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CHAPTER 1

Waterworlds: Framing the Question of Social Resilience

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Abstract

This chapter introduces the larger analytical issues addressed in the book and places the individual chapters within that frame. Following a brief introduction of the implications of *Waterworlds*, three 'regions of disaster' are introduced as an organizing device for addressing water-related hazards of different kinds: the melting ice, the rising seas, and the drying lands. Each of these regions presents particular challenges to people living in threatened environments that are explored in the remaining chapters of the book. The theoretical challenge of combining detailed ethnographic interest with a new global consciousness is then briefly discussed with a view to identifying the degree to which local environments have become perforated, however much people still live locally. The major point made in this chapter is that while until now 'resilience' has been identified as a systems property, when focussing on *social* resilience it adheres not to systems but to human agency. As such it points both to past experience and to future expectation.

Since the drafting of the *Waterworlds* project in the spring of 2008, the international debate on climate change has accelerated dramatically. A sense of urgency has generated new collaborative efforts and a host of scholarly conferences on climate addressing issues of various scales and derivation. In March 2009, the University of Co-

penhagen hosted a congress with the title *Climate Change: Global Risks, Challenges and Decisions*, with the aim of producing the most up-to-date knowledge from the research community – natural scientists, social scientists, engineers, economists, humanities scholars – and attracting more that 2000 scholars from across the world. The event was remarkable in many ways, not least in the clear feeling that scholars of all kinds had come to join forces in order to address and mitigate the possible effects of the new climate scenarios for our common future. In a Synthesis Report (Richardson et al. 2009), six key messages to the world and not least to politicians were highlighted in the hope that the congress might not only contribute new knowledge to the world summit on climate in Copenhagen, December 2009 (COP15), but also point to necessary actions.

While scientific knowledge, admittedly, is not always directly translatable into policy and action, the congress proved to bridge many gaps, and the Synthesis Report in itself is a token of the will among scientists to act collectively in face of what now looks like a much worse scenario for the future that the one foreseen in the 2007 report from the Intergovernmental Panel on Climate Change (IPCC). What transpired during the congress was also a strong need for engaging the social and human sciences in order to address the economic, political, social, and cultural issues that naturally adhere to the environmental changes. Whether as (initial) perpetrators or (future) victims of the present processes of climate change, people are part of equation when the present challenges are addressed.

The present volume – and the entire *Waterworlds* project – offers a perspective on the place of humans and of social communities in the larger area of concern. While most of the papers take their point of departure in communities that are already affected by climate related risks, they also collectively highlight the general will to shape a liveable future in spite of new fears. People take responsibility for their own history in many small ways; this fact is a promising start in any mitigation process that must include human action alongside technological innovation.

There are important lessons to be learnt from history, where the conspicuous cultural dynamics of the Mid-Holocene period have recently been linked to the prevalent processes of climate change at

the time (Anderson et al. 2007). History has also shown in more detail how humans have solved environmental problems before, often by developing new technologies. As we are now facing uncertainties of a planetary scale, technologies cannot be expected to meet the challenges on their own, so to speak; new socialities and collective responsibilities must also develop, given the fact that climate change will hit the globe unevenly. The present volume is offered as a contribution to new notions of human agency as based in a global consciousness.

Waterworlds: Identifying regions of disaster

The present times are haunted by a sense of human vulnerability in the face of major environmental disasters and global climate change. Whatever course and speed the current changes may accrue, their effects on the human world are already manifest. Reading the IPCC report, *Climate Change 2007*, leaves no room for doubt that the world is indeed facing a major challenge that can be met only by concerted efforts at understanding the place of humans in the earth system. There is no way one can think away people from the analysis of the current responses to the global changes of the climate. Even disregarding the anthropogenic contribution to the change, the urgency of acknowledging the human and social impacts is owed to the fact that whatever is decided or not decided internationally to mitigate pending disaster, people will be affected, possibly fatally, by climate change. If they are not hit directly they will have to live within changed environmental regimes and in some cases with severely degraded natural resources. In other cases, the balance may tip towards new possibilities, but there is no doubt that the face of the Earth and its many biological species are heavily affected already.

People worldwide are thus suffering from a loss of habitual natural resources, from fear of an increasingly unpredictable future, and from social disruptions as natural habitats are destroyed. In some ways, the current sense of vulnerability is a continuation of well-known patterns of natural hazards hitting particular regions and people who are at more risk than others, as demonstrated extensively in a major, and recently re-edited volume (Wiser et al. 2005). In the

introduction to that volume, the authors list the number of deaths during the 20th century as caused by various disasters. The toll taken by political violence by far outnumbers any other cause, being 270,7 millions of people or 62,4% of all deaths linked to disaster, while natural disasters of slow-onset (e.g. famines following prolonged droughts) account for 70,0 millions of deaths or 16,1%, and rapid-onset natural disasters (e.g. earthquakes and hurricanes) account for a mere 10,7 millions or 2,3% of all disaster related deaths. To this we may add deaths owing to epidemics, 50,7 millions of people or 11,6%, and road, rail, air and industrial accidents, tolling 32,0 millions or 7,6% of disaster related deaths (Wiser et al. 2005: 4). Given the magnitude of deaths owing to wars and political violence on the one hand and to the 'ordinary' accidents on the other, the authors feel a need to justify their focus on natural hazards, despite the somewhat artificial separation between the various risks. Their point is well taken:

> Analysing disasters themselves [also] allows us to show why they should not be segregated from everyday living, and to show how the risks involved in disasters must be connected with the vulnerability created for many people through their normal existence. It seeks the connections between the risks people face and the reasons for their *vulnerability* to hazards. It is therefore trying to show how disasters can be perceived within the broader patterns of society, and indeed how analysing them in this way may provide a much more fruitful way of building policies, that can help to reduce disasters and mitigate hazards, while at the same time improving living standards and opportunities more generally. (Wiser et al. 2005: 4)

With respect to the current processes of climate change, this message is no less relevant. For both the authors of the above-cited volume and for the authors contributing to the present book, the crucial thing is to understand that natural disasters are not simply caused by nature. They become disasters within a combined natural, economic, political, and social framework shaping both the magnitude and the possible strategies of mitigating the hazard. In other words, disasters are the outcome of particular mixes of natural hazards and human action. It becomes the more urgent to develop new conceptual templates for addressing this coupling (Newel et al. 2005).

With the current threats to people posed by climate change this intimate coupling of the natural and the social domains is highly pertinent. Within the new global frame of socio-ecological systems, the notion of vulnerability has to be re-addressed, however, as it is not predetermined by economic or regional differences as conventionally described in terms of North/South for instance. Such differences may still play an important part in the actual risks that people are facing, yet human vulnerability increasingly relates to a comprehensive global situation in which we are all stakeholders. Addressing the climate-related natural disasters from below – that is from the point of view of people, living with the (pending) hazards – as we do in this volume, we focus mainly on human action by which people reshape their histories in response to perceived threats, not externally identified vulnerabilities. One question addressed is when the ordinary experience of variability in the weather transforms into a sense of climate change on a larger scale and when, therefore, a new sense of uncertainty about the future enters into ordinary life and provokes cultural responses (cf. Strauss & Orlove 2003). From outside the risk may be the same, but seen from within a particular life-world, the threat is not at all the same when it has been reclassified from weather variability to climate change.

Risks related to climate change are unevenly distributed. The global climate change therefore results in new patterns of regional migration, political unrest, economic vulnerability, shifting resource bases, and a profound sense of risk affecting everyday life in many parts of the world. The aim of the book is to explore how people deal with such uncertainty. Through detailed studies of distinct localities and strategies of protection, we seek to enhance the general understanding of living in environments at risk. This is urgent in the interest of understanding how far the social capacity for adaptation may be stretched in times of pending environmental change. It is also pertinent with respect to basic issues of local food security that may all too easily transform into problems of international security.

Focussing on water-related hazards, we stress that water is the most vital natural resource; it is the *sine qua non* of human life. Yet, excess or shortage of water may threaten that very life, and this ambiguity of the relationship between people and water poses new and

significant challenges to the social and human sciences, wanting to understand and mitigate the disastrous effects of global climate change as they impact water supplies, water flows, and water regimes that unmake the sense made of water (cf. Strang 2005). Initially, water also poses the challenge of how to become an object of anthropological analysis (Orlove & Caton, chapter 2). Through history, water has of course been of concern to people, largely organizing their society around a control of various water-flows and -boundaries, and relegating uncontrolled waters to the wilderness (Pálsson & Huijbens, chapter 3). A large scale impact of new water flows on social life has recently been highlighted in a work on the rising sea-level in the Mid-Holocene era forming the Persian Gulf and possibly fuelling the processes of early state-making and economic development in ancient Mesopotamia (Kennet & Kennet 2007).

In order to organize the analysis of various *Waterworlds*, we have identified three 'regions of disaster,' viz. the melting ice in the Arctic and in mountainous glacier areas, the *rising seas* that flood islands and coastal communities across the globe or result from bursting rivers, and the *drying lands* accelerating desertification in large parts of Africa and elsewhere, notably Australia. As 'regions' they are defined by the dominant source of environmental threats to society, yet all of them are interconnected through the larger atmospheric conditions of the globe. In many cases they are also linked on the ground, so to speak, one kind of disaster setting on or accelerating another, such as happens in some south and south-eastern Asian mega-deltas that are triply exposed to the melt-off from the glaciers and snow tops on the Himalayan and Tibetan plateaus, to the rising sea-level, and to altered hurricane patterns.

When we refer to the melting ice, the conditions in the Arctic immediately spring to mind, because the rapidly melting icecap in Greenland and the disappearance of the sea ice have become the global icon of the austerity of the process. It is also a localized phenomenon, however, deeply embedded in particular political and institutional systems (Sejersen, chapter 11). On the ground, the melting ice greatly affects the lives of Arctic hunters, for whom the traditional ways of living and moving within the landscape alter dramatically with the thinning ice and opening waterways (K. Hastrup,

chapter 12). A similar process takes place in Arctic (and Subarctic) Siberia, where the thawing permafrost greatly affects both hunting and herding, not to mention the infrastructure, given that both airstrips, houses and roads are built directly on the frozen earth. Significantly, there is evidence that people adapt to the changing conditions, also of wildlife patterns, by continuing age-old patterns of relating to animals that may have disappeared but which are still conceptually dominant (Willerslev, chapter 13).

Thus, several chapters in this volume explore how people in the far North perceive the threats to their environment, and how they respond to and incorporate prospective climatic changes into everyday economic, social and political practices. The vulnerability to change within this region of disaster is not restricted to the Arctic however, but is found also in mountainous areas elsewhere, such as the Himalaya and the Andes, where the retreat of glaciers greatly affects community life, first by sliding glaciers and wild-running water, next by water scarcity (Orlove et al. 2008). The Andean communities are alert to these risks and are already attempting at hemming them in by way of legal or paralegal declarations (Borg Rasmussen, chapter 10). This is a remarkable local attempt at redistributing responsibility.

The second region of disaster that we have identified, the rising seas, incorporates multiple potential or actual threats from the changing sea level, gradual or sudden. These disasters are often amplified by increasing discharge from rivers originating in ice-clad mountains, as mentioned above. What is more, the waters out of control in low-lying coastal areas are correlated with an intensified cyclone activity, contributing to the vulnerability of small islands and coastal communities in the Indian Ocean and in the Pacific – as well as in the Caribbean Sea and the Mexican Gulf. The issue of hurricanes is addressed in a chapter aiming at identifying social indicators of resilience in the wake of hurricane Katrina that may prove to be of general import (Sherrieb & Norris, chapter 4). In this case we are facing one of those vulnerabilities that Wiser et al. (2005) address; it is disheartening to realize that in their pre-Katrina work the authors already pointed to the possibility of large-scale disaster around New Orleans, not only due to an increasing number and in-

tensity of coastal storms, but also due to previous human regulation of the rivers and waterways that effectively laid the area bare for magnified disasters.

The threats from rising seas are thus spurred by several different environmental changes in concert with human action, spanning from sudden and unpredictable tsunamis to gradual disasters such as coastal erosion, global warming and recurring seasons of cyclones and hurricanes that often fuse into a comprehensive perception of climate induced uncertainty, quite irrespective of the actual origin of the singular events. The interpretation of such hazards may relate to local metaphysical notions that at one level seem to bypass the natural cause of the calamity, yet at the same time also draws on past experience and astute observation; this is documented from the South Pacific where several island communities are living on the brink of disappearing into the sea, yet still with a keen sense of survival (Rubow, chapter 5). Significantly, with the growing international media exposure of global climate change, this may also be invoked as a local explanation for unexpected disasters, such as the Asian tsunami striking in late 2004 (F. Hastrup 2009). While the submarine earthquake that spurred the tsunami has no direct relation to climate change, its differentiated effects locally are correlated with previous patterns of coastal erosion and human-instigated degradation of the natural coastal protection, for instance from mangrove. Within this region we are faced with a complex situation, where past experiences of variability and sudden catastrophe, always part of the environmental reality, become subsumed under present schemes of explanation along with the gradual rise of the seas; what is more, for some the sudden disaster created new opportunities (F. Hastrup, chapter 6).

The third and final region of disaster, the drying lands, comprises the problem of water scarcity. In many parts of the world, from Australia over the Middle East to southern Europe and Sahelian Africa, water has become a scarce resource. Deforestation and changing climatic conditions have contributed to an accelerating drought, which again has lead to a loss of human lives on unprecedented scales. The concern about drought and hunger in Sahel is not new, but it has intensified as the drought has continued and local thresholds

reached; this has resulted in an intensified migratory pattern both within and out of the region. It has also contributed to new patterns of political violence and civil war. The focus on the drying lands and their consequences for human life, directs us towards an analysis of the strategies of coping adopted in the wake of impoverishment and hunger. It forces us to take a closer look at the double or triple exposures to natural, as well as social and global developments that may accelerate one another (Reenberg, chapter 7).

In the Sahel, the salient distinction is the annual rainfall; this has always varied, and it may be difficult to distinguish between climate variability and climate change, when the symptoms are the same. As for the chosen paths of mitigation and survival, these are also complex and relate to intensified migration patterns, new marriage practices as well as new livelihood strategies (Østergaard Nielsen, chapter 8). Zooming in even closer upon local strategies, the picture shows how nomads living in what seems an increasingly dry and vulnerable landscape navigates by way of landmarks of promise that escape the untrained eye (Vium, chapter 9).

The final three chapters in the book deal with the question of knowledge from different angles and with each their scale of addressing the question of resilience. An Amazonian case raises the issue of indigenous knowledge, and of water-literacy as the basis of local resilience (Rival, chapter 14). The idea of a particular water literacy resonates with the ensuing analysis of how international organizations are increasingly mainstreaming climate issues within traditional development policies; here a new kind of 'climate change literacy' comes to the fore in the development discourses that in and of themselves shift the ground of future projects (Fog Olwig, chapter 15). Finally, a chapter on the scientific configuration of nature and climate takes us to the question of planetary resilience as understood and interpreted in universalizing models (Skrydstrup, chapter 16). Here we get to the core of the present authority of natural science.

In the chapters of this book, the water-related 'regions of disaster' are thus explored from various angles with the aim of contributing to a renewed understanding of social resilience as something that inheres in social communities, be they hunters on the margins of traditional scientific horizons or the academic community itself. This has

induced us to take a closer look upon the notion of resilience itself. In the IPCC report of 2007, it is thus defined: 'The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change' (IPCC 2007: 880).

This corroborates definitions suggested by several scholars that I shall not cite here; there is ample discussion of definitions in the chapters to follow, and I shall only point to the major general issue at stake in the book as a whole, namely the fact that the concept of 'resilience' is originally, and continually cast as a systems property. Without some idea of a bounded social and/or ecological system, the concept seems to make little sense. Yet once we move into the human world, systems are not closed; they are in permanent flux, due to the inherent discontinuity between individuals and their world (Ardener 1989). Furthermore, social communities are always open to impulses from elsewhere, such as – in our case – to new knowledge about climate change that infiltrates local understanding and propels people to action. It is, therefore, difficult to ascertain whether a particular society is the same after a natural hazard as before.

The analyses to follow are based on the actualities of social life in distinct localities, and focus on human action as the pivotal point in people's quest for certainty in exposed environments. The general message is that resilience in the socio-ecological system, which has now revealed itself to be of planetary scale, resides in people. If absorption of a disturbance is the measure of resilience, we should realize that such absorption may lead to unexpected changes in social organization and local expectations. This is one of the pivotal concerns adhering to the concept addressed here, given the fact that we are dealing with *global* climate change. If social resilience inheres in human agency and not in any well-defined system, we face a conceptual challenge of a new order.

Globalization: A conceptual challenge

Apart from the empirical ambition of studying how people, who are exposed to climate change in various ways, respond to environmen-

tal reshaping, we also have a theoretical ambition of identifying new modes of linking global processes and universalist scientific knowledge about climate with local perceptions of risk and particular 'weatherworlds' (Ingold 2006). We want to complement the sweeping diagnoses captured in such notions as 'world risk society' (Beck 1998), 'runaway world' (Giddens 2000), and even 'global warming' itself. What the project and, indeed, the chapters below offer is a fine-grained knowledge of unbounded environmental hazards and their effects on localised social worlds. Theoretically, this focus will allow for a new understanding of the effects of environmental disaster on grounded senses of vulnerability and, not least, of the responsibility that people take locally to ensure the survival of their community in the face of perceived threats to their life-worlds from processes that may originate beyond the immediate horizon, but which take effect only as they become part of the local world.

Globalization is a historical fact of our times. Yet, it cannot of itself explain the actual connections and perturbations that arise in its wake. This also goes for such global phenomena as the current climate change. The wider aim of our work is to seek new knowledge about emerging causal explanations as these are inscribed in existing logics and practices, also of a scientific nature. At the local level, people continuously engage in safety measures and protection efforts in a sustained attempt at keeping danger at bay. In this fashion they maintain a sense of integrity within a physical environment under threat. Remembering that physical and social worlds are mutually constitutive (Hastrup 2005), this integrity is closely related to a sense of certainty, without which social life is impossible.

When we speak of global climate change, we immediately face an analytical challenge of bounding the object of interest; normally, what we experience is weather, while climate points to an external observation of systematic change in the weather over a generation or more. People are living in local weatherworlds, within which they experience new or intensified variability; at the same time the new sense of unpredictability is increasingly explained by reference to global climate conditions all over the world. The implied short-circuiting of weather and climate we are witnessing now is the main inducement to rethink global connection in anthropology. In earlier

times, people would not have the scientific knowledge or discourse on climate change; they were innocent with respect to the larger patterns and in some cases they would respond by sticking closely to the old ground rules, hoping the calamities would pass, as happened for the Icelanders during the little ice age (Hastrup 1990). Only later may we see how natural changes and cultural dynamics may foster each other over an extended period of time, such as the Holocene (Anderson et al. 2007). Nature has its own agency in the larger scheme of historical change (Tsing 2001). When this agency becomes of global impact, traditional notions of local environments explode.

With a view to another (but not unrelated) environmental issue, Anna Tsing has recently suggested a new ethnographic take on global connection in her *Friction. An ethnography of global connection* (2005). Tsing studied the fate of the Indonesian rainforest, increasingly threatened by capitalist enterprise and deforestation but also vigorously defended by a wide range of local and international environmentalists with each their vocabulary. Tsing's work is an important contribution to an understanding of the actualities of local environmental vulnerability in the wake of global capitalism and its uneven infiltration of local systems. About an ethnography of global connection Tsing writes:

> How does one do an ethnography of global connections? Because ethnography was originally designed for small communities, this question has puzzled social scientists for some time. My answer has been to focus on zones of awkward engagement, where words may mean something different across a divide even as people agree to speak. These zones of cultural friction are transient; they arise out of encounters and interactions. They reappear in new places with changing events. (Tsing 2005:xi)

While I greatly appreciate the book and its composition, I would want to take the general ambition a bit further where climate is concerned. 'Friction,' 'interaction,' and 'encounters' all point to meetings, clashes, and exchanges – often on the border of language – and presuppose a kind of distinctiveness to cultures, discourses and lifeworlds that perhaps is no longer tenable for the very reasons that make an ethnography of global connection expedient. They have

become as transient as the zones of frictions themselves. Indeed, they are nothing but. This is one reason why recent attempts at understanding the impact of climate change upon 'local cultures' (see e.g. Crate 2008) are obsolete from the outset.

Turning back to 'global warming,' it is certainly clear that factual statements about globalization in terms of encounters cannot account for the interpenetration of phenomena that belong to different scales. When we are dealing with the perceived threat of global climate change, its uneven nature is no less marked than Tsing's well taken suggestion with respect to global capitalism. Global warming introduces new disjunctions and inequities between local worlds, as established knowledge about the environment becomes destabilised. 'The global' is what envelops the local all while becoming part of it. Global terrors, climatic or political, thus 'descend into the ordinary' – to paraphrase Veena Das (2007) on violence, but they do so in uneven ways. We need new ethnographies to show how this imbalance occurs, and how people become literally unsettled as nature develops out of bounds.

The sense of society, understood as a shared horizon of expectation, is under threat from global connections of a new magnitude. Zygmunt Bauman (2006) speaks of a liquid fear, saturating the everyday life of people worldwide and seeping into the perception of what he calls the negative globalization. The perceived threats are unstoppable, uncontrollable and largely invisible and they relate to historical as well as environmental features of the imbalanced state of the global community, such as for instance international terror and global warming. The question, which Bauman does not answer, is how societies may still find ways of creating spaces of certainty, here seen as the human agent's modality of security, allowing people to act responsibly irrespective of the nanotechnologies of fear, infiltrating everything.

In a similarly panoramic fashion, Jarred Diamond (2005) has identified some of the major factors that have contributed to the collapse of past societies throughout human history. They, too, range from environmental fragility, including problems of water and deforestation, over political mismanagement and population problems, to loss of trade and other kinds of interaction. The cases are

illustrative and convincingly told. Yet again, by focussing on closed cases, Diamond leaves the reader wondering how it *really* happened; how did the minutiae of social life and individual action in the face of major threats to social life as known and taken for granted actually lead to the perceived collapse? We want to go beyond and to fine-tune such sweeping global statements by turning the attention to the flexibility of human agency in unfolding social worlds coined in a renewed concept of social resilience that may take the perforation of socio-ecological systems into account.

In anthropology there is a long tradition of studying peoples and cultures as embedded in a particular physical setting, and anthropology still has a remarkable potential for integrating natural and cultural dimensions due to its intrinsic holistic point of view (Crumley 1994: 2). This has been thoroughly demonstrated in historical anthropological studies, subverting or modifying prevalent ideas about causation (Hastrup 1985, 1990), as well as in a recent phenomenological interest in landscapes and the emplacement of people within an environment (Feld & Basso 1996). Into this, a new concern about climate and weather has inserted itself (Strauss & Orlove 2003). This trend combines with a reinvigorated interest in ecology and sustainable development reflecting a new awareness of the increased precariousness of the environment.

This means that anthropologists (and others) are bound to engage with new questions of how people take resilient action to change practices without jeopardizing their sense of belonging and knowing. Time is ripe for taking this further into a kind of ecological scaling that answers the experience of dangers seeping into society from beyond the known horizon. This challenges current ideas of environmental spaces, i.e. the limits within which sustainable lifestyles may be upheld (Agyeman et al. 2003: 22), as further underscored by migration of both people and images. In view of the intensified global entanglement and the emergent regions of disaster, local environments are increasingly perforated and 'sustainability' no longer captures the complexity of resource-management on a local scale. In the chapters below, the implications of this perforation is explored through a detailed attention to local topographies of meaning and of projected future resources.

Local environments are not affected evenly by climate change; many of the people who are already experiencing its adverse consequences are already in some sense vulnerable due to poverty and long-term deprivation. These are the people who have lived with what Baumann calls negative globalization, even without the climatic dimension. His point is that globalization in general is shaped as a "wholly *negative* globalization: unchecked, unsupplemented and uncompensated for by a 'positive' counterpart which is still a distant prospect at best, though according to some prognoses already a forlorn chance", as Baumann has it (2006: 96). In other words, the actuality of globalization has allowed a free run of a highly selective and lopsided development of trade, capital, surveillance and terrorism that manages to create new protective boundaries around privileged zones, all while disregarding traditional national boundaries.

> Negative globalization has done its job, and all societies are now fully and truly open, materially and intellectually, so that any injury from deprivation and indolence, wherever it happens, comes complete with the insult of injustice: the feeling of wrong having been done, a wrong yelling to be repaired, but first of all avenged. (Bauman 2006: 97)

If terrorism is one such form of avenge that may be seen as a symptom of negative globalization and give rise to a particular sense of liquid fear, global warming is a kind of avenge of an altogether different kind, not to speak of scale. Yet it contributes to the sense of negative globalization, where some people apparently still bear the brunt of other people's actions. There is little point in simply distributing the blame, however, because in this era of planetary instability all people are in it together. Past and present, local and global are inextricably entangled and new skills must be developed to regain a sense of certainty by which to act in everybody's interest. Here the richer parts of the world must bear the initial burden.

Risk may have been democratized – potentially affecting everybody in equal measure – but vulnerabilities are still very unevenly distributed (Beck 1998). In many areas, age-old certainties and patterns of resilience are melting away, thereby effectively blocking out people's visions of a local future, and certainly shrinking the space of certainty within which they may act. The emerging global con-

sciousness spans from expansion and promise on the one hand to local contraction and fear on the other. There is a need of ethnographies of this historical process in its many versions that will not loose sight of the global.

Universalist scientific knowledge about climate change contributes to a new global sense of place, and eventually negative globalization may take on new significance. The horizontal, open access world of networks and flows has not obliterated social inequality and value distinction, but it has made the world more accessible to scrutiny from all over and laid it bare to an incipient sense of a new moral order shared by North and South alike. It has been suggested that climate change constitutes a 'perfect moral storm,' implying "the convergence of a number of factors that threaten our ability to behave ethically" (Gardiner 2008). There is a sense that the present moral order is inadequate for dealing with the implications of climate change, including the dispersal of cause and effect in both time and space, and increasingly skewed vulnerabilities and not least an intergenerational responsibility that distributes subjects (agents) and objects (victims) of actions in time, and poses new questions of culpability and justice. All of this converges in our 'current theoretical ineptitude' at dealing with global climate change (Gardiner 2008: 35). This is a political scientist speaking, but the anthropological echo cannot be overheard, given the negative globalization that we have sought to address since the process of decolonization took on speed in the 1960s.

In the domain of political theory it is now claimed that as far as climate change is concerned, possibly "the most confounding aspects of the problem are political rather than scientific" (Vanderheiden 2008: xiv). "Compared to the intellectual resources devoted to the study of climate change over the past two decades relatively little attention has been paid to the normative political issues surrounding this uniquely global and thus far intractable environmental problem" (ibid.). In redressing this, a new kind of anthropology must pull its weight and contribute to the discussion of a new global imaginary, and of shared if differentiated responsibilities. After all and however tenuous at times, the idea of holism upon which anthropology builds gives us a certain authority to address the critical im-

portance of the assumption of an inextricable link between the physical and the social world (Crumley 2001: viii).

Framing: The common objectives

Across the regions studied, there are similarities both of empirical substance and of conceptual pertinence. In most cases, the climatic change entails a shrinking of the liveable space, often followed by political unrest, or a displacement of resources and possibilities for survival. The aim of the volume is to show what people actually do under such circumstances, and to assess and compare the different scales and rationalities employed by the most important actors in the management of the precarious environment. The question is how people, whether hunters, herders, peasants, scientists or policy-makers, create and combine knowledge in new and creative ways to best prepare themselves for the future.

The issue of temporality, that is the question of whether disasters be seen as acute events or as gradual or even cyclical hazards, is an integral part of the over-all analysis of resilience as embedded in human action. It has been suggested that from an anthropological perspective disasters should be seen as processes rather than clearly identifiable events, because they are always embedded in social systems unfolding over time (Oliver-Smith and Hoffman 1999). However, by definition, floods – to take that example – provoke immediate reaction, often in the form of hurried displacement, as adaptation to a life-world under water is not an option. This inherent acuteness of flooding may make us forget that sudden disasters can turn into chronic conditions; conversely, hazards building up gradually can present themselves as unpredicted events occurring out of the blue.

In the social sciences, resilience conventionally points to the amount of perturbation a particular society or community can absorb and still be recognizable, also to itself. As will become clear, abstract definition must yield to concrete shifts in relevance and applicability within different regions and perceptions of disaster. While, evidently, the supply of water, food, and energy is basic to human life at the level of biology, social organization, political and economic stability and a measure of predictability are equally neces-

sary for sustaining social life. While nation-states have so far provided such frameworks these cannot by themselves mitigate the local effects of global climate changes. The idea of global climate regulation transcends received structures of protection, and must be regrounded in the actualities of life as experienced, because however much globalization is a fact of history, people live locally and not in the world in general.

The vision of this book is to contribute to a better understanding of the nature of resilience in communities of various scales, from small settlements to the international community, vis-à-vis environmental change. It is a central argument across the individual analyses that a redefined concept of resilience must be able to take into account the complexity of social and cultural systems as a 'bottom-up complexity'. This implies that multiple actions, expectations and regulations fuse into a shared sense of society as a consistent space for social and moral orientation, which is never given or prefabricated. In this perspective, resilience is an emergent quality of all responsible social action; it is the rule and not the exception of social life, given that all societies must demonstrate a degree of flexibility to operate and ultimately to survive. As Bateson (1972: 497) defined it, flexibility points to an uncommitted potential for change. Resilience, therefore, is not simply a question of systemic (social or cultural) adaptation to external factors, but a constitutive element of any working society. This is where a new key to social resilience in relation to changing environments is to be found – and potentially harnessed into global measures of mitigation.

In sum, what the chapters below demonstrate in so many ways and through the lens of many places and environmental dangers, is that social resilience implies not only a practical flexibility in circumventing the threat, but also a conceptual flexibility in perceiving the temporality or degree of 'eventness' of the disaster as variable and contingent. In short, resilience is seen not so much as a systemic property, as a process of reorientation within local horizons of expectation and senses of being in the world. Ultimately, resilience is an aspect of agency – and thus thoroughly social.

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