestation to less fish in the sea.”⁸² “Over the last 4-5 years,” he says:

Climate Change has become a buzz word. People are saying there are not enough fish, because of climate change, not because of their fishing practices, not because they are overfishing and ignoring size restrictions (Van Dijken, 2013).

An all-pervasive scapegoat, it is drowning out former conservation efforts, says Leilani Duffy-Iosefa, of Conservation International:

Climate change is overused; biodiversity is now at the back of everyone’s minds. Everything is climate change now. It is “climate change this, climate change that”...Climate change is an excuse for not taking responsibility for what people are actually doing. Especially in developed countries. It is not as well known elsewhere. In Palau they are more concerned with biodiversity and invasive species.⁸³

The sense of Samoans having strayed from the original, traditional path of being part of the living, “natural” and spiritual world around them, of caring and being intimately intertwined was echoed by others. As an NUS lecturer said: “We have removed ourselves from nature. We need to insert ourselves back in” (2013).

⁸⁰ Seuseu, interview, 2013.

⁸¹ With thanks to Tony Crook for contributing this point.

⁸² S. Van Dijken, personal communication, Apia, 9 July 2013.

⁸³ Interview, 2013.

7.10 Conclusion

This reflection on Samoan cultural resources for dealing with climate change has identified several pillars of strength. The *'aiga* and villages; the *matai* system; the capacity for adaptation; skill in migration; rootedness in land; and some continuity of the ability to read the environment. There is also the potential for close integration with foundational concepts of a deeply changeable, intimately interconnected environment. We have explored some of the foundations of Samoan conceptions of themselves. We have explored the ways that Samoans see traditional practices, relationships and material things as a resource for dealing with climate change, and the ways some of the paths from the land have been overlaid or merged with paths from overseas. Some of the loss of old paths and changing to the new is seen to weaken Samoan resilience. Some taking of new pathways—particularly the adoption of remote sensing, computing, communications technologies and approaches to house building—are seen to bolster strength.

We can see that recognizing existing strengths within a community can help to shore up and extend what works. The alternative is to permit the common approach of having people from the outside—scientists, commentators, and analysts—decide on resilience indicators and responses (Cote and Nightingale, 2012; Fabinyi, Evans and Foale, 2014).

Knowing more about how communities see themselves, about their own resources for cultural and environmental resilience, is the type of learning we need as we all face an increasingly unpredictable and challenging world. Samoa's greatest resource for dealing with climate change is undoubtedly the solidarity of extended family and community. The *'aiga*, as manifest in the *fale samoa*, is undoubtedly something Mata'afa would point to, and he would hope that the *fale* will continue, a material representation of all that he holds dear. He will continue to advocate the *fale samoa* as the safest house for Samoans. And Julie? She is now attending university in Aotearoa New Zealand. We can wonder where in the world, and in which ways, she will eventually create a home that will provide her with physical and emotional security. Where she and others of her generation will settle on the continuum between *fa'a Samoa* and *pālagi* and how they decide to deal with their climate-changed world, we shall have to wait and see.⁸⁴

⁸⁴ I am grateful to Lumepa Apelu (National Museum of Samoa), Jacklyn Lacey (AMNH), to Leasiolagi Malama Meleisea (National University of Samoa), Sunny Seuseu (MNRE) and Faainu Latu (NUS) for commenting on this chapter, to Mark Gunning (Gunningdesign.com) and Shelby Pykare (AMNH) for their support, and the many informants in Samoa who generously agreed to be interviewed for this research. I give special thanks to editors Tony Crook and Peter Rudiak-Gould for their inspiring work, for convening the original ESFO session and for their conceptual input to this chapter. I gratefully acknowledge the support of the U.S. State Department's Museums Connect program. This important program is made possible by the Bureau of Educational and Cultural Affairs and is administered by the American Alliance of Museums.

Marion Struck-Garbe

8 Reflections on Climate Change by Contemporary Artists in Papua New Guinea⁸⁵

8.1 Introduction

This chapter extends the discussion of scientific, policy and cultural discourse on climate change to an artistic perspective on the issue. It aims to draw attention to a Pacific culture as seen through the eyes of its contemporary artists, and explores the knowing, multiple and often ironic ways in which artists are responding to reductive images and subverting stereotypical assumptions. Artistic responses here combine representational and revelatory knowledge-practices, and the chapter is therefore also a creative experiment in depicting these contested tensions, and similarly moves between modes of knowledge in being faithful to “outsider” views of how climate change in Papua New Guinea might be seen, and being faithful to these “insider” artistic responses. One effect of this experiment is that the narrative may at points sit uncomfortably with depictions of similar themes and similar venues elsewhere in this volume. In destabilising these positions in knowledge, the chapter voices the assertions, tensions and predicaments through which climate change knowledge is being made, revealed and understood.

The consequences of climate change are already felt in Papua New Guinea, especially on the atoll islands. Between 3,500 and 6,000 dwellers will need to resettle due to increasing land loss, salt-water inundation and growing food insecurity. Once resettled as “climate refugees” at nearby Bougainville Island, they are losing their self-sufficiency as well as their cultural identity. Papua New Guinean artists are conscious of local issues and through their contribution they are documenting major social and environmental concerns of their people, trying to highlight how they think and feel about the threat of climate change.

Contemporary art has been a focus of local artists since the 1970s. Usually, themes and motives are dealing with changes in society, depicting scenes of traditional and cultural events or body art and decorated dancers. More recently, some artists started to focus explicitly on environmental issues. Losing one’s home and culture due to the consequences of climate change, losing the forest due to logging by multinational

⁸⁵ An earlier version of this chapter appeared in *Pacific News*, 38, July/August 2012.

companies or staying hungry because of fish shortage due to over-fishing have become their concern. Papua New Guinean artists' art can challenge the perception of and the relationship with climate change and environmental modifications by deconstructing common views and revealing alternative perceptions. By presenting and commenting on their motives (see artist biographies in footnotes, and Struck-Garbe, 1998), I want to show and creatively convey how this fear of loss is reflected in their artwork.

8.2 Climate Change in Papua New Guinea

Papua New Guinea is highly exposed to the effects of climate change and has often experienced extreme weather conditions. Some of the 600 islands of this Pacific Island state experience flooding and severe cyclones more often than in previous years. Manus, Duke of York, Siassi Islands, Mortlock, Tasman and Nuruira Island and Carteret Islands have recorded rising sea levels in the last two decades and it must be feared that in the long-run, rising sea levels will lead to significant land losses. Coastal flooding is already a serious problem affecting thousands of people every year and causing migration to less affected areas. Coral reefs are suffering from bleaching due to rising ocean temperatures and further falling under threat from ocean acidification.

Average rainfall is projected to increase in most areas especially during La Niña events.⁸⁶ This will cause flooding and landslides with adverse effects on peoples' lives in the coastal and low land areas, as well as in the highlands. Rising flood waters at the coastlines and in the river areas are also attributed to consequences of climate change. For instance, during spring 2010 many communities along the Sepik River experienced the worst flood in 40 years. An estimated twenty thousand people of the East Sepik Province were affected. But residents have been able to sustain themselves. There are inter-community supply chains thanks to traditional coping mechanisms, so that people had enough food and shelter.

The El Niño phenomenon has led to droughts which are associated with bush fires, fresh water problems and even frost. In the wake of this event serious health problems and food shortage evolved because sweet potato and other crops withered. As happened in 1997-8, Papua New Guinea then relied on foreign aid to support her people.

Another climate change issue is deforestation, which is rarely mentioned in conjunction with the Pacific Islands. The forest's importance for carbon storage has

⁸⁶ La Niña is characterized by unusually cold ocean temperatures in the Equatorial Pacific, compared to El Niño, which is characterized by unusually warm ocean temperatures. El Niño and La Niña result from interaction between the surface of the ocean and the atmosphere in the tropical Pacific. Changes in the ocean impact the atmosphere and climate patterns around the globe. In turn, changes in the atmosphere impact the ocean temperatures and currents. The system oscillates every 3 to 4 years between warm (El Niño) to neutral or cold (La Niña) conditions. http://www.elnino.noaa.gov/lanina_new_faqs.html.

been realised fairly recently. Rainforests play a key role in regulating local and global climates. Their massive degradation and destruction result in a loss of natural carbon storing and leads to an increase of greenhouse gas emissions.

Papua New Guinea is still hosting some of the world's largest and remaining intact forest landscapes. The forests have always provided a livelihood but due to continued legal and illegal destructive logging and the conversion of forest areas into plantations, the forests and living environment of the people are now under threat.

The observed impacts of climate change pose threats to the 85% of the population who make their living from gardening, agriculture, fisheries and the forests. It is furthermore an immediate threat to the development aspirations of the country which now has to tackle adaptation and to address mitigation plans and to deal with damages due to the impacts of climate change.

8.3 Sinking Islands

It was widely reported in November 2005 that the low-lying Carteret Islands of Papua New Guinea have progressively become uninhabitable, with an estimate of their total submersion by 2015.⁸⁷ The islands gained some dubious fame, because the inhabitants are being called one of the world's first climate refugees.

The islanders have fought a more than twenty years' battle building a seawall and planting mangroves. However, storm surges and high tides continue to wash away homes, destroy vegetable gardens and contaminate fresh water supplies. Due to the loss of land and due to inundation, the islanders are no longer able to grow crops, such as bananas and taro, to feed themselves. Families survive on mainly fish and coconuts, and are battling the swamp mosquitoes that have brought malaria.

The smallest tiny islands in their atoll and a considerable part of the total land mass of the Carteret atoll have disappeared already and in foreseeable years the rest of the land mass of the atoll is likely to submerge. Due to the fact that the area is small in size and low-lying, inhabitants will have nowhere to retreat to as the seas inundate their coastlines.

Carteret Islanders now have to move permanently to another place, to find a new home. In July 2009, nearly 3,000 islanders began what will eventually become a full-scale evacuation to Bougainville, the next major island about 80 kilometres away from their ancestral grounds. Relocation will continue over the next ten to twenty years. As the national and local government's relocation plans are slow the islanders have set up a relocation team. In 2006, they founded the local NGO Tulele Peisa. The

⁸⁷ Pacific Small Islands Developing States, United Nations Members, 2009, Views on Possible Security Implications of Climate Change to be included in the report of the Secretary-General to 64th Session of the United Nations General Assembly, p. 11; http://www.un.org/esa/dsd/resources/res_pdfs/ga-64/cc-inputs/PSIDS_CCIS.pdf

name can be translated as “sailing the waves on our own.” Their aim and task is to support and facilitate the voluntary resettlement of the islanders. They campaign for social justice on behalf of the Carteret Islanders and raise money to implement their own relocation program (Struck-Garbe, 2009a).



Figure 8.1: Alexander Mebri. “Refugees of the sinking islands, No III,” 2008, Acrylic on Canvas.

The painting by Alexander Mebri⁸⁸ shows a disturbed crowd. Men, women and children are rushing away from their island. They carry their bilum (net bags) with their belongings or an infant inside. They have only a small amount of space

88 Alexander Mebri was born in 1960 in Jayapura, the capital city of what is now Papua Province in Indonesia. His family originated from Yoka Village, Lake Sentani, the home of traditional bark paintings and tapa cloth. In 1998 he crossed the border to Vanimo, Papua New Guinea, as a refugee. Later he moved to Port Moresby to stay with his cousin brother. At the Faculty of Creative Arts, University of Papua New Guinea (UPNG), he enhanced his natural inborn talent in drawing and painting. He graduated in 1994 in Fine Arts. His aim is to emphasize the subject between abstract and reality by driving and losing control of the paint itself producing a special sense of beauty and emotions. He is specialized in painting detailed faces of indigenous people. In a personal communication Alexander stated: “Contemporary art and tribal art both equally remain valid expressions of indigenous cultural values, all my works reflect this culture and are an expression of how it has shaped me from the past to the present.” Alexander Mebri has won wide acclaim in PNG and overseas and exhibited in London, Australia and Germany.

at their disposal. The blue sky merging with the blue ocean evokes a feeling of being lost in a vast environment and escaping into the void. At the same time the painting emphasizes the declining space showing people crowded together. Like all the artists mentioned here Alexander Mebri follows the national discourse on the climate change issue in the media and therefore he also commented on his canvas:

This painting depicts the experiences of the people of the Carteret Islands in Papua New Guinea, whose islands are disappearing through rising sea levels. Their struggle to survive, as their gardens are covered by sea water, has finally resulted in their resettlement on higher land, giving hope to the islanders.⁸⁹

Climate change is provoking these people to migrate further inland and is causing a social security threat due to enhanced population pressure. The tensions intrinsic in migration of people can easily transform into an open conflict as people compete over scarce resources. Access to land for gardening or housing and access to fresh water could gear up further conflicts among the islanders. If villagers start to mark borders, forbidding others to come and fetch water from their community wells the existing order might shift (Böge, 2009).

In her terms Ursula Rakova, executive director and spokeswoman from Tulele Peisa, endorses the picture: “[f]or you it (climate change) is a matter of lifestyle, but for us it is a matter of life and death. If we do not move we are going to be drowned. Our shores are being eaten away. Since more than ten years we are building walls. But the ocean is stronger than us. Nothing can stop the erosion.”⁹⁰

Displacement seems to be unavoidable. Rising sea levels are not only eating away the land of the tiny atolls of the Carteret Islands, but also at their inhabitants’ way of life. If the consequences of climate change are admitted, it is like acknowledging that this is inevitable and it feels like surrender. People want to have a decent life till they come to terms with the irreversible relocation. Migration means homesickness, means losing land rights and means losing voting rights. People don’t want to go, they are forced.⁹¹

8.4 Displacement and Resettlement

Fear of the resettlement environment and possible tensions with the host communities leads to strong feelings among the families. They want more safety and security in

⁸⁹ All statements by Mebri taken from email to author.

⁹⁰ Personal communication, Hamburg, 14 April 2011.

⁹¹ Personal communication, Peter Emberson, Climate Change Campaigns Officer with the Pacific Conference of Churches, Copenhagen, 15 December 2009.

their new communities. Even though Tulele Peisa had organized meetings between the two groups prior to relocation, uncertainties among the resettlers remain. For instance, the ten Carteret Islanders who had been transferred from the islands to mainland Bougainville in 2009 could not get the legal rights to the land they needed. Potential problems related to landowning and the feeling of insecurity towards the new environment drove them to return to their home island.



Figure 8. 2: Julie Mota. “Homeless Refugees,” 2009, Mixed media on paper.

This collage from Julie Mota⁹² pictures a couple. The woman is holding a baby in her arms. They are in distress, moving, fleeing and leaving their hearts behind. People are faced with looming crises or in other words: “we have a feeling of anxiety, a feeling of uncertainty because we know that we will be losing our homes. It is our identity. It is our whole culture at stake,” to quote Ursula Rakova again.⁹³ This attitude becomes apparent in the remark of a tribal chief of the Carteret Islands, when asked by a journalist: Are you not afraid to stay on the island? He answered: “I am not frightened. If the island is lost, I’m lost too. I’ll get lost with the island”.⁹⁴

Loss of the land is a disaster. Living on other peoples’ land is not an easy way of life. Land is a very high-ranking issue not only in Papua New Guinea but in the Pacific as a whole. Pacific identity is closely connected with land: “the land is part of me and I am part of the land.” Furthermore, land has spiritual quality and connects people with the past, present and future. It is life and nurture and it gives the inhabitants a sense of being and belonging. They burrow the umbilical cord into the ground where the offspring are born and want to be buried at this particular place when they die. The inhabitants are the guardians of the land and want to stay where they belong, maintaining the key link with the land. In short: land holds life together and holds meaning, land equals identity. People’s intimate connection to land makes its loss a personal disaster.

If the land is already inundated by salt-water, gardening is becoming a major problem. This adds to the workload of women. They have to find another piece of land to start again to grow a productive food garden. The new garden might be farther away from home and the journey to and from will take a longer time. If there is a shortage of land women’s concern increases. They are at the heart of climate change vulnerability (Boncour and Burson, 2010; Struck-Garbe, 2009b).

Even though women have the roles of care giver, agriculture worker and water provider they are mostly marginalised from information about and participation in climate change adaptation and mitigation strategies. As traditional custodians

⁹² Julie Mota was born 1978 in Lae, Morobe Province. In 1998 she graduated in dramatics and play-writing at the Faculty of Creative Arts at UPNG. She also took drawing classes at UPNG. Her interest in art originates from her family’s background. She descends from Tufi in the Oro Province, an area which is famous for its women’s face tattoos and tapa clothes. Julie Mota stated in a personal conversation: “For me to follow in my great grandmothers’ and grandmothers’ footsteps and put ink on paper instead on bark cloth and make my mark in history is a tremendous and privileged task. My work is influenced by traditional legends and stories told by my grandparents.” A lot of her work deals with gender issues in contemporary Papua New Guinea and shows women being humiliated or victims of male violence. Another concern of her depicted in her paintings is peril and troubles of modern urban life. Julie Mota’s work had been exhibited in Canada, the USA and Germany.

⁹³ Personal communication in Tinputz, Bougainville, Papua New Guinea, March 2011.

⁹⁴ Marshall, Steve (2007): PNG-Carteret Islands, Broadcast: <http://www.abc.net.au/foreign/content/2007/s1903373.htm>

of the land women have passed on their skills in natural resource management for generations. Through their experiences, they have acquired valuable knowledge that will allow them to contribute positively to the identification of appropriate adaptation and mitigation techniques, if only they are given the chance to voice their ideas or become agents of change. On the Carteret Islands women have accumulated ancestral knowledge about water supplies that will be useful in planning and implementing community level adaptation strategies. Carteret society is matrilineal: mothers now fear that they will never be able to pass their land to their daughters because their heritage will be gone by then.

Despite women being central figures in everyday life and often having considerable knowledge and skills they are mostly excluded when it comes to politics and decision-making. This also holds true for resettlement issues. The lack of recognition of the role of women in the use of the land and their right to determine how it is used is a major obstacle in the development of adaptation strategies. This is despite fundamental rights being enshrined in national constitutions and policies, and in international agreements such as the Convention on the Elimination of Discrimination Against Women (CEDAW), which Papua New Guinea has signed and ratified. Women are not only in the face of climate change denied the enjoyments of their rights but the issue is a chance for them to address the key barriers again and demand the observance of their rights.

8.5 Coral Bleaching and Overfishing

The small islands of Papua New Guinea are reef-dependent. Pressures on the reef systems represent significant threats to livelihoods and well-being. Strong reefs play a vital role as natural breakwaters minimising wave impacts during storms and cyclones and as a food provider supplying fish (and protein) and sea-food for daily consumption.

Sea temperatures in the tropics have increased by one degree Celsius over the last ten years and are still increasing currently.⁹⁵ Reef building corals become stressed by higher temperatures, they are bleached and die in great numbers. Fewer corals mean less protection and less food for the islanders in times when they are experiencing stronger and heavier storms at the same time (Hoegh-Guldberg, 1999).

Figure 8.3 by Alexander Mebri illustrates people walking on the reef looking for fish and shellfish. They seem to be in panic because they cannot find any seafood. He gives the following statement about his painting: “Marine life in the Pacific is slowly being destroyed, as uncontrolled fishing is being carried out by more developed countries, with bigger ships and sophisticated machinery. The simple coastal villager

⁹⁵ Marshall, Steve (2007): PNG-Carteret Islands, Broadcast; <http://www.abc.net.au/foreign/content/2007/s1903373.htm>

now struggles to catch fish for his daily family’s meal.” His comment points to an additional problem: having fished out their own waters, countries like Japan, Taiwan, Korea, China, the United States and Spain are now sending their industrial fishing fleets to the Pacific to exploit the region’s stocks. Overfishing is seriously depleting tuna stocks and destructive fishing practices are killing other valuable marine life. Pacific Island countries are being exploited for their resources. For them the ocean is no longer the provider of food. This is a terrifying situation and such a threat to the sustainability of the entire social-eco-system of the islands that it obviously forces the islanders to act desperately.



Figure 8.3: Alexander Mebri. “Where has my fish gone, No II,” 2008, Acrylic on Canvas.

8.6 Deforestation

The importance of the forest and the necessity for reducing emissions from deforestation was quickly recognized by Papua New Guinea’s then long-time Prime Minister Michael Somare. He said at the UNFCCC COP 13/CMP3 meeting in Bali in December 2007: “If we lose the world’s forests we lose the fight against climate change. Rainforests are our earth’s greatest utility—our planet’s lungs, thermostat, and air-conditioning system.”⁹⁶ Despite this comprehension the Somare government

⁹⁶ Spiegel Online Wissenschaft: 02.05.2011, Prognose: Meeresspiegel steigt stärker als erwartet; <http://www.spiegel.de/wissenschaft/natur/0,1518,760148,00.html>

continued to facilitate the expansion of large-scale industrial and destructive logging. Over the past years successive governments before and after him have favoured industry over the environment, staunchly defending the interests of foreign logging companies and supporting their illegal activities. Local people have not benefited from large-scale foreign owned development and industries, and government corruption does not effectively manage revenue from extractive and lumber developments so that services like hospitals, roads and schools are available to the population. Furthermore, the public also does not have the information available to hold the government accountable for mismanagement.



Figure 8.4: Julie Mota. “Forest Concern,” 2009, Pen illustration, charcoal and watercolor on paper.

Although much of this area is still untouched Papua New Guinea is losing the struggle against forest degradation due to current policies and practices. Poor governance and a high level of corruption have led to large-scale illegal logging. Forest management is poor. The people have seen no benefit from logging, just destruction. At some stage, they thought they give away forest for development. According to a former missionary and landowner Brother Jim Coucher from Vanimo: “At first they welcome the loggers because they think it might mean money, but in fact they get very little out of it. The loggers don’t do any replanting or clearing up at all ... and they give no benefits to the people. They use bulldozers to drag the logs which create all sorts of problems with erosion.”⁹⁷ Forest protection on the one hand and small-scale eco-forestry on the other could be a way to slow down the speed of destruction and to solve the problems of forest loss.

In “Bush Fire” Alexander Mebri depicts a couple who is involved in inflaming a bush fire. In the background, there are other people standing closer to the origin of the fire. In the flames appear the eyes of their ancestors watching and crying with black tears. The eyes are also symbolising the soul of the forest. The artist comments on his works as followed: “Bush fires, one cause of climate change in the world today, are caused by uncontrolled burning of forests to make more gardens as population increases.”

A significant threat to Papua New Guinea’s forests is agricultural expansion. The country’s high population growth rate (3.1%) means increasing amounts of land are converted for subsistence agriculture. Each year 50,000-60,000 h.a. are cleared totally and permanently: 45% for agriculture, 48% for industrial logging, and the rest for infrastructure⁹⁸. As the population neared 7.8 million in 2014 with over 80% of this population living a traditional rural subsistence lifestyle, the capacity of the ecosystems to continue to support the country’s rural population has come under threat. More people impose greater demands on natural resources. Over the past 30 years, the country’s population has more than tripled, from 2.1 million to 7.3 million in 2011.⁹⁹

Typically, fire is used for land-clearing and at times—especially during dry El Niño years—agricultural fires can go out of control. During the 1997-8 El Niño events, fires burned thousands of hectares of dried-out forest while hundreds of people died from food shortages and famine in the central highlands.

⁹⁷ <http://www.planetark.com/dailynewsstory.cfm/newsid/45991/newsDate/13-Dec-2007/story.htm>

⁹⁸ Zwartz, Barney (27.02.2010): Rampant logging, destroying PNG; <http://www.smh.com.au/environment/rampant-logging-destroying-png-20100226-p94l.html>

⁹⁹ <http://www.islandsbusiness.com/news/papua-new-guinea/4378/pngs-population-stands-at-around-78-milliongrowth/> (24 January 2014).



Figure 8.5: Alexander Mebri. “Bush Fire,” 2008, Acrylic on Canvas.

One aspect of Alexander Mebri’s statement is based on the assumption that the smaller forests are, the less carbon dioxide (CO_2) is absorbed by trees; this then accumulates in the atmosphere as a result of pollution. Deforestation is one of the main causes of climate change, accounting for almost a fifth of all greenhouse gas emissions. At the same time, there will be an increased presence of CO_2 if trees are being burnt or being logged (Greenpeace, 2008).

The greatest hazard for the ecology of the rainforest in Papua New Guinea derives from industrial logging. Officially it is the so-called “selected logging” that takes place. However, in fact at the present, as well as for the past two decades, forest harvesting has occurred in a destructive and in an ecologically unsustainable fashion. Phil Shearman’s report shows nearly one quarter of the rainforest was damaged or

destroyed between 1972 and 2002 (Shearman et al, 2009). The numbers indicate that Papua New Guinea cannot and does not regulate forest operations. Under the Special Agricultural Business Leases (SABLS)—introduced in 1996 and meant to develop small-scale agricultural projects on the local level—a rapid deforestation happened which was accompanied with a huge land grab. Over 5 million hectares (12% of Papua New Guinea’s landmass) of customarily owned land has been given to foreign companies for 99 year leases despite landowners’ opposition. This deed violated the rights of indigenous people and caused harm to their livelihoods and the natural resources they depend on. The government yet is still failing to take a meaningful action to address this problem. Meanwhile the deforestation goes on.

8.7 Pacific Islands and the Global Challenge

The impacts of climate change are being felt hardest by some of the world’s poorest and remote communities with little opportunity or support for adaptation to these impacts. In 2008, Kiribati’s then President Anote Tong said at an environmental conference in New Zealand: “The climate change is not an issue of economic development; it is an issue of human survival.”¹⁰⁰ But nothing has changed. The emissions in the atmosphere will carry on contributing to climate change, so the small low-lying islands will be submerged within this century, according to the worst-case scenarios.

Ursula Rakova is riled at this perspective. “We are angry. Some of our people do not understand the science, but they know they are losing their homes and they are angry they have to pay for what other people in industrialised nations have done.”¹⁰¹ John Danger¹⁰² illustrates her comment.

100 United Nations Environment Programme: *The Environment in the News*, 2008, 6 June, World Environment Day Coverage, p. 12

101 Morton, Adam (28 July 2009): First climate refugees start move to new island home; <http://www.theage.com.au/national/first-climate-refugees-start-move-to-new-island-home-20090728-e06x.html>

102 John Danger Ulka was born in 1969 in the village of Kakagl in the Simbu Province where he grew up and went to a local school. In 1999 he moved to Port Moresby and became a grass roots artist without any formal training. His paintings depict scenes of the people and their surroundings of his home country in a kind of naive and two-dimensional way. John’s paintings are popular with the tourists and local people including business houses in Port Moresby. He is currently the spokesperson for all so-called street artists in Port Moresby. John Danger is well-known in Papua New Guinea and has been participating in art shows and exhibitions in the country for many years.



Figure 8.6: John Danger. “Climate Change,” 2009, Acrylic on Material.

In his painting, he depicts the human influence on climate change. Industrial activities in the developed countries produce carbon dioxide and increase the greenhouse gases’ concentration while the island village is drowned due to sea level rise. Despite the fact that Pacific Island countries are low-emitters of greenhouse gases, they are in fact among the most vulnerable to the adverse impacts of climate change. They are the first victims of climate change, which tremendously hampers their development.

The concerted call of Pacific Island nations for a globally coordinated response to climate change for years seems to trail off unheard. The people fear that many of the islands will disappear under the ocean if climate change is allowed to continue.

The consequences of climate change are already felt in Papua New Guinea and discussed in the mass media by NGOs, politicians and church representatives. Contemporary art in some parts has always dealt with the problems of modernity in the country and has now taken up climate change as a theme. Living in a contemporary society that is culturally diverse, rapidly changing and threatened by environmental disasters and damages means it is important that the arts of this society embrace and reflect these changes. Art is a sensor of society and it challenges perceptions of climate change by visualising the feelings of threat and danger that

come along with climate change. Even though artists want to be relevant in their culture and society they see their artwork also as a message to the outside, to the global world. The underlying narrative acknowledges that the rich countries have responsibility for the current excess of carbon in the atmosphere, and therefore should support the poor countries in their fight against the consequences of climate change. Their paintings can be seen as participating in an unfolding and contested conversation between North and South.

Joeli Veitayaki, Elisabeth Holland

9 Lessons from Lomani Gau Project, Fiji: A Local Community's Response to Climate Change

9.1 Introduction

Life in the Pacific Islands is being transformed by climate change: higher temperatures are causing coral bleaching and will affect crops and biodiversity; rising seas are consuming the coastal areas and causing salt water intrusion that is affecting freshwater supplies; carbon dioxide emitted by fossil fuel combustion is being absorbed by the ocean, resulting in changing pH levels leading to ocean acidification; and more frequent and severe storms and tropical cyclones will exacerbate floods and loss of human lives and property. Climate change is altering ecosystems and affecting how Pacific Islanders live in their small island developing states—already burdened by rapidly increasing populations; limited land area; restricted natural resources to accommodate people's development aspirations; limited finance and scarce and unskilled labour. With such wide-ranging impacts on people's lives, climate change is regarded as the greatest challenge to life in the Pacific Islands in years ahead. This makes the effort of Pacific Islanders to live with climate change remarkable. While climate change adaptation is everybody's responsibility and Pacific Island Governments are taking action at national and international levels, the focus in this paper will be on how local communities that are dependent on their land and marine resources are taking action to protect their sources of livelihood and adapt to the new reality ravaged by climate change.

Local Fijian communities heavily depend on their island environment that is dominated by the sea and marine resources. These people are at the forefront of attempts to live with climate change, which is expected to have devastating impacts that may mean relocation and the alteration of all their rights. Although indigenous Fijians have ownership rights over their environmental resources whose uses are regulated under customary arrangements and practices, Fijians today have to ensure that their environmental resources provide for them as well as succeeding generations in a time when customary arrangements may no longer be effective and appropriate. Already, many of the time-tested customary arrangements have been altered owing to the transition to a cash-based economic system and other aspects of globalisation now witnessed in the country. In addition, Fijians have to adapt to changing climatic conditions using both the knowledge and practices of

their ancestors alongside appropriate contemporary methods spearheaded by their governments and civil society organisations. It is critical that the people quickly realize that their best development option is to ensure that their natural resources continue to provide for them in the future even in the face of climate change, increasing populations and other pressures.

This chapter highlights the effects of climate change in a rural indigenous Fijian community where it is customary to prepare for eventualities while there is still time (*vakarau ni se siga toka*—prepare while there is still daylight). The paper will examine how the people on Gau Island relate to climate change and how they are dealing with it. The chapter demonstrates how the people have addressed the effects of climate change, and contributed to the climate change discourse in a distinctive way. This is a co-management arrangement where outside partners including the authors worked with the local communities who have customary ownership rights to formulate a resource management approach that is relevant to the local people as well as reflective of the need to adapt to climate change. This approach has allowed the external partners to filter the climate change discourse in terms that are relevant to the people, secure the necessary funding support and work with the local communities to determine an appropriate set of activities to address the effects of climate change.

The partners organised capacity building workshops and meetings at various levels to ensure that the messages are widely known and are used to design local solutions. The involvement of local people was more challenging as it meant redefining some of their established practices and ideas. The Lomani Gau network was the outcome and solution; it provided an association of people committed to improving their living conditions for the long run. The network formulated resource management plans for each village, which were then shared with the local communities and are implemented and monitored.

To be relevant to local communities who were often misrepresented as being free and idle, there was a need to explain climate change in local terms and local solutions to convince them of the urgency for local action. In addition, it was important to maintain the attention and focus of these local communities who often are not committed to long term targets. Consequently, rural development initiatives have to be revised to make them consistent to climate change concerns. Fortunately, the common features shared with sustainable development, integrated management and precautionary principle are not difficult to re-establish in communities where the people have complimentary customary practices. It is rewarding when the people themselves make the connections and explain the influence of climate change locally.

The Lomani Gau initiative shared in this paper demonstrates the work that local communities in Gau have undertaken in engaging climate change, figuring out what it means locally and how it can be accommodated and how it changes “customary” practices, relations, responsibilities and knowledge. To show the

appropriations that have happened in Gau, the chapter will focus on the setting on the island, the engagement process to convince people of the need to address the issues, the actions that the people have taken to protect their own interests and those of future generations, the challenges relating to other societal changes that have to be addressed and the lessons from climate change adaptation that should be shared to make people better adapt to changing conditions.

9.2 Gau Island: The Setting

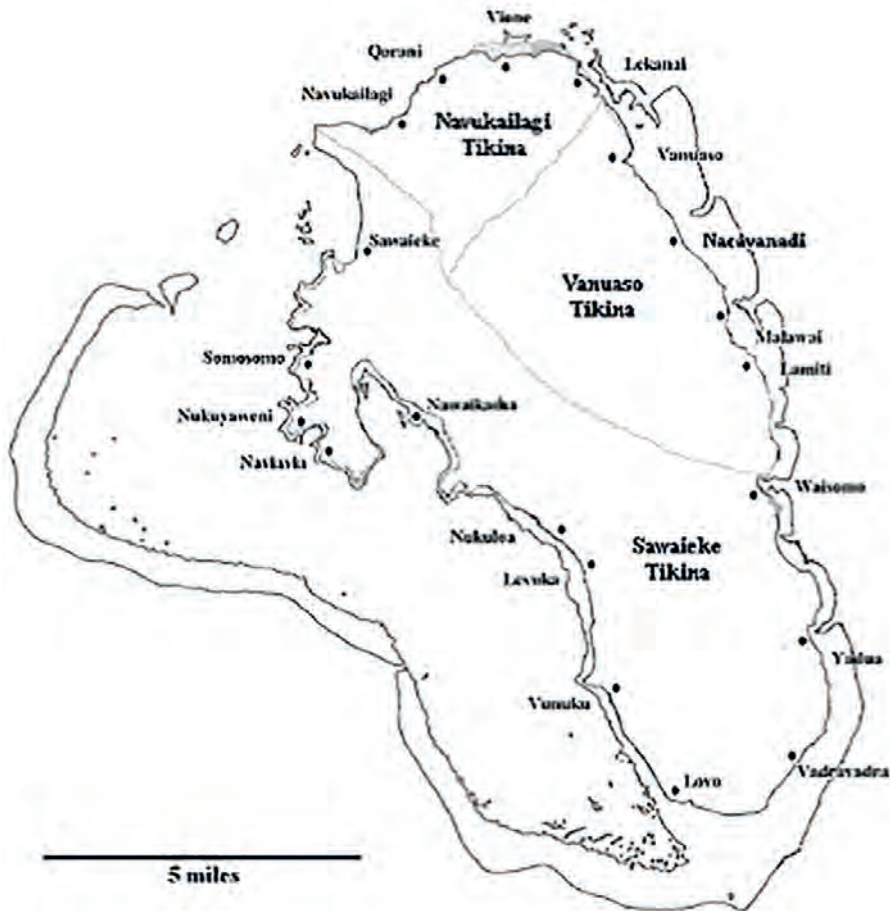


Figure 9.1: Map of the Fiji islands. Courtesy of Joeli Veitayaki and Elisabeth Holland.

Gau Island lies 80 km east of Fiji's capital Suva. It is the fifth-largest island in Fiji, with an area of 190.1 km² (Map of Fiji). A rugged mountain range that peaks at around

738 m runs along the interior of the island to which coastal lowlands and river plains connect. The central highlands are covered with old-growth cloud montane forests that are home to the endemic *Kacaunigau* or Fiji Petrel (*Pseudobulweria macgillivrayi*), some endemic plants and sites of ancient settlements. The forests have not been logged, providing the people with clean water and air, wild food, building materials, herbal medicine, farming implements, and household goods. The coastal areas, in contrast, have been heavily impacted by human activities and, as we will see, must be rehabilitated if locals are to successfully adapt to climate change.

A barrier reef system encircles Gau providing the people with: varieties of seafood such as finfish, bivalves and echinoderms; sources of income such as fishing, shipping, research, live rock and ornamental fish, shark feeding and whale watching; as well as building materials such as sand and coral rubble mining, coral sale, gravel trading. The coral reef system also protects the 100.3 km coastline from huge storm waves and surges.



Figure 9.2: Gau island. Illustration courtesy of Joeli Veitayaki and Elisabeth Holland.

Gau Island is divided into three administrative units (*tikina*) that resemble customary affiliations that reflected pre historic migrations and settlement. The three districts are: Sawaieke, which consists of eight villages of Sawaieke, Somosomo, Nawaikama, Nukuloa, Levuka, Lovu, Vadradora and Yadua and three settlements in Nadrodro,

Matainaro and Lele; Navukailagi, which has three villages of Navukailagi, Qarani and Vione and a Seven Day Adventist's settlement; and Vanuaso, with five villages of Lekanai, Vanuaso, Nacavanadi, Malawai and Lamiti and two settlements in Wailevu and Baravi (Map of Gau). All the villages are located in coastal lowlands but the villagers have land claims that stretch from the mountains in the interior to the areas beyond the outer slopes of the barrier reefs. Most of the villages in Gau are located on river banks next to hills near that provide convenient evacuation spots from floods, as well as tsunamis.

Gau Island is home to around 3,000 people. Though traditional livelihoods (subsistence farming and fishing) remain crucial, Gau communities are also rapidly modernizing. Increasing populations, expanding farms, increasingly intensive fishing, greater use of fuel-powered transportation and energy generation, increased harvesting of local resources for sale in urban areas, and expanding infrastructure have increased local environmental impacts and undermined valuable ecosystem services. Sustainable development initiatives are therefore a necessity for the continued well-being of Gau Islanders.

While the scientific discourse on climate change is important in understanding humanity's role in its continually worsening state, it has to be filtered and used in a manner that will help convince the people to take action. The engagement process is critical because climate change is a relatively new issue that can easily be misrepresented if the climate science is emphasised when the issue is discussed with local communities. Failure in this delicate phase can wrongly reassure the people, who will dismiss the importance of the issue and their own involvement. In addition, the people will not realise the urgency of addressing the climate change issues now. The demand in developing countries for donors to pay for the adaptation and mitigation, demonstrate the failure in local communities to engage. In fact, the dependence on western science that focuses on emission figures, provided these developing countries false hope that their contribution is negligible and that local communities are not responsible and must only follow the lead by developed countries. The emphasis on climate science also inhibits the influence of other societal challenges such as ever-increasing population, poverty and environmental degradation on climate change. Ironically, the developing countries can all contribute to climate change adaptation and mitigation by better addressing these social challenges.

Given that local communities in the Pacific region, such as in Fiji, will be amongst the first and worst climate change victims, Pacific Islands and Territories need to be pragmatic to protect their own interests using all the resources and avenues available to them. Local communities such as those in Gau Island need to look for solutions that are appropriate for them. Not doing anything to address climate change, is not an option. In this case, the Lomani Gau partners from the University of the South Pacific and elsewhere adopted a more practical approach emphasising the impacts of climate change on the environment. The focus on Gau is on the causes and impacts of rapid coastal erosion, pollution and altered coastal habitats that people rely on for

their sustenance and income. The local communities also emphasised the important threats caused by rapidly increasing population and worsening poverty. These distinct but related issues were more relevant to the local people, who agreed to be prudent with their use and care of environmental resources.

The aims of Lomani Gau are to:

- make Gau Island a model for climate change adaptation in small islands in transition from subsistence to commercial and economically viable rural development.
- conduct participatory learning and action training workshops and meetings to raise climate change awareness and stimulate self-determined climate change adaptation responses.
- formulate and implement Gau Island climate change adaptation and sustainable development guidelines.
- rehabilitate important natural habitats under increasing threat from human activities.
- reduce environmental degradation of natural habitats.
- use science and appropriate technologies to determine sustainable use of island resources.
- build capacity and promote good environmental resource use practices within Gau.
- promote integrated resource management and iterative learning.
- facilitate development of alternative sources of livelihood and income, monitoring and enforcement through regular follow-up and applied research activities.
- publicise the villagers, their flora and fauna, local culture, traditions, and way of life in Gau, and their importance.
- promote project features through publications and the production of visual aids.

With these activities, it is difficult to relate the need for action to the international instruments and national legislation and policy because the majority of the people have little or no knowledge of these. This is why it is sensible to integrate local knowledge and practices to mobilise indigenous, place and community-based initiatives to adapt to climate change because this is the logical thing to do. Moreover, it makes sense for people to take action using customs and traditions they are familiar with rather than rely on conventions and legislations they know little about. Links to climate change scientific predictions and theories are only shared once the people start to work on their adaptive activities.

9.3 The Engagement Process

With the need to use appropriate engagement processes in local communities in Fiji, the mobilisation of local people to adapt to climate change adaptation on Gau

is founded on people's strong relations to nature (Henocque and Denis, 2001) and to each other. The people have customary ownership rights that they need to sustainably utilise for their sake and the interests of their future generations. This relationship is used to ensure the involvement of local people in the adaptation to climate change on Gau. The people are integrating their traditional practices with contemporary arrangements and are using social relations and networks to emphasize commitment, connections, compliance and collaboration.

The Gau communities' response to climate change challenges is packaged under the activities of *Lomani Gau* ("care for" or "deeply treasure"), which was established in 2005 to spearhead this community-based resource management initiative involving all 16 villages on the island, working towards climate change adaptation in the face of burgeoning climate change and the myriad of other threats to the livelihood base. *Lomani Gau* was formed to implement, coordinate, lead, monitor and review community-based sustainable rural development on the island. The other intention of *Lomani Gau* is to strengthen the governance at the Gau Island Council level so that the rural development issues and initiatives are better coordinated.

The initiative emphasises locally deployable solutions that feature contemporary sustainable development methods, as well as traditional practices. The use of people's proven and cost-effective traditional methods reduces the uncertainty with which resource management is associated, and obviates the need for extensive training, as traditional methods are already well-known to the participants.

The most commonly used resource management method in Gau is the *tab*—a prohibition of harvest or use of resources, areas, and/or at particular times. This resource stewardship method that is widely practised throughout the Pacific (Williams, 1982) demonstrates the commitment amongst these communities to make the harsh and tough decisions. Under this arrangement, which works better than other contemporary methods because it allows the replenishment of the resource by reducing the fishing effort, compliance is ensured through fear of divine punishment, respect for the authority of chiefs, and commitment to the well-being and honour of the group members. This makes costly formal enforcement and monitoring measures unnecessary and ensures that the actions agreed to by the villagers are respected by all.

The *Lomani Gau* initiative was initially trialled in one of the three *tikina* on the Island as *Mositi Vanuaso*, named after the kin-based customary marine tenure system that exists. This calculated step to enhance the involvement of all the people that have customary right to the fishing ground while ensuring that the engagement in Gau was at a small and manageable level that will be assessed by the people. Over the three years of the *Mositi Vanuaso*, the community-based resource management activities diffused into the other two districts because the local people throughout the island were impressed with the positive outcomes of the trial, which included the management of marine resources, management of waste, protection of

watershed areas, rehabilitation of coastal habitats, capacity building and securing of alternative sources of livelihood. As can be seen from the list, the evolving and iterative approach encouraged the people to actively formulate and shape their resource use activities and their children's future utilising their traditional practices, available funds and advice without waiting for the national government's directive, guidance and leadership.

Unfortunately, many coastal communities are ill informed of the threats of rural development and the consequences of the commercial use of their resources, which they are offering in exchange for the money they require for their development activities. For this is reason, resource management awareness and education workshops and meetings at the levels of villages, districts and island were emphasised in these local communities where the majority of the people have never lived outside and therefore are oblivious to the rural development challenges and the options appropriate to address them.

The awareness and training covered all important issues to be shared widely amongst all the people such as the reasons why they should be managing their resources better, resource management plans, project planning and good governance practices. The process allowed the involvement of technical experts and the introduction of new ideas. Climate change science was not mentioned because it was not easy to translate the terms and concepts. Instead, the focus was on the impacts such as coastal erosion, coral bleaching and change in biodiversity that the people can address. In this way, the villagers' marine managed areas allowed the coral and biodiversity less disturbance and recovery while the management of waste, the replanting of tree, protection of water catchment and the ban on bushfires enhance the management of the protected area and help the people adapt to climate change. Later, the villagers were happy to share that their resource management activities are consistent with climate change adaptation measures they were being urged to do. It was at this point that some aspects of climate science such as the natural increase in world temperature and the maintenance of carbon sinks, was shared with the villagers.

This engagement activities allow the people to think, determine and systematically plan the rural development activities they can pursue to meet their aspirations and maintain their environmental resources. Under Lomani Gau, the three districts and 16 village chiefs and their people decided on how their resources are utilised while the social institutions offered the line of communication as well as the enforcement arrangements. Chiefly decisions are made in consultation with members of the community and are then communicated to all those relations that need to be informed.

The Lomani Gau approach emphasises the marriage of new ideas and approaches with traditional practices under contemporary arrangements. Difficulties arise because some traditional methods such as the ownership of fishing grounds and institutions such as chiefly authority are inconsistent with national laws and

regulations and, in many cases, are waning. On the other hand, the people are more familiar with their community-based resource management arrangements but are not aware of their responsibilities under national legislation and international conventions. The hybrid system being piloted in Gau requires significant education, which include the promotion of good practices such as seasonal prohibition (*tabu*), and community initiatives and sustainable technologies such as composting toilets, renewable energy targeting pertinent issues that villagers now deal with.

Biological, social and economic surveys and monitoring are undertaken to follow up, reinforce and strengthen people's commitment to their resource management initiatives, which are regularly reviewed to see how the people fair with their sustainable development commitment in the challenging context they operate in. Villagers continuously choose between the immediate incomes from the unsustainable use of their resources and the uncertain and intangible long-term return from conservation activities. This is why it is important to conduct effective consultative meetings, marine awareness and regular follow up activities. It is also critical that management actions are provided the time to work, as the positive lessons from these resource conservation efforts will inspire the continuation of conservation and resource management into the future.

The partnerships in this project has boosted the iterative method and stressed compliance to prove that conservation is more beneficial for the people and environment. The commitment to make a difference has ensured that the resource management effort on Gau is allowed the time to work and incorporate the new areas of development. Gau people have recognised and appropriated the holistic interconnecting character of climate change and been able to envision and act upon the necessary responses and work. The management system now covers the whole island and allows for contemporary approaches such as ecosystem based and ridge to reef management while the partners look for cheaper arrangements that are appropriate in rural villages.

Some of the development agencies, institutions and Non-Government Organisations (NGOs) partners that have contributed to the management of the resources and the rural development initiatives in Gau include the International Ocean Institute-Pacific Islands Operational Centre (IOI-PI), the University of the South Pacific (USP), Fiji Locally Managed Marine Areas network, the French Embassy, the National Trust for Fiji, Nature Fiji *Mareqeti Viti*, the World Wildlife Fund for Nature (WWF), National Fish and Wildlife Foundation, Frontier Fiji, Planetary Coral Reef Foundation, Edulink, Conservation International, Global Environment Facility's (GEF) Small Grants at the United Nations Development Programme (UNDP), Japan International Cooperation Agency (JICA), Mie University and the Fiji Government. Financial and technical assistance on fisheries management, aquaculture and alternative sources of livelihood dominate the contributions from these partners who are united to improve the lives of local communities while protecting the natural heritage of Gau.

The work on Gau has shown the importance of awareness and capacity building to ensure that the root causes of the issues are effectively addressed. In many instances, these solutions to local challenges are outside the communities and are unknown to local people. This makes awareness and capacity building critical to the sharing of new ideas with local communities.

9.4 The Accomplishments

Gau Island has been transformed over the last ten years since the people started focussing on the sustainable use of its natural resources. All of the new resource management activities undertaken on Gau are expressions of the care that the people are exercising in this new context, form and guise.

All of the villages are undertaking activities to address the devastation associated with climate change. In that time, over US\$100,000 has been spent on resource management activities on Gau, which has progressed from the marine resource management activities to address the threats on land. The villagers have adopted the integrated and ecosystem based approaches to formulate 16 resource management plans that address the climate change problems the villages want to fix, declare more than 16 no-take zones within the customary fishing areas, ban wild fires and reduce deforestation, promote sustainable technologies and rehabilitate coastal habitats. Some of the villages on Gau are now operating income generating ventures to buy and sell copra, kava (*yaqona*), artifacts, village stores, and cattle farms while others have become honorary fish wardens, research assistants and community leaders who are leading by charting the sustainable use of the island's environmental resources.

The evolving activities of Lomani Gau reflect the iterative methods used to balance the villagers' development activities and the implementation of their climate change adaptation measures. These also reflect the achievements of parts of the village resource management plans over the years and the wide variety of issues that the people can undertake to prepare for climate change. The current aim is to declare a forest reserve over the island's montane cloud forest to be the basis of ecotourism on Gau and to improve farming practices by encouraging the villagers to farm on the lowland areas that are already cleared. This initiative has been agreed to by the Gau Island Council, which in the 1990s agreed to protect the island's forests and biodiversity to conserve the habitat of the iconic Fiji Petrel. The protection of the forests is now supported by activities to reduce deforestation and establish farm access roads.

Lomani Gau is organising regular meetings and training activities to promote the appropriate land-use guidelines recommended to protect water catchments, avoid the contamination of drinking water and reduce soil erosion and loss on Gau. The importance of protecting the forest to safeguard its ecological services are explained to the people who are encouraged to protect their natural cloud mountane forests,

protect their water catchments as well as allow for thick vegetation as buffer zones along their rivers and coastal habitats. The people are advised not to farm right up to river and waterways to minimise soil loss and erosion to the water ways and to take precautions to ensure that their use of chemicals is not posing threats to their environment and themselves. The villagers are encouraged with incentives to plant trees in their villages and surrounding degraded areas that are commonly burned while disposal of village waste through better sorting, proper disposal methods such as the use of designated rubbish pits and the care of pigs to lessen their destructive influence in the villages and surrounding areas. Composting toilets and the maintenance of healthy and clean living environment are now pursued in all the villages and supported through a yearly Most Beautiful Village in Gau Competition in which all the villages participate.

Surveys of the ecological, social and economic issues on the island have been undertaken and used to determine the development activities undertaken by Lomani Gau in each village. These surveys and methods strengthen people's commitment and are key moments of cultural translation where scientific information and people's traditional resource use practices reinforce each other. The work in Gau nicely demonstrates the global connections that climate change provides in linking near and distant places together as part of a single issue.

Lomani Gau has collaborated with the villagers to set up fish aggregation devices (FAD), or artificial structures to stimulate the aggregation of pelagic fish, in three parts of the island where the fishing is best, and three village cattle farms. The FADs support the recovery of reef based fisheries and target the pelagic stocks rather than the demersal species that are normally targeted while the cattle farms are to demonstrate the proper animal husbandry practices. Training workshops and follow up activities are organised in villages, districts and island levels to formulate and endorse activities that are consistent with a Code of Conduct for Sustainable Living on Gau Island that is being negotiated with the villagers.

Frontier Fiji, a subsidiary of the United Kingdom registered Society for Environmental Explorations, was in Gau between 2006 and 2012 conducting biological surveys of the coastal habitats and sharing their findings with villagers in Sawaieke and Navukailagi districts. The Research Assistants and Frontier Staff Members provided a volunteer/tourist workforce to assist the local villagers with their resource management initiatives. The group endured hardship and trying conditions to produce some of the first reports on the state of the coastal habitats and marine resources on the island. The visitors stayed for two to ten weeks while staff stayed for a year and represented the type of intrepid adventurous tourism that can be enticed to visit remote tourist destinations such as Gau.

New ideas that have been introduced to people in Gau include participatory decision making that is more inclusive and allow the involvement of youth and women in decision making; the use of the integrated resource management approach that emphasise the involvement of all stakeholders in addressing all of the issues

that people need to deal with to adapt to climate change and the implementation of appropriate alternative sources of livelihood that the people will succeed in and benefit from. Women, youth and children are using their opportunities and are undertaking community initiatives that are consistent with Lomani Gau aims. FADs are innovative methods that are welcomed by local villagers who are catching yellow fin tuna, trevally and Spanish mackerel from these devices. In addition, the cultivation of pandanus, and the weaving and selling of Gau mats in Suva, has opened a new market for this traditional item and involved men and women who are bringing into Gau around F\$1,000 per month—money that has supported better living standards on the island.

Lomani Gau seeks and secures the funding to conduct training and follow up activities such as meeting the costs of transportation to the Gau Island Council meetings. The network supports strengthening of governance at all levels of administration on the island. It is assisting the Gau Island Council to coordinate local government activities and has set up Lomani Gau Tikina Committees to lead community work in the three districts. Over the last three years, Lomani Gau has collaborated with the village nurses and the Fiji Health Department on the island to organise “Gau’s Beautiful Village” competition (*Koro Vakasakiti e Gau*), where the three villages judged best in addressing all the sustainable rural development issues are rewarded.

Some of the initiatives currently undertaken in Gau to appropriate climate change impacts include: reducing the deforestation associated with the customary shifting cultivation method where people farm a piece of land for around three to five years before they move to clear a new farming spot where they practice multiple cropping; minimising the indiscriminate and careless burning of secondary vegetation on coastal slopes which threatens biodiversity including the Fiji Petrel, lizards, snakes, and natural forests; protecting watersheds and drinking water sources by declaring forest reserves and reducing deforestation and farming activities in water catchment areas to assure continued water supply; minimising hillside cultivation to reduce soil loss and erosion; rehabilitating degraded coastal habitats such as coral reefs and mangrove forests by declaring marine managed areas and replanting coastal vegetation such as mangrove forests to enhance their health and integrity; and the sustainable use and management of coastal resources such as fisheries and coastal lowlands to provide the needs of future generations.

Appropriating the locally observed impacts of climate change made it easier to convince the people of the actions they need to take to adapt to climate change. This appropriation of climate change impacts means that the people use the “climate change” label to mobilise all necessary community-based sustainable development schemes that they would have wanted to do anyway, even without climate change. Between 2011 and 2013, Gau villagers have implemented a coastal vegetation rehabilitation initiative funded by the Global Environmental Facility (GEF) Small Grants and the UNDP. The villagers planted over 100,000 trees during the project

period and were awarded the 2013 Prime Minister's Forest Conservationist of the Year award by the Ministries of Agriculture, Fisheries and Forests, which have promised training assistance, seedlings and technical advice on the reserve and heritage site that the people of Gau are currently discussing. Tree planting on the island is now used to maintain environment health by ensuring that the vegetative cover is maintained to reduce soil erosion and loss, prepare for climate change, enhance the inshore or reef-based fisheries resources by diverting some of the fishing effort elsewhere and provide an alternative source of income.

The success of this coastal rehabilitation initiative is strengthening the commitment in Gau to protect the old-growth forest and pursue alternative uses of the forested lands. There is growing interest in Gau to declare the island a heritage site where people can live full lives in harmony with nature. The Gau Island Council has endorsed moves to declare the cloud forest a reserve, partly to boost the potential for ecotourism. With the marine protected areas, cultural sites and natural and geographical features such as the shark nursery and submerged offshore reefs, Gau people should have enough attractions to entice ecotourism which can be hosted by local landowning groups. This would promote Gau as an ecotourism destination and offer new income sources to local people.

In 2013, Mie University in Japan, the Department of the Environment in Fiji, IOI-PI and USP agreed to collaborate with the local villagers on a Sustainable Development and Governance in Gau project to make resource management beneficial to local communities. Some of the activities that are being pursued include the introduction of new agricultural and fishing practices including the provision of three village pig fences where all the village households will build their individual pens inside a well fenced area, another cattle farm where the people of three neighbouring villages will raise their animals and three bakeries that the villagers can use to make bread from local food crops and provide sources of income. The establishment of the village pig farms is the first phase to the production of biogas, which can be regarded a climate change mitigation activity. The proposal was shared with all the villagers in the island who were then asked to submit their proposal to be involved, which needs to include the offer of the land where the farm is to be located, the promise to provide the posts from local surroundings and the undertaking to provide labour for the venture. Pig waste for the time being will be mixed with dried grass from the villages to produce organic manure that the farmers can use. The next phase will be to cement the fenced area and build the chamber to allow the production of the biogas.

There is also an attempt to construct farm roads and permanent farms in the lowland areas of a few of the villages. These farmlands will have the designated forested buffer zones to protect the land, rivers, forests and the coral reefs. The villagers are planting sandalwood and plantation timber trees in areas of secondary growth that are commonly burnt. A model farm is now being set up to illustrate many of the farming practices mentioned above. In addition, waste management including the use of composting toilets, biogas production chambers, renewable energy

sources and building architecture to maximise the use of local natural materials and techniques will all be demonstrated.

At sea, a *bêche-de-mer* enclosure has been erected in Vione to protect and raise these animals to their optimum size where they can attract their highest process. Seaweed farming is being promoted as an alternative source of income to more villages that can enhance the recovery of inshore fisheries. Solar lights have been introduced as people search for more renewable energy sources. There is now no longer any import of expensive kerosene, shell light and diesel as the people are quickly adopting the renewable sources. A youth leader from the island will spend three months in Mie University and Okinawa in Japan to learn the type of appropriate technologies that can be implemented in Gau.

This section has shared some examples of what the people in Gau have done in response to climate change impacts they now face. With the advice from their outside partners, including the authors, the people have taken actions to show their commitment to improving their lives and adapt to threats such as climate change. We now highlight some of the challenges witnessed so far.

9.5 The Challenges

The challenges in Gau Island are to get the local people to commit to and articulate sustainable development in all their resources management and development activities and practices. For the majority of people in rural areas, including those on Gau, these environment-friendly requirements are regarded as impediments to people's development aspirations and their rights to benefit from the exploitation of their natural resources. With the benefit of hindsight after a decade of continuous engagement with local communities, it is now easier to justify the adoption of precautionary approach given the many instances where people rush to develop their resources only to lose them to partners who were interested in the resources and not the welfare of their local partners. Such examples and lessons have forced people to reconsider their development choices. The situation has made it critical that people conduct exhaustive consultation and awareness as they plan their development activities. After a decade of working with the people in all the villages in Gau and building their capacity, sustainable development principles seem to be much better accepted and people are beginning to relate to the interrelations amongst the elements of the ecosystem that can be impacted by their development activities.

Mobilising local action in rural villages is dependent on a number of factors that include awareness level, connectivity, capacity, conviction and funding. Of these factors, awareness, capacity building and funding cannot be addressed through the traditional systems that the villagers use. Rural communities do not have these capacities because issues such as climate change are being explained in scientific terms that are new to the people. In fact, emphasis on emissions makes climate

change adaptation and mitigation only remotely relevant to rural villages where the only machineries used are the diesel generators, brush cutters and outboard engines. The general feeling then is that the developed countries are responsible for the problem and thus should be required to address it. These methods also ignore the many adaptive actions that people in rural areas can undertake to prepare for the future. As the work on Gau demonstrates, capacity building is important to convince the people of the part they have to play. Outside advisers have to create awareness, build capacity and provide advice on appropriate technologies for which funding has to be sought and secured. Local people live in semi subsistent societies where money is required to meet the costs of transport, experts and materials for organising community activities. This is why the Global Environment Facility and the UNDP established its Small Grants scheme. Sadly, the requirements for accessing this financial assistance many times still isolate local communities in rural areas such as Gau.

The lack of government support for community development is hindering many community driven initiatives. Government ministries should ensure that people in local communities are not responsible for enforcement and surveillance. In fact, government agencies should establish the guidelines, funds and rewards for those that succeed in attaining their community-based objectives. The people of Gau have over the last decade shown their commitment and support for resource management and are assisting the Government in meeting its commitments to sustainable development.

Technical advice from external partners on issues that are new to local communities have benefited the people. Fish aggregation devices, composting toilets, smokeless stoves and renewable energy are new technologies that are being tried in Gau to adapt to climate change. Human and pig waste is being managed to realise the monetary implications that such innovations offer. External partners are assisting with these new initiatives.

The enforcement of management decisions agreed to at local levels remains a challenge because of the erosion of traditional authority and the reliance on legislations people know little about. Traditional authority and institutions that used to uphold local decisions and banish people who do not adhere to the community's wishes in the past are still useful at the local level today but must be supported by the Government when local communities are dealing with the activities of people from outside the communities. This is the reason why the main threats to local resources management activities come from outside the communities. For this reason, locally managed marine areas are targeted by commercial fishers who regard these as prime fishing areas that they have the resources to access whenever they wish. The Fiji Fisheries Department, as the licensing authority responsible for developing and managing the fisheries resources, must address poaching from local communities where the people are least prepared to deal with these external threats.

9.6 The Lessons Learned and Way Forward

Small islands such as Gau offer useful lessons on how local people are living with the impacts of climate change and are adopting resource management initiatives to improve their living standards. The villagers have declared marine managed areas, planted mangrove forests, seaweed and trees, and are now pursuing the use of renewable energy and the management of their waste to ensure that the ecological services offered by their environment will provide for them in the future. The resource management and development activities undertaken in Gau over the last decade highlight the contribution of local communities to the management of their environmental resources. The interventions have shown what the people in these communities can do to utilise their own resources, including traditional knowledge and practices, to improve their living conditions. The experience in Gau has proven that local communities can lead the drive to adapt to climate change.

The engagement of people in Gau took advantage of the local people's social units such as traditional practices and relations. Close-knit social units such as extended families, villages and districts enhance the participation of local communities and the implementation and enforcement of the people's resource management decisions. Community-based climate change adaptations are easy to organise and produce quick results but need to be maintained over the long term to allow for the desired recovery. Long term engagements are challenging as external inputs are required to maintain the focus of local people in the management of their resources. The people normally are ready to commit to resource management but are uncertain about the duration of the management period because they depend on the use of their resources. Interestingly, more and more community groups are actively managing their natural resources because the future of their children in a climate change ravaged island is at stake.

Training and community workshops are required to engage, mobilise and maintain local initiatives. Local engagement processes require that capacities are built to enhance people's understanding of climate change issues and their personal role in addressing these. Capacity building processes are necessary as much of the climate change science is new to local communities, which need to be informed on how they can use their arrangements to adapt to climate change issues. Innovative and regular follow-up activities are necessary to introduce and maintain new adaptive techniques that can be assimilated by local communities and also to check on progress made.

The search for alternative sources of income has been significant in Gau because of the need to relate to climate change adaptation while providing much needed income in rural areas, where people are paying higher prices for goods and services. Alternative sources of livelihood are chosen carefully in accordance with people's resources, skills and needs and their natural resources endowment. For the Lomani

Gau initiative, the protection of food sources is the foundation for climate change adaptation, resource management and poverty alleviation.

Women and youth are specifically targeted in Gau because they constitute the largest community groups who have not previously been given leadership roles. The village store in Vanuaso has been operating for the last decade since it was established under Mositi Vanuaso and is run by the village youth. In Malawai, the women have been selling mats in Suva for the last decade and have created an urban market for this traditional skill, which has strengthened this traditional art and provides a welcome source of income. In Lamiti, the youth is buying kava (*yaqona*) from the members so that they are spared the time-consuming marketing trip to Suva where some of the young farmers have lost all of their hard-earned income. In Malawai, Lekanai and Vadravadra, the youth groups are looking after their community cattle farms. Lomani Gau is now well represented in the Gau Island Council where all the 16 Turaga ni Koro (village headman) who are using the network to better coordinate the climate change adaptation work in their villages. This empowerment has improved community-based resource management in the villages.

Poaching from community-based resource management areas remains a stumbling block to resource management at the local level and is a source of social and cultural pressure and conflicts. The problem is tied to the commercial trade of food sources by increasing number of villagers that want to improve their income. Fishing is the most attractive way to make money in coastal communities but overfishing eventually leads to food insecurity for the local people. Moreover, the lack of funds and income generating activities in these rural communities force the people to sell their environment resources at any cost when they have the chance. These issues make resource management both critical and difficult because the effectiveness of these activities will always be skewed.

Villagers are pragmatists; they will adopt new ideas and practices if they are convinced that these will benefit them. The villagers in Gau are convinced that a healthy environment is the best way of appropriating climate change. They are demonstrating great resilience and adaptability in accommodating climate change conditions. However, the villagers require advice, human capacity, and finance to better articulate sustainable development in their context. Given what has been achieved in Gau over the last decade with limited financial resources, it will be interesting to imagine the outcome at the national, regional and global levels if there is a concerted effort to engage and support local community groups in sustainable development and climate change adaptation.

The future looks bright if the small steps that have been taken in the rural communities in Gau are an indication of what can be accomplished if the same approach is adopted in other areas. Once the momentum is attained, social transformation can be widespread. This is why local case studies need to be promoted widely to share the lessons and changes globally. In Gau Island, care of

their environment is now the basis of climate change adaptation and sustainable development activities that the people hope will enable them to move away from their present environmentally exploitative positions towards one that protects their natural environment while supporting their development activities.

Nalau Bingeding

10 Papua New Guinea's Response to Climate Change: Challenges and Ways Forward

10.1 Introduction

The developing nations of the Pacific are already affected by climate change, as evidenced by the impact of rising sea levels and the increasing intensity of cyclonic events in the region in the past few years (Walsh et al, 2012). These phenomena are intensifying within the region and are likely to continue intensifying for many decades to come unless serious action is taken by the international community to combat climate change. Therefore, every country in the Pacific should build resilience to the adverse effects of climate change and contribute to the international effort to combat climate change. This chapter details the responses of the government of Papua New Guinea (PNG), and its endeavours to match domestic implementation to international initiatives.

Climate change has posed specific and significant challenges for Pacific governments, and has had important impacts on a range of national contexts. In particular this chapter describes the gaps between the way Papua New Guinea has responded to international rationales that provide and incentivise funding for climate change in certain ways, and the weaker rationales and successes in implementing processes internally as a nation. By presenting the details and realities of one Pacific government's endeavour to respond to climate change through the policy process, the chapter portrays the limitations of taking climate change as a small set of simple issues, and instead exposes the required groundwork and the real interface of matching international and grassroots perspectives.

PNG, the biggest country in terms of land area and population in the Pacific, is a recognized leader on Reducing Emissions from Deforestation and Forest Degradation (REDD and REDD+¹⁰³) on the international stage. The broad form of the REDD concept (Costa Rica and PNG, 2005) was masterminded by PNG and Costa Rica and presented at the 11th annual Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 11) in Montreal in 2005. The former

103 REDD+ includes reducing emissions from deforestation and forest degradation, sustainable forest management; and the role of forest conservation and carbon stock enhancement.

Prime Minister of PNG, Sir Michael Somare, has been a staunch advocate of REDD and has appeared in many international forums to present PNG's position on its implementation. At COP 13 in Bali, Indonesia, PNG's Climate Change Ambassador, His Excellency Kevin Conrad, told the world's largest economy, the US, to take the lead or to get out of the way, contributing to the eventual endorsement of REDD by the United Nations Framework Convention on Climate Change (UNFCCC) (Revkin, 2008). Despite being recognized as a world leader on REDD+, PNG has not adequately addressed climate change adaptation and mitigation issues at both the international and national levels. Much of the hype on climate change by PNG at the national and international levels has been rhetorical, while little to nothing constructive has been done to date to address critical climate change issues. Alongside the physical impacts of climate change, and the social impacts of adaptation and mediation, then, this chapter shows that climate change has also had profound impacts on the political economy of PNG: this chapter discusses these impacts in terms of the way a Pacific government has appropriated the science, funding and international views of itself, and of the issues PNG faces, and the way it has responded in terms that whilst geared to the external views and expectations, operates through some awkward relations with other policies, with the realities on the ground, and of course with landowners. Such impacts suggest that these important national interfaces have been eclipsed by the international interfaces.

10.2 Challenges and *Ways Forward*

This section takes up a series of twelve issues, and firstly, outlines each challenge and secondly, comments in italics on suggested ways forward.

10.2.1 Adaptation Issues are Sidelined

Since 2008 I have attended most seminars, workshops and conferences on climate change in PNG. However, most of these gatherings were about mitigation issues such as REDD+ and carbon trade, while few have been about adaptation issues.

The Carteret Islanders of the Autonomous Region of Bougainville in PNG have been affected by sea level rise since the 1980s, which now threatens to displace many of the inhabitants. However, very little has been done by the PNG government (GoPNG) to address this problem. The only help accorded the Carteret Islanders by GoPNG has been an injection of K2 million (about USD 720,000) to the Autonomous Regional Government of Bougainville in 2007 (Legatis, 2011). In the absence of substantial help from above, the Carteret Islanders have had to take matters into their own hands through a local association known as Tulele Peisa, which (appropriately) means "sailing the waves on our own."

A nationwide assessment needs to be carried out to identify risks and vulnerabilities of people, property and public infrastructure to the potential adverse impacts of climate change. Then the documented information can be used to develop policies and strategies to counteract the potential adverse impacts of climate change.

10.2.2 Climate Change Efforts Lack Coordination

The Office of Climate Change & Development (OCCD) is the coordinating agency for climate change work in PNG (OCCD, 2013). But judging by the way the office is handling climate change issues, it seems OCCD is the ultimate authority on climate change in PNG. OCCD had set up several technical working groups on adaptation and mitigation under its structure, and people from stakeholder groups were invited to join the various technical working groups. Forums are regularly held by OCCD with the agendas set by the office, while stakeholder representatives are expected to attend and provide the input of their respective organizations.

As the coordinating agency for climate change work in PNG, the OCCD has failed to define “who is to do what” in terms of climate change. The OCCD continues to handle all climate change issues, while other government departments and NGOs act as data collectors and have done little to address climate change issues within their respective areas. In terms of training needs and capacity building, the OCCD seems to have training for its own staff while other government departments and NGOs have been left to their own devices. Training and capacity building for stakeholders through a coordinated effort by the OCCD is non-existent at the moment.

The OCCD needs to define its role as the climate change coordinator and stick to the responsibility of coordination, while other stakeholders should be given climate change activities that fall within their jurisdictions to deal with. OCCD should identify the roles of the other stakeholders and delegate their responsibilities to deal with; the delegation of climate change responsibilities to different stakeholders will facilitate PNG's climate change endeavour.

10.2.3 Key Climate Change Documents are Biased and Ineffective

McKinsey & Company, an international consulting firm, was brought in by GoPNG to draft several key climate change documents for the country. These key documents were drafted with local expertise sought from within the OCCD. Consultation with other stakeholders was minimal, so McKinsey and OCCD were criticized by civil society organizations and other government departments on the manner in which these key climate change documents were drafted. NGO and civil society groups have claimed that the legislation and policy drafted by OCCD were carried out with influence from foreigners with vested interest in climate change activities in PNG.

Consequently, McKinsey exited from PNG on a low key and the OCCD now handles the drafting of all key climate change documents for the country.

While employed to draft key climate change documents for PNG, McKinsey was paid millions of PNG Kina by GoPNG; in September 2010, McKinsey was paid K1.37 million (about USD 500,000) by GoPNG in addition to another K2.2 million (about USD 800,000) that was paid earlier to the company (PNGexposed Blog, 2011). Although substantial amounts of PNG tax payers' and donor money was paid to McKinsey, these key climate change documents have not made any difference for PNG at the national and international levels. Presentations made to the Norwegian Government and the UN-REDD Program for REDD+ funding using some of these key documents have not secured much REDD+ funding or technical assistance for PNG as yet.

Commercial logging, subsistence agriculture, mining, plantations (mainly palm oil) and forest fires are the drivers of deforestation and forest degradation in PNG, with commercial logging (48.2%) and subsistence agriculture (45.6%) being the major drivers of deforestation and forest degradation (Shearman et al, 2008). Despite GoPNG's commitment on reducing emissions from deforestation and forest degradation at the international level, some of the key climate change documents produced so far have advocated for Reduced Impact Logging as a mitigation measure for the logging industry while nothing has been done to place a moratorium on log exports (Babon, 2011). New timber permits continue to be issued for logging while Forest Clearance Authorities (aka FCAs) for Special Purpose Agriculture Business Leases (aka SABLs), which are more or less logging activities in the guise of agriculture projects, continue to be issued by GoPNG. This is a case of the left hand not knowing what the right hand is doing.

The OCCD should mobilize stakeholders to define the Terms of Reference for climate change activities in PNG. Then these activities will have to be evaluated and the critical ones should be identified and relevant documents developed to address them. Wider stakeholder participation should be encouraged, with a level playing field developed for all stakeholders to be involved.

10.2.4 Participation in International Negotiations Fails to Deliver Results

PNG is by far the biggest nation in the Pacific in terms of land area and population. Besides Australia and New Zealand, many island nations in the Pacific look up to PNG as the big brother when it comes to regional issues. However, in terms of climate change issues there is a great divide between PNG and the other island nations of the Pacific. At international forums on climate change, the smaller island nations in the Pacific are addressing climate change as part of the Alliance of Small Island States (AOSIS) with their main focus being on adaptation issues while GoPNG seems to be more interested in the mitigation issue of REDD. What is ironic about this is the fact

that arguably the world's first climate change refugees are from the Carteret Islands in PNG (IRIN, 2008; Morton, 2009).

At international negotiations there seem to be two groups of people representing PNG. One group is usually led by the foreign-born PNG citizen Kevin Conrad and his foreign entourage, while another group is usually led by indigenous PNG citizens. One of the country's daily newspapers reported that at the COP 15 meeting the PNG delegates were pushed aside, with Kevin Conrad and his Italian advisers, lawyers, and support staff running the show (*The National*, 18 December 2009; cf. Babon et al, 2012).

Millions of PNG Kina has been spent on sending large delegations to international forums on climate change since 2005; in 2009, it cost GoPNG K2 million (about USD 720,000) to send 30 delegates to COP 17 in Copenhagen (Tanos, 2009). However, the presence of large delegations from PNG at international forums on climate change has not made much difference in terms of securing climate change funding and technical assistance for PNG to date. Moreover, it is not known what these large delegations at international forums are there to do in terms of climate negotiations.

The use of foreigners to negotiate for PNG and sending large delegations to international climate change forums has proven to be futile so far. PNG has to change the trend and send a small delegation of highly qualified Papua New Guineans to negotiate for PNG at international forums on climate change. Moreover, experiences from past negotiations should be used to fast-track issues and activities that PNG wants to be negotiated at international forums. In the past PNG more or less negotiated on its own, but this time around PNG should work in concert with the smaller island nations of the Pacific and push for adaptation and mitigation issues relevant to the Pacific.

10.2.5 REDD Projects Fail to Achieve Additionality

Four REDD+ demonstration sites for PNG have now been selected (Babon, 2011). The Papua New Guinea Forest Authority (PNGFA) is responsible for the development of these 4 REDD+ projects. The object of any carbon project is to benefit the environment and the climate. Therefore, any REDD+ project must be established with the intention of reducing emissions from deforestation and forest degradation and alleviating climate change, and as such, REDD+ projects should conform to the definition of the term "additionality." That is to say, any REDD+ project that is to be implemented must not constitute "business as usual"; it must not be an action that would have been implemented anyway without the use of REDD+ funding. For any REDD+ project to be implemented within a Forest Management Agreement (FMA), the tool that is to be used to reduce emissions from deforestation and forest degradation must meet this definition of "additionality" so that there is additional benefit for the environment and climate.

The PNG Forest Policy 1991 (Ministry of Forests, 1991), PNG Logging Code of Practice (Government of Papua New Guinea, 1996), ITTO Target and Indicators for Sustainable Forest Management (ITTO, 2005) and Convention on Biodiversity (CBD Secretariat, 2013) are tools that have been adopted for Sustainable Forest Management by GoPNG. However, what is contained in these different policy documents is “business as usual” for PNG in terms of sustainable forest management. Therefore, what is additional about these 4 REDD+ projects?

Reduced Impact Logging (RIL) has been suggested as an “additional” activity for reducing emissions from deforestation and forest degradation in PNG (Government of Papua New Guinea, 2010: p. 18). However, there is no definition given for the term RIL within the context of PNG. Therefore, what is meant by RIL is vague because sustainable forest management practices contained in the different policy documents adopted by the GoPNG already cater to RIL. So what sort of practice(s) other than crawler tractor logging and the requirements for sustainable forest management already contained in the different policy documents would be additional in a REDD+ project within an FMA?

The country's Sustainable Forest Management policies and practices should be reviewed to determine what is additional and what is not additional under REDD+. RIL has been identified as a climate change mitigation measure in PNG, but the term remains undefined within the PNG context. Precisely defining the term would facilitate the design and development of forestry projects that would truly reduce the contribution of logging to climate change.

10.2.6 Subsistence Agriculture Complicates REDD Efforts

Subsistence agriculture is the second highest driver of deforestation and forest degradation in PNG, accounting for 45.6% of forest change (Shearman et al, 2008). However, the regulation of subsistence agriculture in PNG is a complex issue for several reasons. Firstly, subsistence agriculture is practiced on customary land and the government has no direct legal control over these lands and the forms of forest changes that may be taking place there. Secondly, rural people generally lack government services and need their land to sustain themselves

Therefore, if the government is to place large areas of customary land under REDD+ and carbon trade without the people's consent, this would be an injustice to the customary landowners. The idea of implementing REDD+ on a national scale in PNG (GoPNG, 2010) without the free, prior and informed consent of customary landowners is an action that can be seen to have breached basic human rights and should be condemned.

Several NGO groups in PNG work with customary landowners on Land Use Planning (LUP). One of these NGO groups is The Nature Conservancy (TNC), which has developed LUPs for several land owning groups in a district in the Madang Province (The REDD Desk, 2013). TNC intends to upscale its LUP work to a provincial

level and wants to develop a provincial LUP for the Madang Province (US Aid and LEAF, 2012).

TNC has contributed to only a few small-scale projects in PNG, and in order to upscale its work it would need more financial support from GoPNG. At present GoPNG does not provide direct funding to NGO groups for community development work, and there is anecdotal evidence that some politicians and government officials view NGO groups as being anti-development.

The implementation of LUPs at the community level therefore offers a legal and justifiable means by which subsistence agriculture can be controlled to some extent to alleviate deforestation and forest degradation in PNG. These community LUPs are developed with input “by the people, for the people.” Under a community LUP, land would be allocated for gardening, forest biodiversity conservation, small-scale agriculture, commercial agriculture, settlements and other land uses. And as such, subsistence agriculture would be practiced in the area designated for gardening and not carried out on an ad hoc basis. Thus, deforestation and forest degradation through subsistence agriculture can be limited to some extent.

In order to further limit deforestation and forest degradation from subsistence agriculture, the use of genetically improved crop cultivars with high yields (from conventional breeding), the use of improved fallow systems, and allocation of sufficient land for gardening should be used in conjunction with subsistence agriculture practices (Bingeding, 2012b). By using improved fallow systems customary landowners continue to reuse the same piece of land without the need to clear more primary forest areas for gardening. In using genetically improved crop cultivars with high yields, customary landowners would produce a much higher yield of crop on a small piece of land in contrast to using a low-yielding crop cultivar that would produce the same amount of yield on a much larger piece of land. By gardening on the piece of land designated for subsistence agriculture through the community LUP and utilizing sustainable land use practices such as improve fallow systems, customary landowners do not have to clear more primary forest land on an ad hoc basis and would therefore contribute to the alleviation of deforestation and forest degradation.

As far as climate change work is concerned in PNG, nothing has been put forward in terms of policy by GoPNG on LUP at the community level and how subsistence gardening could be controlled to reduce deforestation and forest degradation in the country. It seems the country does not know where subsistence agriculture fits into the REDD+ domain in terms of climate change mitigation.

The Nature Conservancy project in Madang Province has proven that the concept of community LUP is a viable option for limiting deforestation and forest degradation to some extent on customary land in PNG. This approach should be adopted throughout the country. The use of sustainable land use practices such as improved fallow systems and genetically improved crop cultivars with high yields should complement community LUP to enhance the country's capability to reduce emissions from deforestation and forest degradation.

10.2.7 Logging Concessions May Not Generate Significant REDD Credits

PNG has a land area of 46.17 million hectares, of which 71% of the land was covered by forest in 2002 (Shearman et al, 2008). However, in terms of commercial logging, 15.0 million hectares are considered production forests (Ministry of Forests, 2009). Of the 15.0 million hectares of production forests, the PNG Forest Authority is currently dealing with some 4-5 million hectares while another 2.5 million is yet to be allocated (Bingeding, 2012b), with another 6-7 million hectares logged out and the lands already returned to its customary owners.

Commercial logging is one of the major drivers of deforestation and forest degradation in PNG, accounting for 48.2% of forest change (Shearman et al, 2008). Little reforestation has been carried out in logging concessions in PNG to date, making carbon stock replenishment for the logged-over concessions largely unknown. Although the Forest Policy 1991 calls for reforestation to be carried out as a means to maintain a permanent forest estate to supply existing and new forest industries (Ministry of Forests, 1991), little reforestation has been carried out to date because it is much easier for companies to pay reforestation levies into trust accounts and move on than to engage in reforestation exercises (Bingeding, 2008).

Deforestation and forest degradation within timber concessions is envisaged as an avenue from which much of PNG's REDD+ credits will come. GoPNG has legal jurisdictions over timber concessions; therefore, the government sees timber concessions as being an opportunity area for REDD+ revenue that will end up in the national purse. However, much of the timber concessions have been logged out and the lands have been returned to customary landowners, meaning that GoPNG no longer has jurisdiction over these timber concessions. Moreover, some of the current timber concessions were acquired prior to 1990—the baseline year for CO₂ emissions under the UNFCCC (UNFCCC, 2013)—meaning that only timber concessions acquired after 1989 are eligible for REDD+. Therefore, how many current timber concessions are eligible for REDD+ and the number of REDD+ credits that can be generated from these concessions are unknown quantities; and the number of REDD+ credits that could be generated from timber concessions may be minimal.

PNG needs to evaluate its current logging concessions and determine how many of them are eligible for REDD+ schemes. In this way, it would be possible to determine how many REDD+ credits will come out from current logging concessions rather than work on assumptions when the actual REDD+ credits from current logging concessions may be minimal.

10.2.8 Stakeholders Lack Interest in Forest Plantation Development

PNG currently has 69,000 hectares of forest plantations, but forest plantation development has been erratic. There are several reasons for this. Firstly, GoPNG

collects a large amount of revenue from log export but allocates very little money for forest plantation development. Secondly, the land rent paid to customary landowners for the use of their land for forest plantation development is low, which probably contributes to customary landowners' unwillingness to lease more of their land for this type of development. Thirdly, land disputes between rival clans or tribes, and between the state and customary landowners, have stalled forest plantation development in some areas of the country. Fourthly, there is lack of incentives such as business partnerships or shareholdings by landowners in forest plantations and timber processing mills, further reducing landowners' interest in leasing more of their land for forest plantation development. Lastly, for most forest tree species customary landowners have to wait for more than six years (*Ochroma lagopus* [Balsa] is the only tree species harvested at 4-6 years of age) before they see any substantial monetary gains from development of forest plantations on their land. Customary landowners would rather lease their land for activities that derive annual economic turnover than to give it away for long-term tree crops.

In the past forest plantations were developed for timber production and to rehabilitate degraded grasslands in some lowlands and highlands provinces of PNG (Srivastava, n.d.). While some forest plantations in the country are used for sawn timber, woodchip and veneer production, forest plantation resources are insignificant in comparison to natural forest resources (PNGFA, 1997). Moreover, some of the current plantations may be uneconomical due to a lack of demand for the log sizes available from a plantation in its early age; some of the plantations may have low timber yields because successive thinnings have not been carried out on time due to lack of markets for sizable logs.

Forest plantations can now be managed for timber production as well as for carbon sequestration. Therefore, forest plantation owners can now benefit from the sale of timber, carbon credits and the provision of other environmental services. The Clean Development Mechanism now provide opportunities for landowners and businesses to develop forest plantations on degraded grasslands and other degraded landscape for the sale of timber, fuel wood, carbon credits or the provision of other ecosystem services. The management of forest plantations on degraded grasslands for production of timber, fuel wood, carbon credits and the provision of other ecosystem services is actually killing many birds with one stone. Consequently, forest plantation development in PNG seems more economical now than in the past.

PNG has 6.7 million hectares (Shearman et al, 2008) of degraded grasslands, of which some of these areas can be developed into forest plantations. Nevertheless, there is lack of enthusiasm in developing forest plantations in PNG at the moment. This is despite the fact that forest plantations are more economical now than in the past due to the fact that carbon trade offers the opportunity to grow trees for the sale of timber, fuel wood and carbon credits.

The PNGFA, as the government agency responsible for forest plantations should take the lead in venturing into large scale forest plantations on degraded grasslands throughout the country to enhance the country's forest areas and carbon stock. Moreover, the government should also facilitate forest plantation development in the country and encourage local companies, multinational corporations, super funds and customary land owners to venture into forest plantation development.

10.2.9 The Role of Conservation under REDD Is Underappreciated

In an area less than 1% of the world's total landmass, PNG harbors 5% of the world's biodiversity (Wikimedia, 2013) and is therefore regarded as one of the world's biodiversity "hotspots." Conservation of terrestrial biodiversity has been carried out in PNG since colonial times through the different acts required for Protected Area establishments (e.g., Fauna (Protection and Control) Act (1966)). However, to date, only around 2% of PNG's landmass has been placed under some form of conservation (Wikimedia, 2013). This achievement is well below the internationally accepted target of 10% and the 16.8% recommended by Faith et al (2001).

Conservation of forest biodiversity is a land-use activity that has been competing with mining, logging and commercial agriculture in PNG for some time now. However, the success of forest biodiversity conservation has been minimal possibly because conservation activities cannot put up incentive packages that can compete with mining, logging and commercial agriculture. When funding is available for conservation activities and a conservation organization is present in an area, landowners buy into the concept. But as soon as conservation funds cease and a conservation organization moves out of an area, landowners abandon conservation and return to their previous ways of life. While no major economic activity is present in an area that is under conservation the concept is embraced by the people, but as soon as an economic activity like logging turns up within the vicinity of the area people easily switch sides because they see better incentives in logging than in forest biodiversity conservation. Consequently, the biggest issue with the success of biodiversity conservation in PNG has been the lack of economic incentives.

Today, however, forest conservation is included under REDD+. Thus, there are now economic and non-economic incentives, and so forest biodiversity conservation activities can put together packages that can compete with logging and commercial agriculture; the opportunity cost of mining, however, may be greater than that of forest biodiversity conservation. However, the tools that have to be used for forest biodiversity conservation under REDD+ must be additional so that they benefit the environment and climate—forest biodiversity conservation activities must not be business as usual.

Conservation under REDD+ is not additional for the different conservation tools under Protected Areas (e.g. Wild Life Management Areas). This is because these tools for forest biodiversity conservation are already required by the country's laws to be established and would have been established anyway without funding from REDD+. These forest biodiversity conservation activities would be business as usual and would not have additional benefit for the environment and climate, thus innovation is needed to enhance these activities. However, due to the lack of knowledge on where forest biodiversity conservation in PNG fits into the REDD+ domain, there has been little effort put in by the government to use forest biodiversity conservation activities as tools for reducing emissions from deforestation and forest degradation.

In order to enhance forest biodiversity conservation in PNG and tap into the economic and non-economic incentives provided under REDD+, the country needs to determine the role of forest biodiversity conservation within the REDD+ domain in PNG and how it can meaningfully contribute to national development as well as the international effort to mitigate climate change. Only then can forest biodiversity conservation be seen by customary landowners and other stakeholders to be a socio-economic activity that is viable and can sustain the socio-economy of the country as well as the environment and contribute to climate change mitigation.

10.2.10 Payment for Ecosystem Services

Payment for Ecosystem Services (PES) requires imminent threat(s) to an environmental service before a service buyer would be willing to pay a service provider to forego an economic or social opportunity so that the targeted environmental service is maintained or enhanced. In addition to that, a market must be established for the targeted environmental service to be traded.

PES has been advocated for in PNG for some time now, but due to lack of knowledge on PES little effort has been put into defining environmental services and establishing markets for them to be traded. One environmental service that already has the potential for a PES market to be established in PNG is water. For example, in 2010 the World Bank and PNG Pawa Limited (PPL), the state-owned power supplier, collaborated on a project to increase power supply to the city of Port Moresby. The World Bank provided the technical input while PPL did the ground work. In one of the meetings with landowners from where the dam for an 80MW turbine was going to be built, landowners from the watershed area also turned up for the meeting and surprised the PPL and World Bank delegates. The dam was going to be built on Koiari people's land in the Central Province, while the watershed area was on Efogi people's land in the Oro Province. Thus, the customary landowners from Efogi wanted to know if they would also be paid for the water that their watershed would provide for the dam. This example shows that customary landowners are now aware of environmental services that their lands and forests can provide and what

would be the economic benefits for them. Therefore, under the PES system, the customary landowners from the watershed area can forgo subsistence agriculture to conserve their watershed area. In order for the watershed area to be conserved for water supply to the dam, PPL could incorporate the opportunity cost of subsistence agriculture into the cost of electricity so that power users in Port Moresby pay for it. In return, PPL can then use power rents to pay the Efogi landowners for conserving their watershed and supplying water to the dam for electricity production.

Water already has a market in terms of PES in PNG, and this potential needs to be harnessed now for the conservation of the terrestrial environment and climate change mitigation. However, a nationwide assessment should be carried out to determine other potential markets for terrestrial PES that may exist in PNG so that these too could be harness for the benefit of the environment and climate.

10.2.11 Lack of Will to Reduce the Adverse Impact of Mining on Terrestrial and Marine Environments

The mining sector contributes only 0.6% of the deforestation and forest degradation in PNG and is only a minor driver (Shearman et al, 2008). However, this figure is an underestimate because mining developments contribute to increase in forest clearance for gardening to feed mine townships and associated communities (Dambacher et al, 2007: cf. Shearman et al, 2008), and 150,000 hectares of forest die-back along the Fly River is associated with mine discharge from the Ok Tedi Mine (Higgins, 2002: cf. Shearman et al, 2008).

Despite the adverse impact of land based mines on terrestrial and marine ecosystems and the loss of the country's forest carbon stocks due to deforestation and forest degradation by large scale mining in PNG, the government continues to issue licenses for more exploration and mining in PNG. There are already some ten large scale mines in PNG, but some 7.0 million ordinary people in PNG struggle to make a living on a daily basis while the government struggles amidst plenty of money to deliver the much-needed services to the people. Therefore, what is the rationale behind destroying more of the country's forest and biodiversity through mining activities when mining has little positive impact on the lives of the ordinary people at large?

In recent years GoPNG licenced Canadian company Nautilus Minerals Limited (Nautilus) to explore the sea beds of the Bismarck and Milne Bay waters for sulphide deposits. Then in the year 2012 GoPNG licensed the company to begin mining the country's sea beds for minerals (*The Guardian*, 2012), but due to opposition from NGOs and other stakeholders the operations of Nautilus were scaled back. However, GoPNG has now acquired 15% share in Nautilus (Sukman, 25 April 2014), and is a partner in the development of the deepsea mining; therefore, the project will go ahead soon.

Sea grass, seaweed and coral reefs take in carbon dioxide from sea water and use that with sunlight to photosynthesize and store carbon in their tissues. However, with the build-up of greenhouse gases in the atmosphere it is now known that the oceans are taking in about one-quarter of the atmospheric carbon dioxide (Great Barrier Reef Foundation, 2013). Therefore, the oceans are now acidifying due to build-up of carbonic acid in seawater, and as a result coral reefs are being bleached. Moreover, increased ocean surface temperatures due to global warming have also bleached coral reefs (Stanford University, 2012).

The protection of marine carbon sinks for mitigation of climate change is very important because sea grass, seaweed and coral reefs have the potential to be used for carbon sequestration. Mining the sea beds of the Bismarck and Milne Bay waters poses further threats to PNG's coral reefs and the marine ecosystems through sedimentation and further acidification of the seas (Bingeding, 2012). Despite the threats posed by deep sea mining, there seems to be little concern by GoPNG for the protection of coral reefs and other photosynthesizing marine organisms for carbon sequestration and climate change mitigation in PNG.

If the mining industry is to contribute meaningfully to the sustainable development of PNG and the international effort to mitigate climate change, the role of the mining sector within the context of REDD+ should be determined for PNG. In determining the role of the mining sector within the REDD+ context in PNG, the country can implement mining activities on a sustainable scale so that there is minimal adverse impact of mining on the people and the environment while the sector contributes to sustainable development of PNG and climate change mitigation.

10.2.12 Lack of Vision to Reduce Fossil Fuel Emissions and Develop Clean, Renewable Energy

Diesel and gas generators make up about 50% of PNG's power generation capacity (www.reegle.info/actors/3922/department-of-petroleum-and-energy.htm). Diesel generators produce 710 GWh of electricity annually, while natural gas generators produce another 400 GWh of electricity annually (Table 10.1). However, the government now intends to increase the capacity for natural gas power generation to 390 MW and slightly increase diesel power generation by the year 2030 (Oxford Business Group, 2012).

In terms of annual greenhouse gas emissions diesel and gas generators would emit 0.466 MtCO_{2e} and 0.132 MtCO_{2e} respectively (Table 10.1). However, since PNG endeavors to be carbon neutral by the year 2050 (GoPNG, 2010), innovations must be sought to reduce the country's fossil fuel emissions. This can be done by developing renewable energy sources that would have minimal adverse impact on the environment and people.

Table 10.1: Diesel and natural gas power generation and greenhouse gas emissions

Fossil fuel	Installed power generation capacity (MW)	Annual electricity generation (GWh)	Annual greenhouse gas emission (MtCO ₂ e)
Diesel	217.09	710	0.466
Natural gas	82.06	400	0.132

Currently PNG faces a chronic power shortage problem. And in order to meet the country's demand for more power, the government plans to build more gas power stations and hydropower dams to generate enough electricity.

Nevertheless, there are several issues with gas power stations and hydropower dams regarding climate change. Firstly, natural gas is a fossil fuel and does emit greenhouse gases and volatile organic compounds that are dangerous to human health and the environment. Secondly, hydropower can be a form of clean, renewable energy if grassland areas are flooded to produce electricity or water from the spillway of an existing dam is reused to produce electricity. However, if substantial areas of forested land are going to be flooded for power generation this could lead to more deforestation and forest degradation and other environmental and social problems, and the power produced may not be regarded as clean energy.

There is now an ambitious plan by the PNG and Queensland (Australia) governments to dam the Purari River in the Gulf Province to generate 1800 MW of power for both Queensland (Australia) and PNG (Reegle, 2013). It is claimed that this hydropower dam will generate enough renewable energy for use and create job opportunities for both PNG and Queensland. Nevertheless, nothing has been said about the environmental impact the dam will have on the forest that is going to be flooded, large wetland ecosystems that lie below the dam, and the rich fish stocks in the Gulf of Papua. But in terms of climate change the adverse social and environmental impacts of renewable energy generation must also be taken into consideration when attempting to generate clean electricity.

The potential to generate electricity from renewable energy sources in PNG is enormous (Table 10.2). However, despite the availability of these renewable energy sources and the tradability under the Clean Development Mechanism of the Kyoto Protocol, little has been done to tap into clean, renewable energy sources in PNG to date. This is due to lack of vision by GoPNG to reduce emissions from fossil fuels and to develop clean, renewable energy for the country.

PNG must evaluate all of its renewable energy sources to determine their social, economic and environmental impacts on the people and the environment. Once this evaluation is done, those renewable energy sources that have minimal social and environmental impact on people and the environment should be developed for the country's clean energy needs as well as to contribute to a carbon neutral economy by the year 2050.

Table 10.2. Renewable energy sources in PNG

Type of Energy	Source(s)
Solar	Sun
Wind	Wind
Tidal	Sea
Biogas	Municipal effluent, palm oil mill effluent, animal manure (pigs, cattle and goats), spent oil palm fruit bunches, municipal solid waste, and coffee mill biomass (pulp) and effluent
Hydropower	Rivers, streams
Geothermal	Volcanic springs
Biomass	Fuel wood, thinnings from forest plantations, waste wood from timber mills (off-cuts and sawdust)
Biodiesel	Coconut trees, Jatropha trees, seaweed, waste oil from restaurants and food bars

10.3 Key Points and Conclusions

This chapter has discussed a series of important issues, contexts and initiatives that have directly impacted upon PNG's endeavors to address climate change at both the international and national levels. Several key points of the impacts that have been brought about by PNG's appropriations of climate change were discussed: although PNG had the world's first climate change refugees, the country tends to focus more on REDD+; although PNG has established an office to coordinate climate change issues in the country, this has led to uncertainties in the delegation of responsibilities and action; although PNG has developed several key climate change documents, neither climate change legislation or policy have been endorsed by the government; although PNG has been represented (often by foreign advisors) at international climate change forums since COP 11, this has not led to securing funding or technical assistance for climate change work in the country.

Subsistence agriculture is the second highest driver of deforestation and forest degradation in PNG, but the key climate change documents put out so far by the office of climate change have not proposed an integrated policy for the community or national level. GoPNG envisages that logging concessions provide an avenue where much of PNG's REDD+ credits will come from, but most of the timber concessions have been logged out and the lands have been returned to its customary landowners—consequently, REDD+ credits from current timber concessions are unknown and could be minimal.

Biodiversity conservation has been lacking in PNG in the past due to lack of economic incentives, but REDD+ and PES now provide both economic and non-economic incentives for biodiversity conservation and other ecosystem services.

However, due to lack of knowledge on the role of biodiversity conservation and other ecosystem services under REDD+ and PES, there has been little effort put into using biodiversity conservation for climate change mitigation in PNG. Forest plantations can be developed for carbon sequestration and for timber and fuel wood production, thus forest plantation development in PNG is now more economical than in the past. However, less attention has been given to forest plantation development as a tool for mitigating the adverse effects of climate change in PNG.

Mining activities pose threats to PNG's terrestrial and marine carbon sinks. However, the government continues to issue exploration and mining licenses and seems to have little concern for its terrestrial and marine carbon sinks and the need to mitigate climate change. About half of PNG's power supply is generated from fossil fuels. Nevertheless, due to lack of vision to reduce fossil fuel emissions and exploit the country's enormous sources of renewable energy for the development of clean energy, there are now plans to increase the country's future power supply using more gas power stations and hydropower dams. This is likely to increase fossil fuel emissions and the rate of deforestation and forest degradation respectively. In setting out the detail and pragmatics of the policy context, and a vivid picture of the PNG state's capacities, interests and responses, the chapter has also discussed a series of limitations. The picture which emerges disrupts the wishful thinking character of much international discourse about climate change, and shows that as much as PNG has appropriated, and made appeals to, this sphere, it has also paid less attention to turning international expectations into an equally energetic internal process.

Dame Anne Salmond

Afterword

Think Like a Fish: Pacific Philosophies and Climate Change

His Highness Tui Atua Tupua Tamasese Ta'isi Efi, the head of state of Samoa, opened this book by urging his readers to adopt a perspective based on *va tapuia*—"sacred relations between humans, animals, cosmos and the gods." He suggested we might think about climate change from the vantage-point of other life forms—a dog, perhaps, the ocean, the stars, trees, a bird or a fish; and explore Pacific worlds patterned by existential interlocks between people and other beings.

In these ways of being, balanced exchanges between different life-forms generate health, peace and prosperity, while arrogance and greed breed ill-health, poverty and conflict. While equilibrium is highly prized, it is always fragile. According to Maori ancestral chants, for instance, cosmic order is established in two main ways—by affinity and alliance, when different powers come together to create new forms of life; and by contestation and quarrelling, in which different beings separate (or are separated) from each other.

According to the Te Arawa scribe Te Rangikaheke, for instance, at the beginning of the world there was just one founding ancestor, Rangi-nui the Sky Father and Papatūānuku the Earth Mother, a single being. For many *pō* (era of darkness) their children lived between them, cramped and frustrated. Weary of their confinement, they began to talk about separating their parents so that light could enter the world. Although the wind-ancestor Tāwhiri-matea disagreed with this idea, his older brothers ignored him. After many unsuccessful attempts, Tāne, ancestor of the forests, lay on his back and pushed up with his legs, forcing earth and sky apart.

As Rangi wept for Papa, his tears became rivers and lakes, and she sent up mists to greet him. Tormented by their grief, Tāwhiri-matea flew into a fury and attacked his brothers with whirlwinds and tornadoes, smashing Tāne's trees to splinters, driving Rongo and Haumia's root crops underground and lashing Tangaroa, the sea god into submission. In the midst of this chaos, Tangaroa's children fought with each other. When Ika-tere, the ancestor of fish, taunted his brother Tū-te-wanawana, the ancestor of lizards, saying, "You go inland, and be heaped up after fires in the fern!" Tū-te-wanawana replied, "You go to sea, and be hung up in baskets of cooked food!" (Te Rangikaheke in Curnow 1983: 254). After this quarrel, they went their separate ways.

Only Tū, the ancestor of people, stood tall in the face of Tāwhiri-matea's onslaught. For his bravery, he earned for his descendants the right to harvest his brothers'

offspring—birds, root crops, forest foods and trees, crayfish, shellfish and fish, although they had to ask the ancestors for permission. In Te Ao Māori, as in Samoan and other ancestral Pacific ways of living, the fundamental kinship between people and other life forms is never forgotten.

According to the Tainui scholar Pei te Hurinui Jones, the double spiral in Maori carving, painting and tattoo embodies this swirling emergence of the cosmos (Jones 1959: 232). Unlike the linear arrow of modernist time, Maori space-time spins in and out from an ancestral source. When the sea ancestor Tangaroa breathes in, for instance, the sea spirals down his throat, forming a great vortex (Te Parata) at the heart of the ocean; the tide goes out and people die. As he breathes out, the tide flows and children are born into the world. When Tāwhiri flies up to the highest heaven to fetch the baskets of knowledge, he ascends on a whirlwind. The spiral of space-time is at once destructive and creative.

To think like a fish, then, is to understand that apocalyptic storms may herald conflict and confusion, but also new forms of life. After millennia of sea living, Pacific Islanders—especially fishers and navigators—are closely attuned to climatic shifts and changes. While “movements on the ocean are often unpredictable and surprising,” (Robertson, this volume) their ancestors had the power to calm or raise particular winds, to smooth the sea or summon up waves to swamp the fleets of their enemies. In New Zealand, for instance, the early missionary Samuel Marsden spoke with a *tohunga* who controlled the winds and waters in the Hokianga harbour, and reported that according to the warrior chief Hongi Hika, the sea god Tangaroa lived in his forehead (Salmond, 2017). When Marsden boarded a ship in the Bay of Islands, intending to take the errant missionary Thomas Kendall back to Port Jackson in defiance of Hongi’s wishes, the ship was wrecked before it left the Bay. It was a fine, calm day, and Marsden could not understand what had happened. He had recently been told, however, about the wreck of another ship in the Hokianga, where the mate attacked some sacred rocks with a hammer, and the local *taniwha* (powerful water being) picked up his ship and smashed it on the rocks as he tried to sail out of the harbour (Salmond, 2017).

In this book, Maria Robertson describes exchanges with an elderly female navigator from Kiribati, Teueroa, and her existential interlock with the ocean. In a deep sense, she and the sea are one. When Teueroa was born, her father took her umbilical cord out to sea and dropped it into deep water, and in her early teens, she was initiated as a navigator when her father sailed out of sight of land, tossed her into the water and sailed away. When he returned to pick her up, he asked her to point out the direction of the land. Later, he taught her how to predict the weather from the winds and stars. According to Teueroa, droughts that are explained by scientists as due to climate change have already been foretold by the stars. As Robertson remarks, given the notion that the world is made of relationships, engaging in known and unknown ways, fixing and unfixing, always struggling and co-operating, the world emerges in these connections. And the notion of organised exchanges of energy allows individuals to engage with systems and correct imbalances that could otherwise be said to be out of their control.

These exchanges of energy may include songs, as well as ritual knowledge and other artistic interventions. As Elfriede Hermann and Wolfgang Kempf report, many Kiribati people address the prospect of catastrophic climate change with a prophetic song that exhorts them to “rise up” and take practical action to avert the loss of their islands. For New Guinea, Marian Strucke-Garbe describes powerful artistic responses. Other examples include “Moana: The Rising of the Sea,” a performance created by Vilsoni Hereniko at the University of Hawai‘i that has featured at many international gatherings focused on climate change (Steiner, 2015).

In her account of Cyclone Pam in the Cook Islands, Cecile Rubow suggests that such storms (“naturalcultural whirls”) may be reflected in “giant rotating, intensifying discursive systems” that gather momentum across large networks, bringing together different knowledges and voices in ways that make different kinds of sense to different people. She suggests that “climate change” is one of these spinning assemblages, sweeping across the islands and spinning together ancestral, Christian and scientific ideas, generating fear and vulnerability, practical responses and creative power.

This sense of being caught in relational vortices and yet having the power to strike new balances also emerges in John Connell’s account of the Carteret Islanders, a population of fewer than 1000 people who inhabit a cluster of six small atolls off Bougainville. While these people have been described by the global press as the first climate refugees—“frontline victims of the excesses of capitalism”—they have suffered food, cash and timber shortages for at least half a century. At the same time, tectonic shifts, seismic events, and local interventions such as dynamiting the reefs and building sea walls amplify their difficulties. Nevertheless, the discourse of climate change serves as a “weapon of the weak,” giving them chances to build new lives in other places.

In this swirl of ideas, Pacific peoples have also been powerfully influenced by Christian narratives. As Jennifer Newell describes for Samoa and Emilie Nolet for Fiji, Biblical stories about God driving Adam and Eve out of the Garden of Eden for their sin of eating forbidden fruit; Noah building the Ark to survive the Great Flood; and the Apocalypse, when the sun scorches the earth, the rivers dry up and there is darkness and pain in the land are echoed in local debates around climate change.

These mythic narratives also underpin metropolitan accounts of climatic change. Ideas such as “the Anthropocene,” “anthropogenic impacts,” “ecosystem services” and “resource management” all reflect Biblical stories in which God gives Adam and Eve “dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth,” (Genesis, 1: 28) putting people in control of the cosmos. An onto-logic in which all other beings are created for human purposes fosters a sense of exceptionalism that helps to drive climate change, biodiversity losses and related phenomena, alongside fears of Armageddon or being driven out of Paradise. It is also very different from ancestral Pacific accounts in which all living phenomena including earth, sky, winds, rivers, birds, fish and people are linked together in kin networks, powered by reciprocal exchanges.

These kin-based philosophies have more in common with other strands in Western thought, for instance those that trace back to vitalist philosophies in the Enlightenment, and ideas about the “tree of life” or the “web of life” elaborated by scientists including Alexander Humboldt or Charles Darwin (Reill, 2005; Normandin and Wolfe, 2013; Lash, 2016). Ideas about complex networks and systems, symbiosis and “holobionts” in the contemporary biological sciences (Gilbert, Sapp and Tauber 2012: 326) all resonate closely with Pacific ideas.

In these kinds of framings, it makes sense to “think like a fish”—to consider the vantage-points of life forms other than human beings on planetary processes. In the context of attempts to sustainably manage the Pacific Ocean, for instance, whether through exclusive economic zones or marine reserves, these perspectives might allow us to see that fish do not register such boundaries, and to come up with devices that do not allow them to be harvested to extinction.

If people and environment, culture and nature are not divided in ancestral ways of being in the Pacific, neither are mind and matter, theory and practice. Engagements with Pacific forms of order are not just thought experiments, but also inform legal frameworks and practical action. In New Zealand, for instance, as part of the Treaty of Waitangi settlement process, both the Urewera, the ancestral territory of Tūhoe people, and the Whanganui River have recently been recognised as legal beings in their own right, with their own entitlements to health and well-being.

These laws have many practical implications, and not just for Maori people. While they place obligations of care on the iwi concerned, they also fundamentally reshape relationships between all people and these ancestral beings. For the Whanganui river, its restoration becomes a right, not an optional extra; and for the Urewera, once a major national park, the iwi has initiated a regime that seeks to manage people, rather than communities of plants and animals. Once issued with tramping, hunting and fishing permits, visitors now enter into “friendship agreements” with the Urewera, and are guided by young Tūhoe who introduce them to new ways of understanding this place that is an ancestor (for more detailed accounts of these experiments, see Salmond, 2017).

Such philosophical experiments can also inform scientific projects. In the Te Awaroa project, for instance, funded by the University of Auckland, teams of scientists and local experts draw on *mātauranga Maori* (ancestral knowledge) along with an array of natural and social sciences to listen to the “voice of the river” in different parts of the country, studying rivers as living systems through time, with their plants, animals and people, to inform healthier futures. In the wider Pacific, too, star navigators are again sailing across the ocean, carrying out scientific research and raising urgent concerns about the state of this great sea with its dying reefs, depleted fish stocks, gyres of rubbish and drowning islands.

In relation to climate change, Maori ancestral perspectives suggest that this is one of an array of symptoms that show interlinked living systems moving away from a state of *ora* (health, well-being and abundance) towards a state of *mate* (ill-health, dysfunction, degradation and failure). Such shifts have many manifestations. Intensive agriculture

that over-tills or over-grazes the land while using many imported inputs (diesel for machinery, chemical sprays and palm kernels as feed, in the case of intensive dairying), for instance, may also degrade aquifers, rivers, estuaries and harbours, contribute to biodiversity losses through mono-cropping and deforestation, and drive climate change through animal methane emissions, deforestation and the use of fossil fuels.

To “think like a fish,” then, is to recognise that aspects of modernist science may be non-adaptive. In order to understand these interconnected processes, the separation of the social from the natural sciences and the fragmentation of the disciplines are profoundly unhelpful. If we are to deal intelligently with climate change, new paradigms that foster intelligent inquiry into an array of intricate relational networks and patterns of exchange among planetary systems at different scales are urgently needed.

As Tui Atua Tupua Tamasese Ta’isi Efi suggests, there is also a need to live differently—to confront human greed and the urge to exploit “natural resources” for short term profit by considering the interests of future generations, and to pursue reciprocal exchanges that seek balance with other life forms, however elusive. The gravity of this challenge is highlighted by Nalau Bingeding’s account of a disjuncture in Papua New Guinea between the government’s powerful rhetoric about climate change in international fora and a lack of practical action at home. On the island of Gau in Fiji, on the other hand, according to Veitayaki and Holland, the inhabitants are tackling climate change on many fronts through the Lomani Gau project, informed by rigorous inquiry and ancestral precedents.

Across the contemporary Pacific, many thinkers are seeking to engage with climate change and related existential challenges by weaving together ancestral ideas with insights from the contemporary sciences, and activating these through innovative artistic, political and legal devices. In the face of apocalyptic visions that engender helplessness and despair, these offer new ways of thinking, a sense of resilience and hope, and a will to take practical action:

As my mentor Eruera Stirling used to chant:

<i>Whakarongo! Whakarongo! Whakarongo!</i>	Listen! Listen! Listen!
<i>Ki te tangi a te manu e karanga nei</i>	To the cry of the bird calling
<i>Tui, tui, tuituiā!</i>	Bind, join, be one!
<i>Tuia i runga, tuia i raro,</i>	Bind above, bind below
<i>Tuia i roto, tuia i waho,</i>	Bind within, bind without
<i>Tuia i te here tangata</i>	Tie the knot of humankind
<i>Ka rongo te pō, ka rongo te pō</i>	The night hears, the night hears
<i>Tuia i te kāwai tangata i heke mai</i>	Bind the lines of people coming down
<i>I Hawaiki nui, i Hawaiki roa,</i>	From great Hawaiki, from long Hawaiki
<i>I Hawaiki pāmamao</i>	From Hawaiki far away
<i>I hono ki te wairua, ki te whai ao</i>	Bind to the spirit, to the day light
<i>Ki te Ao Mārama!</i>	To the World of Light!

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