

Anticipation, climate change, and movement in Greenland

Anticipation, changement climatique et mouvement au Groenland

Mark Nuttall

Volume 34, Number 1, 2010

Les Inuit et le changement climatique
The Inuit and Climate Change

URI: <https://id.erudit.org/iderudit/045402ar>

DOI: <https://doi.org/10.7202/045402ar>

[See table of contents](#)

Publisher(s)

Association Inuksiitiit Katimajit Inc.
Centre interuniversitaire d'études et de recherches autochtones (CIÉRA)

ISSN

0701-1008 (print)

1708-5268 (digital)

[Explore this journal](#)

Cite this article

Nuttall, M. (2010). Anticipation, climate change, and movement in Greenland. *Études/Inuit/Studies*, 34(1), 21–37. <https://doi.org/10.7202/045402ar>

Article abstract

Drawing and reflecting on long-term research and fieldwork in Greenland, I seek through this article to broaden the discussion of adaptation, vulnerability, and resilience in the climate change literature to include a focus on *anticipation*. While adaptation is a reactive response to climate change, anticipation is more about intentionality, action, agency, imagination, possibility, and choice. It is also about being doubtful, unsure, uncertain, fearful, and apprehensive. Through a specific discussion of hunting, I argue that understanding local perceptions, concerns, preparedness and responses to changes in the environment depends on understanding the social and cultural context of anticipation, how people learn to anticipate, and the nature of that anticipation.

Anticipation, climate change, and movement in Greenland

Mark Nuttall*

Résumé: Anticipation, changement climatique et mouvement au Groenland

Réfléchissant sur ma recherche à long terme au Groenland, j'essaye dans cet article d'élargir la discussion sur l'adaptation, la vulnérabilité et la résilience dans la littérature sur le changement climatique afin de mettre l'un accent sur *l'anticipation*. Alors que l'adaptation est une réponse réactive au changement climatique, recentrer l'attention sur l'anticipation nous permet de voir l'importance de l'intentionnalité, l'action, l'agence, l'imagination, la possibilité et le choix. L'anticipation est également liée au doute, à l'incertitude, la crainte et l'appréhension. À travers à une discussion spécifique sur la chasse, je soutiens que la compréhension des perceptions locales, des préoccupations, de la préparation et des réponses aux changements dans l'environnement dépend de celle du contexte social et culturel de l'anticipation, de comment les gens apprennent à anticiper, et de la nature de cette anticipation.

Abstract: Anticipation, climate change, and movement in Greenland

Drawing and reflecting on long-term research and fieldwork in Greenland, I seek through this article to broaden the discussion of adaptation, vulnerability, and resilience in the climate change literature to include a focus on *anticipation*. While adaptation is a reactive response to climate change, anticipation is more about intentionality, action, agency, imagination, possibility, and choice. It is also about being doubtful, unsure, uncertain, fearful, and apprehensive. Through a specific discussion of hunting, I argue that understanding local perceptions, concerns, preparedness and responses to changes in the environment depends on understanding the social and cultural context of anticipation, how people learn to anticipate, and the nature of that anticipation.

* Department of Anthropology, University of Alberta, Edmonton, Alberta, T6H 2H4, Canada.
mark.nuttall@ualberta.ca

Introduction

The Arctic is undergoing a warming trend with no precedent in its recent history. Sea ice is thinning, permafrost is melting, seasonal snow is reduced, glaciers are receding at a rapid rate, terrestrial and marine animals are being affected, and the cultures and livelihoods of northern residents are under threat. Although climate change affects all northern residents, the Arctic's Indigenous peoples and local communities that depend on fishing, hunting, herding, and agriculture are facing special challenges to their ability to harvest wildlife and other food resources (e.g., ACIA 2005). The Arctic, of course, is not alone. Around the world, global climate change is transforming ecosystems, and the local and regional consequences are having profound and far-reaching implications.

Inuit societies have been celebrated in the literature for their successful strategies of adaptation to seasonal variability and limitations. Many of their short-term responses to climate variation and change appear to be based on a finely tuned ability to be flexible, to innovate, and to seize opportunities in the environment. One example is the movement of the Thule Inuit across the North American Arctic beginning a thousand years ago, from western Alaska eastward to the central Canadian Arctic and beyond to Hudson Bay, Labrador, and Greenland, which archaeologists, anthropologists, and historical ecologists cite to show how Arctic peoples have adapted and migrated while the climate has changed. Initially, for 400-500 years, mean summer temperatures were 1-2°C below current average ones. Then came the Medieval Climate Optimum, when summers were around 2°C higher on average than at present. The Canadian Eastern Arctic had less summer sea ice, longer periods of open water, and ice-free summers. These conditions opened the way for Inuit groups to venture into areas with a variety of marine mammals, mainly narwhal, beluga, harp seal and, significantly, the bowhead whale. The cultural effects were even more far-reaching. The incoming Thule Inuit being better adapted, they eventually displaced and/or assimilated the indigenous Dorset people (Nuttall et al. 2005).

Adaptation is now a policy and research priority. This concept, as Finan (2009: 176) argues, is key to climate anthropology, as are the concepts of *vulnerability* and *resilience* used by anthropologists and other social scientists to explain variations in adaptation success. Nelson et al. (2007: 113) consider adaptation to be a process of making decisions and taking actions in order to cope with changes in social-ecological systems "while maintaining the option to develop." Inuit—as anthropologists and Inuit leaders have argued—exemplify how human cultures interact with their localities and manage to survive and thrive in extreme environments. Yet current and projected climate change is provoking anxiety about community vulnerability and resilience, and the effectiveness of local strategies for responding to short-term and long-term local and regional effects. Politicians, community leaders, Indigenous peoples' organisations, scientists, anthropologists, conservationists, and many others are arguing that special attention is urgently needed to increase resilience to climate change and preparedness to respond to, cope with, adapt to and negotiate climate change and its impacts, risks, and opportunities. Drawing on my own research experience in Greenland, I will argue

the following: to understand local strategies of adaptation to environmental changes and to develop this resilience, we must understand and pay closer attention to the social and cultural contexts of anticipation, i.e., how people learn to anticipate.

The anthropology of anticipation

The past decade has seen a growing literature on the anthropology of climate change. Anthropologists now work on the human rights aspects, assess the vulnerability and resilience of communities (e.g., Hastrup, ed. 2009), examine rapid landscape change (e.g., Orlove et al. 2008), and investigate the nature of risk and the political ecology of disasters, hazards, and population displacement (e.g., Oliver-Smith 2009). They also consider the social construction of climate change through decision-making, politics, and power (e.g., Pettenger 2007) and its scientific construction through scenario-building and model-making (e.g., Lahsen 2005), and they work in contexts where anthropological knowledge and practice help to shape policy (e.g., Fiske 2009). Anthropologists are also finding roles in regional and global assessments of climate change, and they work on theorising and conceptualising how to bridge temporal and spatial scales, as well as seeking how to disentangle the effects of natural variability and change from those of human action.

Anthropology is much concerned with making sense of experience and seeking to understand the human world as a fundamentally social one that has different yet intersecting temporal and spatial modalities. To make effective policies or decisions on climate change, the starting point is a willingness to understand experience and its nature, as well as the interplay of social, political, cultural, and economic institutions. My concern here is to broaden the discussion of adaptation, vulnerability, and resilience in the climate change literature to include a focus on *anticipation*. This is not to suggest that the concepts of adaptation, vulnerability, and resilience are redundant, although the emphasis on them in many climate change studies ignores the extensive anthropological literature and theorising on agency, intentionality, and creativity, as well as work in the anthropology, sociology, and psychology of anticipation.

By considering anticipation, we may shed light on how people think about the world around them, how they orient themselves toward the future, and how they create and enact change within a world that is constantly becoming and being remade. While adaptation is largely about responses to climate change, anticipation is about intentionality, action, agency, imagination, possibility, and choice; but it is also about being doubtful, unsure, uncertain, fearful, and apprehensive. Anticipation helps to orient human action—and emphasises that people make the future, at least the immediate one, whereas adaptation helps to influence or constrain human action. Adaptation is reactive. Anticipation is predictive or proactive; it can take possible future events and the hope of achieving certain goals and ambitions into consideration.

As theoretical biologist Robert Rosen argued, anticipation is about thinking ahead and all living organisms exemplify naturally occurring “anticipatory systems.” Following Rosen, we could define anticipation as the ways of making choices and decisions based on predictions, expectations or beliefs about the future. He argued that “[a]n anticipatory system is a system containing a predictive model of itself and/or its environment, which allows it to change state at an instant in accord with the model’s predictions pertaining to a later instant” (Rosen 1985: 341). Theories of anticipation influence business management, particularly in such areas as strategic action and decision-making (e.g., Weick and Sutcliffe 2007), artificial intelligence, behaviourism in cognitive anthropology and cognitive psychology, and the anthropology of performance and skill (e.g., Carlson 1996). TenHouten (2008), for instance, argues that anticipation is a key mental resource that integrates cognition and affect.

Anticipation has interested philosophers from Epicurus through to Kant (see the latter’s discussion of “anticipations of perception” in *Critique of Pure Reason*) and up to the works of Husserl (1991) on consciousness and Bloch (1995) on the future. In anthropology and evolutionary theory, anticipation is often discussed in relation to the evolution of consciousness and the distinctiveness of being human, especially as the basis of adaptation (e.g., Bennett 1976). Being able to anticipate movement, to track game, and to secure a plentiful supply of food, for instance, has always given human groups an adaptive advantage. Anthropologists have also argued that the study of anticipation is needed to explain socio-cultural change and to contribute to public policy (e.g., Textor 1985).

While the anthropology of anticipation is relevant to processes of rapid change, little of it appears to have entered discussions of climate change. This is all the more curious since these discussions involve models, scenarios, speculative forecasts, images, representations, simulations, storylines, and anxieties about a world that climate change will transform in the not too distant future. Adams et al. (2009) argue that our current moment in history is partly defined by a state of anticipation. If so, anticipation may be a prerequisite for thinking about adaptation to climate change, and researchers may well need to study its social, cultural, and cognitive aspects within local settings.

I am not concerned here with an anthropology of the future, but with the idea of anticipation as a way of orientation, exploration, and possibility—a way of imagining, framing, and viewing the world. Anticipation thus differs from forecasts and scenarios in that it involves a way of finding one’s way in and around an environment and in and around one’s social and cultural worlds. Though not prediction, anticipation draws upon predictive capabilities, knowledge, experience, and skill. Life does not flow from the past through to the present and on to the future in a straightforward linear fashion. Anticipation is relational in the sense of connecting several points in time—people anticipate at a specific point in time, but what is being anticipated occurs at specific times in the near or distant future. As such, it entails and involves exploration, discovery, experience, and curiosity. It is a form of learning. TenHouten (2008) argues that anticipation is primarily a cognitive process, requiring a kind of “natural history”

intelligence, and involving classification and analysis of the world “so that its constitutive events and processes can be understood and predicted.” The world is thus explored and its potential assessed, and people learn how to anticipate the future rather than being surprised by it.

Dennett (1991) has described the human brain as an “anticipation machine” that can “think ahead.” Pannenberg (1985: 525) has written that human beings are “set apart by the development of a consciousness that bridges time, cancels (within the limits imposed on it) the distinction of things and times, and sublimates this in the unity and continuity of its own present, thus giving a presentiment of eternity.” Anticipation is thus about foresight, rather than expectation, and about looking to horizons of possibility. As Bennett (1976: 847) puts it, “Anticipation in the human realm may appear in the form of purpose, needs, desire, foresight, will, or simply consciousness of continued existence.” Yet, Derrida (1990: xxv-xxvi) argues that thinking about possibility and about each beginning entails, as a starting point, an anticipation not just of the future but also of the past, a past that is “reconstituted by the originary present and by the anticipated future.” Consciousness bridges time and this, as Pannenberg (1985: 522) argues, “derives from anticipation of the future” which “makes it possible to deal actively with things in the context of human goals.”

Anticipation, movement and becoming

Climate change does not always provoke a sense of fragility about society and the environment, feelings of hopelessness about the future, or looming catastrophe. The overall response is rather anticipation of what is to come. Such feelings can be overwhelmingly positive or negative and anticipation is an emotional stone’s throw away from apprehension. Adaptation and adaptive capacity can be understood as an ability to anticipate, and to be successful at it, especially in terms of intention and action, realising ambition, and avoiding the undesirable. But anticipation is also about perceiving the world, relating to it, moving around in it, making sense of it, thinking about what to expect from it, and what possibilities can be gained from it. It is not just a matter of knowledge, but one of ontology. Inuit have not just adapted to the Arctic environment; they have anticipated the possibilities and conditions for successful engagement with it. In Greenlandic traditional communities, e.g., hunting and fishing involve not merely procurement, but also anticipating, waiting, hoping, pondering, and imagining the movements of seals, narwhals, fish, and other animals to be caught, as well as anticipation and apprehension of the return home (Nuttall 1992).

In Greenlandic, anticipation may be translated by either *isumalluarneq* or *ilimasunneq*, which have “thought”/“reason” (*isuma*) and “expect” (*ilima*) as their roots. *Ilimasunneq* conveys not only “anticipation” and “expectation,” but also “feeling” and “clue.” Hunters express this concept in a number of other ways, e.g., *ilimagaa* means “to expect something,” while *neriugaa* means “to hope for, or be hopeful of something.” Anticipation also, but not always, involves a measure of uncertainty, anxiety, nervousness, fear and, ultimately, disappointment and

disillusionment. In northern Greenland, hunters set out on the ice in winter or go out to sea in summer with the hope of returning with seals (they may say they are expecting something good to come—*ilimasuarnarpoq*), while anticipating that they may not catch anything at all. One can be hopeful (*neriugaa*) or fearful, especially of bad weather (*aarleraa*). Indeed, being prepared for uncertainty, disappointment, and failure (i.e., anticipating this possibility and expecting to be anxious, e.g., in terms of not feeling safe—*ilimasuppoq*) is a hallmark of successful adaptation. In this sense, anticipation is at once an envisioning of possibility, an expression of curiosity, a pursuit of the desirable, and an avoidance of the undesirable. Over the years, in small villages along the north, south, and east coasts of Greenland, as well as in larger towns, I have come to appreciate that people see the world around them as one of constant motion, uncertainty, flux, and surprise because such a perception is key to ensuring daily survival, and negotiating and understanding the social world (Nuttall 2009). Hence, the word *pinngortitaq* is often translated by “nature” or “creation” (*pinngortitsisoq* means “creator”), but its literal meaning is “to come into being.” It derives from *pinngorpoq*, a process of “becoming,” and “coming into existence” that refers to the unfolding of possibilities and opportunities. The world is thus a work in progress. When they travel, navigate, and move through local memoryscapes of individual and community experience, hunters eventually acquire intimate knowledge (*ilisimassuseq*) of their environment (Nuttall 1992). They come to understand the movement and habits of seals and other animals, and the articulation of knowledge is an expression of embedded skill. Hunters also learn to appreciate that the environment moves and shifts, and that *pinngortitaq* is a process of the world around them coming into existence at all times and in all places. To quote Whitehead (1920: 72), what is perceived “as present is the vivid fringe of memory tinged with anticipation.” Nothing is ever fixed or certain and success as a hunter or fisher depends not just on skill, but also on ability to be open to surprise and uncertainty (Nuttall 2009), to the “way of *pinngortitaq*” (*pinngortitat ileqqui*).

Such a worldview may lead to a sense of fatalism, a resignation to one’s inability to influence events that will shape the future. Nonetheless, Greenlanders often answer many questions with *immaqa*, which means “perhaps” but also “what if?” and can convey a feeling of possibility as well as doubt. Movement and fluidity are apparent not only in the environment, but also in the flow and circulation of social life and in the endless formulations of kinship and social relationships—for example, following a person’s death, there is often anticipation of a child’s birth and the naming of that child after the deceased (Nuttall 1992). The world is perceived as one of constant becoming, a world of renewal and beginnings, in which imagination and creativity are put into daily practice. Nothing can be expected, much can be anticipated, and surprise is one thing that is certain. What, then, is the sense of anticipation when a glacier recedes and reveals a hitherto hidden landscape?

The emerging land

Amid scientific talk of “tipping points” and environmentalist discourse of “irreversible Arctic meltdown,” Greenland has come to represent the image and reality of catastrophic climate change. Recent years have seen widely broadcast scientific reports on the melting of Greenland’s inland ice and the loss of sea ice along the north and east coasts. Climate models suggest that average temperatures in Greenland will rise by more than 3°C this century and lead to large-scale melting of the inland ice (e.g., ACIA 2005). Covering an area of 1.7 million km² and containing about 8.4% of the world’s total glacial ice, it is the second-largest ice mass after Antarctica’s 13-million km² ice sheet. The Intergovernmental Panel on Climate Change’s fourth global assessment of climate change concluded that airborne, satellite, and seismic data indicate pronounced thinning of the inland ice in places where summer melt has been increasing over the last 20 years, while there is evidence of slower rates of thickening of the ice much farther inland (IPCC 2007). The entire Greenland ice sheet contains enough water to raise global sea levels by seven metres.

In Greenlandic, the inland ice is *sermersuaq*, “the great ice.” Greenland is less than 20% ice-free and its cartographic image is dominated by this massive ice sheet. Around its edges, the inland ice has many outlet glaciers. While the ice flows relatively slowly in the central parts of the inland ice, at only a few metres each year, the outlet glaciers move far faster. In a sense, these glaciers are ice streams draining enormous interior basins. With the melting of the inland ice, a new Greenland is emerging. Mountains, headlands, fjords, and islands are appearing and cartographers are beginning to revise maps and charts with names of places previously hidden under the ice (Nuttall 2009). For example, the retreat of the Sermeq Avannarleq glacier near Ilulissat in Disko Bay has recently created a new island, which has been named Qarsunga (“always pale island”). It was reported widely in the regional and global press as yet another example of unprecedented climate change (e.g., Nuttall 2009).

But while the world’s media may give the impression that such changes are recent, scientists have been observing and monitoring glacial retreat in Greenland for several decades and their data are often supported by the observations of local people. The Danish Pearyland Expedition, which explored parts of northern Greenland in the late 1940s, concluded that the Chr. Erichsen Bræ glacier receded 35 metres annually between 1947 and 1950. The expedition referred to maps made of Independence Fjord in Greenland’s far north by previous Danish expeditions in 1906-1908 and 1920-1923, and concluded that glaciers in the area had “shrunk considerably.” In a preliminary account of the expedition’s activities during the winter of 1948-1949, and published in the journal *Arctic*, the scientific team observed that “Today, Chr. Erichsen Bræ is practically a mass of dead ice, and the rate of movement is insignificant” (Winther et al. 1950: 12). In northwest Greenland, the front of the Upernavik Isstrøm glacier at 72° N was first mapped in 1850 and it more or less maintained its position until the 1940s, when it began to recede. Over the last century it has retreated more than 20 km, and areas north of it have also retreated significantly in the last 150 years, revealing a

cluster of hilly islands once covered by the ice. Glaciologists may not yet fully know why glaciers surge and retreat, but glacial movement is nothing new to the Inuit who have watched the changing icescape, and the emerging or disappearing landscape. The ice has its own agency and sentience. I was once told by an elderly hunter in the village of Kangersuatsiaq that “[t]he ice is always moving.” Movement is an everyday fact of life, whether in the social worlds of Inuit communities, in the sudden migratory shifts of beluga whales, or in the behaviour of glacial ice.¹

Knowing and appreciating that the ice is always moving does not necessarily mean that people are not worried. In Greenland’s northern villages and smaller settlements, hunters talk of their fears of deteriorating sea ice and glacial melt leading to the end of their traditional lifestyles (Hastrup 2009; Nuttall 2009). Scientific scenarios suggest that climate change will have impacts on marine and terrestrial animal populations in Greenland, affecting their size, structure, reproduction rates, and migration routes. While such scenarios offer storylines for a range of possible futures, Arctic residents, particularly those who depend on living marine resources for their livelihood and cultural survival, say they are feeling significant transformations already. These changes, however, accentuate those already being experienced as a result of social and economic shifts and the broader global processes affecting remote Arctic communities. Furthermore, climate change often has less immediate impact on everyday life than does the lack of specific government policies to create sustainable economic conditions in many small Greenland villages, as well as the gradual erosion of subsidies and the imposition of hunting and fishing quotas.

Nonetheless, unstable sea ice is beginning to make ice-edge hunting more difficult and dangerous. Hunters in northern Greenland tell me that travelling to the edge of the ice (*sinaaq*) makes them anxious in a way it has never done—they say it is “more slippery” (*quasarpoq*) than before, and that they feel more secure using a dogsled on the solid ice attached to the shore (*qaanngoq*). Changes in snow cover are also hindering travel to hunting and fishing areas by dogsled or snowmobile, thus causing local adjustments in winter travel, hunting practices and fishing strategies. Worries over the loss of polar bears and their habitat and talk of the last days of the Arctic hunter have captured public attention and provoked the alarm of conservationists and Indigenous activists. In the public imagination, Greenland’s environmental transformation has become one of the starkest examples of global climate change.

Anticipating, hunting, striving

How will Greenlanders imagine themselves and their families living in an altered world that will radically differ from the one they know now? It depends on whom you speak with and in what part of the island they live in. Hunters in northern communities are undeniably experiencing the reality of climate variation as they move and travel

¹ See Cruikshank (2005) for an excellent discussion of Indigenous and scientific perspectives on glacial movement and glacial retreat in northwest North America.

across increasingly thin sea ice. Yet, for others, there is an anticipation of good things from climate change. In south Greenland, sheep farmers are benefiting from the expansion of grazing land and cropland, while politicians and business leaders hope that a warmer climate means easier access to oil, gas, and minerals, and the promise of greater economic independence from Denmark, as well as jobs for communities struggling with making a living from the fishing industry. Residents of Maniitsoq, in central west Greenland, hope that Alcoa will build an aluminium smelter nearby and are seemingly more interested in the promise of jobs and economic prosperity than in the annual emissions of 4,600 tons of sulphur dioxide and 450,000 tons of carbon dioxide estimated by the Strategic Environmental Assessment (Nuttall 2008). Some politicians in Nuuk anticipate a time in the not too distant future when revenues from extractive industrial development may enable Greenland to become fully independent of Denmark (Nuttall 2009). From this perspective, climate change, then, does not necessarily threaten Greenlanders but empowers them. Greenland's politicians and business leaders, eager to attract energy multinationals, mining companies, and aluminium manufacturers, are extolling their country's virtues as a green land, or at least as a land that is getting greener. For some, climate change presents opportunities and forms of adaptation to an increasingly globalised world that are framed within a Greenlandic political discourse of nation-building and development, thus giving a positive spin to the prevailing discourse of environmental catastrophe.

This Greenlandic political discourse is also distinctive in the way it differs from many other Indigenous responses to climate change—specifically those of Canadian Inuit leaders—and the scientific rhetoric about Arctic meltdown as social and environmental crisis (Nuttall 2009). At the “Indigenous Peoples’ Day,” a side-event at Denmark’s National Museum during the United Nations Climate Change Conference (COP-15) held in Copenhagen in December 2009, Greenland’s Minister of Social Affairs, Maliina Abelsen emphasised that “in Greenland, we refuse to be mere victims of climate change” and went on to compare Greenland’s situation with developing countries and economies in transition. She added,

This doesn’t mean that Greenland is not concerned about global warming and does not feel and see the climate change effects. We indigenous peoples are often the first witnesses. In fact—global warming is something very real to us—it’s here already. Already now the hunting season for hunters who hunt off the sea ice for seals and whales—on the East coast of Greenland and in the Northwestern part of Greenland—has been reduced significantly, making it almost impossible for the hunters to sustain their incomes and their families (Abelsen 2009).

In those Greenland villages where the main activities are hunting and fishing out on the sea, there is a nervous anticipation that climate change will contribute to the end of community life. For hunters, fishers, and their families, everyday life is marked and punctuated by a series of anticipatory moments related to finding and catching marine mammals and fish, as well as travel and navigation. Being so dependent on marine resources, it is perhaps not surprising that daily discussion in villages along Greenland’s coasts so often includes stories of the sea and its power, the uncertainty of

ice, places where men hunt and fish, and apprehension and anticipation over weather changes that may mean poor hunting conditions (Nuttall 1992, 2001). In northern Greenland, such as along the vast coastline stretching from Uummanaq to Qaanaaq, people have long relied for their livelihoods on hunting marine mammals such as seals, walrus, narwhals, beluga, fin and minke whales, and polar bears, as well as fishing for fjord cod, Greenland halibut, salmon, and Arctic char. Land animals such as caribou and Arctic foxes have also been of some importance. *Piniartoq*, the Greenlandic word for hunter, translates literally as “one who wants.” It derives from *piniarpog*, “to make an effort to get or to do something,” “to want,” and “to acquire.” *Piniarpaa* means “to strive after something,” while *piniarlupog* indicates that the hunter has been “striving in the right way” and is diligent and successful. To hunt, therefore, is to strive for something one wants and needs. A second meaning of *piniartoq* is “provider.” Another word sometimes used to describe a hunter is *upalungaartoq*, literally “someone who is prepared and ready.”

In addition to having reliable equipment and skills, knowing the movement, behaviour, and habits of animals is vital for their successful capture as, indeed, is being able to anticipate their movements. To take an example, when out hunting seals in spring in northern Greenland, hunters should know how to distinguish between the different marks on the ice that seals make. An *allu* is the seal’s breathing hole and a hunter will stand patiently, often for hours in freezing temperatures, waiting for the seal to surface for air. A slight stirring of the water or tiny bubbles rising to the surface indicate the presence of a *puisartortoq*, a seal in its breathing hole. Other holes called *pugguvik* are made by seals but may not be recent, and the hunter needs to know what they look like and pass them by, rather than stopping and waiting needlessly. Hunters looking for a seal basking on the ice (called *uuttoq*) scan the icescape with binoculars, but the presence of a *kikkuleq*, a hole the seal has made specifically to crawl up from, as distinct from an *allu*, means an *uuttoq* may not be too far away. In the summer, an animal’s behaviour—such as the way a seal swims or perhaps repeatedly surfaces for air—can also reveal tidal movements or whether an iceberg is about to shift its centre of gravity, helping the hunter to anticipate danger. Watching such signs and responding appropriately is a conscious articulation of knowledge, but it is also about knowing how to anticipate. Being unable to anticipate and thus being unprepared (*upalungavoq*) can mean not only poor success in hunting and fishing, but also death.

Hunters, however, do not all simply belong to one category of *piniartut*: their expertise, skills, and luck are constantly tried and tested with each trip and hunting expedition. Their local reputations are thus always being enhanced, reconsidered, or re-evaluated. One can be a particular kind of hunter, e.g., a *puisikkajooq*, someone who catches many seals, or a *pisagarajooq*, a lucky hunter. A young hunter may harbour hopes that his contemporaries and elders may one day recognise his abilities and ascribe to him the status of *piniartorssuaq* (‘great hunter’). Such status is often fickle, however, and should never be assumed to be lifelong. In the late 1980s, in villages in the Upernavik district along the northwest coast, and also in south Greenland several years later, I often heard it lamented that occasionally someone who was once a *piniartorssuaq* has now become an *angujuttoq*, ‘someone who never catches

anything.’ The hunter must also be prepared to anticipate and deal with this change in status.

Hunting “involves movement and uncertain action, situational diversity and distant rewards” (Rosaldo 1980: 114). Knowledge of good hunting places, and the names and stories associated with the landscape, seascape, and icescape also enhance chances of navigating and moving around successfully. Place names recount not only a community’s past, its significant events, and the astonishing things that may have happened there, but also movement, uncertainty, and success in hunting and fishing. This information provides clues to negotiating the present and thinking about the future, as well as connections and meanings (Nuttall 1992). There is, in the words of Whitehead (1920: 69), “no sharp distinction either between memory and the present immediacy or between the present immediacy and anticipation.”

Hunters and fishers watch the changing appearance of the sea or the ice, but they also listen to it and learn to be attentive to sounds telling them about the behaviour of water, ice, and icebergs. When they talk about the weather, they report subtle changes in the mood of the sky and their effects on the sea. People keep an eye on the waves (*malit*) in order to anticipate and recognise when a large wave (*maliarsuk*) is about to become a swelling wave (*ingiulik*), which may make a hunting trip by small boat uncomfortable or dangerous because of a coming storm (*anorersuaq*). A hunter must anticipate that a rising sea (*qaffiavoq*) may develop unexpectedly, only to calm down just as suddenly without too much warning, leaving nothing but a barely discernible ripple (*minittorneq*). The seascape is in constant flux. Hunters and fishers do not talk about the sea as a featureless expanse of ‘broad water’ (*imartuneq*). Their discussion is embellished with descriptions of its many features and characteristics—e.g., eddies are called ‘things which bubble and boil under the water’ (*qalaliatut*), and the many places where one can see the land casting shadows on the water (*qoqaat*). These places are sometimes given names. Just as *qoqaat* can darken the sea, the water can also reflect light (*qillaaluttoq*) in certain places, at different times of the day, and in different seasons. The sea’s surface (*immap qaa*) can twist, move, dance, and change (Nuttall 1992). When I first lived in northern Greenland in 1987, I was taught words that hunters impressed upon me as being essential to my safety on the water. Being able to steer a boat, they told me, was easy. Anyone can start an outboard engine and, with a little practice, travel out to sea. What was difficult, and what I needed to understand, was knowing (in other words, being able to anticipate) when that boat was in danger of being driven away by the wind or the current (*saavippoq*), or whether I could recognise *tininneq* (‘low water’), *tinippoq* (‘when the tide was going out’), or *ulippoq* (‘when the tide was coming in’), or whether I could tell if I was being carried out to sea with the ice (*uisaavoq*). I was being told the importance of being able to anticipate any number of possibilities and it is something I have remembered every time I go to Greenland, get in a boat, and travel with hunters and fishers.

Discussion

Anticipation depends on there being a degree of flexibility in allowing hunters to move around the environment, to make choices, to act upon them, and to seize opportunity. In villages around the area of Upernavik, such as Kangarsuatsiaq, Nuutarmiut, and Kullorsuaq, as well as in south Greenland in the area around Nanortalik, I have listened to hunters talk about the seasonal movements they make around their coastal localities, and also relate local histories of changes in settlement patterns that people made in the past. In both north and south Greenland, people have established new settlements and then abandoned them after a few weeks or a few years. These places are inscribed on maps, are evident in the landscape today in the shape of abandoned and ruined houses, and are spoken about when people discuss past events or tell stories. Some settlements, such as Kuuk, north of the town of Upernavik, were abandoned, later resettled, then abandoned, and then resettled again. There are numerous similar examples of places that were settled temporarily or long-term and are now empty or used occasionally and seasonally. In 1925, a few families moved to Qaarusulik, an island in the southern part of Melville Bay and some 20 km north of Kullorsuaq (established in 1928). Today, people from Kullorsuaq spend time in Qaarusulik in late winter, spring, summer, and autumn, and use it as a base for hunting polar bears as well as narwhals and beluga. Once, staying at Qaarusulik with a family from Kullorsuaq in March, I was taken on a walk across the island to be shown the graves of people who had lived and died there. “It was a hard life for them,” my host told me, “but a good one.”

Petersen (2003) describes some of this movement in rich detail, as well as some of the reasons why people moved and why some places were populated and later abandoned. The reasons do not always have to do with either government policy or the trade economy—even if government policies of centralisation, need for education, feelings of isolation, and proximity to trading posts did play their part. Many places were populated because of the promise of rich hunting and fishing grounds, competition between hunters, overcrowding in established settlements that necessitated a move elsewhere, or perhaps because of ecosystem changes. Similarly, they were depopulated because life became rather difficult or impossible. As Peterson (*ibid.*: 112) observes, people had their “ups and downs.”

What is apparent in the narratives and archival material Petersen collected, as well as from the accounts people have told me during my own fieldwork, is that the hunters who sought out new areas were considered to be pioneers, people who looked ahead and had foresight (*siunerqarpoq*). *Siulersorpaa* means ‘to walk in front’ or ‘to lead’ and someone out in front, and an ancestor is also *siuaasaq*. They were mainly recognised as ‘great hunters’ (*piniartorssuit*). They went in search of new and better hunting grounds and, if these did not in the end sustain people, there were other places, other opportunities beyond the next island, around the next headland, and deep in the next fjord. People knew something about the places they sought out and settled in, whether from experience or hearing stories about them or, as Petersen observes when writing about the northward expansion of hunting settlements in Upernavik district,

experience had shown that hunting got better and better towards the north. People travelled from regions where char fishing and caribou hunting could supplement the ordinary catch to new regions where these resources were scarce. But this was amply compensated by the better hunting of seal, narwhal and beluga, and not least polar bear, which could be caught most easily in the north, and which meant prestige for the hunter (*ibid.*: 108).

While experience showed that hunting got better towards the north, it was also a matter of not just knowing through experience but also anticipating that hunting would be better based on experience with previous and current hunting grounds, on what one might expect from the environmental conditions (e.g., proximity to ice fjords), and on the movement and behaviour of animals that one encountered and observed. In this way, hunters aim to strive for something (*siuneraa*), and foresight is not so much about prediction (*siulittuut*) as it is about understanding and the state of always being prepared (*upalungaarpog*). As one hunter from Kangersuatsiaq once explained to me when he decided, many years ago, to go and look for seals in places he had never been before, places where older hunters could not remember people having had much luck, “The seals and the fish come here from somewhere, move on, and then come back. So, if I go to a new place, I expect that I may find something.” He went on to tell me that being a hunter meant being constantly prepared for something that is about to happen (*upalungaarsarpog*). Successful anticipation depends to a certain extent on ability to act on previous experience and apply knowledge to new situations and forms of engagement.

Conclusion

My concern here has been to focus on the place of anticipation in climate change studies and to point to the ethnographic possibilities of understanding anticipation in a multiplicity of ways—as a form of knowledge, as ontology, as foresight and insight, as engagement, as orientation, as self-realisation, and as a consideration of potential. Anticipation concerns the future, or a range of possible futures—whether immediate, near, or distant—how people imagine themselves into it, and how they prepare for possibility and opportunity, for challenges, and for the effects of events and action. The loss of flexibility and barriers to adaptation, however, all have a bearing on how hunters in Greenland are able to prepare for living in an Arctic homeland affected by dramatic and far-reaching climate change. Dennett (1991) argues that anticipation acts to guide us through a world of shifting conditions and sudden surprises—people gather information, they acquire knowledge and use it not just to circumvent and avoid difficult situations, but also to *produce* the future by anticipating in order to stay one step ahead of disaster and catastrophe. Climate change brings challenges (and opportunities) to the environment and society. By understanding how anticipation is inherent in everyday life and implicit in social relations and cultural practices, and how aspects of those relations and practices can emerge from anticipation, we may better understand successful local strategies of adaptation and the nature of resilience.

Acknowledgements

This article was written as part of an Academy of Finland-funded program, “Human-Environment Relations in the North,” based at the Thule Institute, University of Oulu, Finland, and the Department of Anthropology, University of Alberta, Canada. I am grateful to the two anonymous reviewers who provided considered and thoughtful comments and criticism on the first draft.

References

- ABELSEN, Maliina
2009 Address on behalf of the Greenland Government, Indigenous Peoples’ Day, National Museum of Denmark, Copenhagen, December 12, 2009, organised by the International Work Group for Indigenous Affairs and the Tebtebba Foundation.
- ACIA (ARCTIC CLIMATE IMPACT ASSESSMENT)
2005 *Arctic Climate Impact Assessment*, Cambridge, Cambridge University Press.
- ADAMS, Vincanne, Michelle MURPHY and Adele E. CLARKE
2009 Anticipation: technosciences, life, affect, temporality, *Subjectivity*, 28: 246-265.
- BENNETT, John.W.
1976 Anticipation, adaptation, and the concept of culture in anthropology, *Science*, 192(4242): 847-853.
- BLOCH, Ernst
1995 *The Principle of Hope*, Cambridge, MIT Press.
- CARLSON, Marvin A.
1996 *Performance: a critical introduction*, New York and London, Routledge.
- CRATE, Susan A. and Mark NUTTALL
2009 Epilogue: anthropology, science and climate change policy, in S.A. Crate and M. Nuttall (eds), *Anthropology and Climate Change: from encounters to actions*, Walnut Creek, Left Coast Press: 394-400.
- CRUIKSHANK, Julie
2005 *Do Glaciers Listen?: local knowledge, colonial encounters, and social imagination*, Vancouver, UBC Press.
- DENNETT, Daniel
1991 *Consciousness Explained*, Boston, Little, Brown and Co.

- DERRIDA, Jacques
1990 *The Problem of Genesis in Husserl's Philosophy*, Chicago, University of Chicago Press.
- FINAN, Tim
2009 Storm warnings: the role of anthropology in adapting to sea-level rise in southwestern Bangladesh, in S.A. Crate and M. Nuttall (eds), *Anthropology and Climate Change: from encounters to actions* Walnut Creek, Left Coast Press: 175-185.
- FISKE, Shirley
2009 Global change policymaking from inside the Beltway: engaging anthropology, in S.A. Crate and M. Nuttall (eds), *Anthropology and Climate Change: from encounters to actions* Walnut Creek, Left Coast Press: 277-291.
- HASTRUP, Kirsten (ed.)
2009 *The Question of Resilience: social responses to climate change*, Copenhagen, The Royal Danish Academy of Science and Letters.
- HASTRUP, Kirsten
2009 Arctic hunters: climate variability and social flexibility, in K. Hastrup (ed.), *The Question of Resilience: social responses to climate change*, Copenhagen, The Royal Danish Academy of Science and Letters.
- HUSSERL, Edmund
1991 *On the Phenomenology of the Consciousness of Internal Time*, Dordrecht, Kluwer Academic Publishers.
- IPCC (INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE)
2007 *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Cambridge, Cambridge University Press
- LAHSEN, Myanna
2005 Seductive simulations: Uncertainty distribution around climate models, *Social Studies of Science*, 35(6): 895-922.
- NELSON, Donald.R., W. Neil ADGER and Katrina BROWN
2007 Adaptation to environmental change: contributions of a resilience framework, *Annual Review of Environment and Resources*, 32(11): 10.
- NUTTALL, Mark
1992 *Arctic homeland: Kinship, community and development in northwest Greenland* Toronto, University of Toronto Press.

- 2001 Locality, identity and memory in South Greenland, *Études/Inuit/Studies*, 25(1-2): 53-72.
- 2008 Climate change and the warming politics of autonomy in Greenland, *Indigenous Affairs*, 1-2: 44-51.
- 2009 Living in a world of movement: human resilience to environmental instability in Greenland, in S.A. Crate and M. Nuttall (eds), *Anthropology and Climate Change: from encounters to actions*, Walnut Creek, Left Coast Press: 292-310.

NUTTALL, Mark, Fikret BERKES, Bruce FORBES, Gary KOFINAS, Tatiana VLASSOVA and George WENZEL

- 2005 Hunting, herding, fishing and gathering: indigenous peoples and renewable resource use in the Arctic, in ACIA, *Arctic Climate Impact Assessment*, Cambridge, Cambridge University Press: 649-690.

OLIVER-SMITH, Anthony

- 2009 Climate change and population displacement: disasters and diasporas in the twenty-first century, in S.A. Crate and M. Nuttall (eds), *Anthropology and Climate Change: from encounters to actions*, Walnut Creek, Left Coast Press: 116-136.

ORLOVE, Ben, Ellen WIEGANDT and Brian LUCKMAN (eds)

- 2008 *Darkening Peaks: glacier retreat, science and society*, Berkeley, University of California Press.

PANNENBERG, Wolfhart

- 1985 *Anthropology in Theological Perspective*, London, T&T Clark.

PETERSON, Robert.

- 2003 *Settlements, kinship and hunting grounds in traditional Greenland*, Copenhagen, Danish Polar Centre, Meddelelser om Grønland, Man & Society, 27.

PETTENDER, Mary E. (ed.)

- 2007 *The Social Construction of Climate Change: power, knowledge, norms, discourses*, Aldershot, Ashgate.

ROSALDO, Michelle

- 1980 *Knowledge and Passion: Ilongot notions of self and social life*, Cambridge, Cambridge University Press.

TENHOUTEN, Warren D.

- 2008 Anticipation: a key cognitive-affective resource for the evolution of the human mind, Paper presented at American Sociological Association,

Annual Meeting, Boston, July 31, 2008 (online at: http://www.allacademic.com/meta/p239516_index.html).

TEXTOR, Robert B.

1985 Anticipatory anthropology and the telemicroelectronic revolution: A preliminary report from Silicon Valley, *Anthropology and Education Quarterly*, 16(1): 3-30.

WEICK, Karl E. and Kathleen M. SUTCLIFFE

2007 *Managing the Unexpected: resilient performance in an age of uncertainty*, San Francisco, Jossey-Bass.

WHITEHEAD, Alfred North

1920 *The Concept of Nature*, Cambridge, Cambridge University Press.

WINTHER, P.C., J. TROELSEN, K. HOLMEN, P. JOHNSEN, B. FRISTRUP, B. and E. KNUTH

1950 A preliminary account of the Danish Pearyland expedition, 1948-9, *Arctic*, 3(1): 2-13.