

LOSING GROUND: AN ETHNOGRAPHY OF VULNERABILITY AND CLIMATE
CHANGE IN SHISHMAREF, ALASKA

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By

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Abstract

This dissertation presents an ethnography of vulnerability in Shishmaref, Alaska. The village of Shishmaref, population 563, faces imminent threat from increasing erosion and flooding events – linked to climatic changes and ecological shift – making the relocation of residents off of the island necessary in the foreseeable future. In spite of ongoing conversations with government agencies since 1974, an organized relocation has yet to occur in Shishmaref.

While ecological shift and anthropogenic climate change are no doubt occurring in and around the island, the literature on vulnerability and disaster predicts that social systems contribute at least as much as ecological circumstances to disaster scenarios. This research tests this theory and asks the question: what exactly is causing vulnerability in Shishmaref, Alaska?

The resulting dissertation is an exploration of the ecological, historical, social and cultural influences that contribute to vulnerability and risk in Shishmaref. Unlike common representations of climate change and disaster that present the natural environment as a sole driver of risk, this research finds complex systems of decision-making, ideologies of development, and cultural assumptions about social life contribute to why Shishmaref residents are exposed to erosion and flooding and why government intervention and planning remains difficult.

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Chapter One: Introduction

1.1 Shishmaref is Everywhere

In recent years, there has been an explosion of awareness of environmental migrants and environmental migration linked to climate change in both popular and scientific dialogue. When I teach courses on climate change at Oregon State University today, Tuvalu, the Maldives, and ‘those villages in Alaska’ – places that have been identified as communities of potential environmental migration linked to climate change – are known and recognized by many of my students. Each month I receive emails from colleagues, friends, and family members about stories they’ve seen about Shishmaref or about Alaska and the migrations associated with climate change. I have been interviewed by multiple media outlets preparing stories on Shishmaref (USA Today, The UK Financial Times, The Munich Re Foundation Newsletter), and contacted by other graduate students and faculty, asking for assistance, literature review, and direction in studying environmental migration linked to climate change in general, and in Alaska specifically.

From my perspective as a researcher who was invested early in the topic of migration in Alaska driven by ecological change, I have witnessed the crest of interest in and enthusiasm for: (1) climate change outcomes; (2) migration linked to climate change; and (3) Shishmaref as a quintessential example of these two phenomena. In the summer of 2012, as one of my students was completing a research project on Evangelical

environmentalism, he exclaimed during an in-class presentation: “Shishmaref is everywhere!”

To be sure, Shishmaref appears omnipresent – in my inbox, in my classroom, in the newspaper stories I read and the interviews I conduct – because this is my field, the focal point of my research, and the center point of my attention for the last 5 years. But there is also something absurd about an outsider’s claim that this 600 person, primarily Iñupiaq village in extremely rural, west coast Alaska is ‘everywhere.’ In comparison, other Seward Peninsula villages such as Wales, White Mountain, and Little Diomedé, are not ‘everywhere,’ even if one is looking for them. The question becomes: 1) what is really happening in Shishmaref and, 2) why is it eliciting so much attention?

1.2 Migration and the Environment

To understand why and how Shishmaref came to be an important case study for researchers interested in environmental migration it is important to understand something about migration itself as a research topic. Throughout the greater part of the 20th century, social scientific research on human migration frequently failed to identify natural or environmental systems as driving factors for migration decisions (for reviews see Piguet et al. 2011; Morinière 2009). Piguet et al. (2011) attribute the lack of environmental drivers in human migration research to a Western European/North American bias towards the belief that “technological progress would decrease the influence of nature on human life” (Piguet et al. 2011:3), a trend that persisted until well into the latter half of the 20th century. Within this rubric, migration was an economically decision, not an

environmentally driven one. Poor economies pushed migrants, better economies pulled migrants – the environment was distal as a relevant mechanism for migration. It was under these intellectual circumstances that a surprising essay by Essam El-Hinnawi, published by the United Nations Environmental Programme in 1985, defined environmental refugees as,

those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life [sic] (El-Hinnawi 1985:4).

In 1990, the International Panel on Climate Change (IPCC) made the claim that one of the most significant outcomes of anthropogenic climate change on human populations may be forced migration (IPCC 1990). In the report, the IPCC stated that the gravest effects of climate change may be those on human migration as millions are uprooted by shoreline erosion, coastal flooding and agricultural disruption (1990). In 1993, Norman Myers further linked climate change and migration when he estimated that up to 150 million people could be forced to migrate due primarily to sea level rise and desertification by the year 2050 (Myers 1993). By 2008 and 2011 the International Organization on Migration (IOM) released estimates that projected between 200 million to 1 billion potential environmental migrants in the coming century (IOM 2008; 2011). Thus, in just over a quarter of a century, analysis of human migration scenarios changed from failing to recognize the environment as a significant push factor in migration, to

estimating that as many as *one out of every nine people on the planet* (one billion environmental migrants / 8.9 billion, estimated population in 2050 (UN 2005:4)) could be an environmental migrant.¹

These large estimates appeared in peer reviewed theoretical papers (Myers 1993), policy reports (Myers and Kent 1995), and governmental and non-governmental organization reports (IOM 2008), which identified areas of the world that were vulnerable to small or large changes in climate or environmental conditions that could trigger mass migrations. The next step was mapping these areas. Maps of hot spots of ‘environmental migrations’ quickly came into being and gave a visual representation of evolving reports. In particular, Emmanuelle Bournay created a map (Figure 1.1) for the newspaper, *Le Monde Diplomatique*, that was based on Norman Meyers 2005 report on environmental migrants and the areas so significantly affected by ecological shift that migration would ensue. Bournay’s map was featured on UNEP’s website (though later removed) and circulated widely among scholars and policy makers. It is still featured on the Wikipedia site that explains environmental migration (http://en.wikipedia.org/wiki/Environmental_migrant).

¹ These numbers remain hotly contested.

2005 THE U.N.'S CLIMATE CHANGE REFUGEE MAP

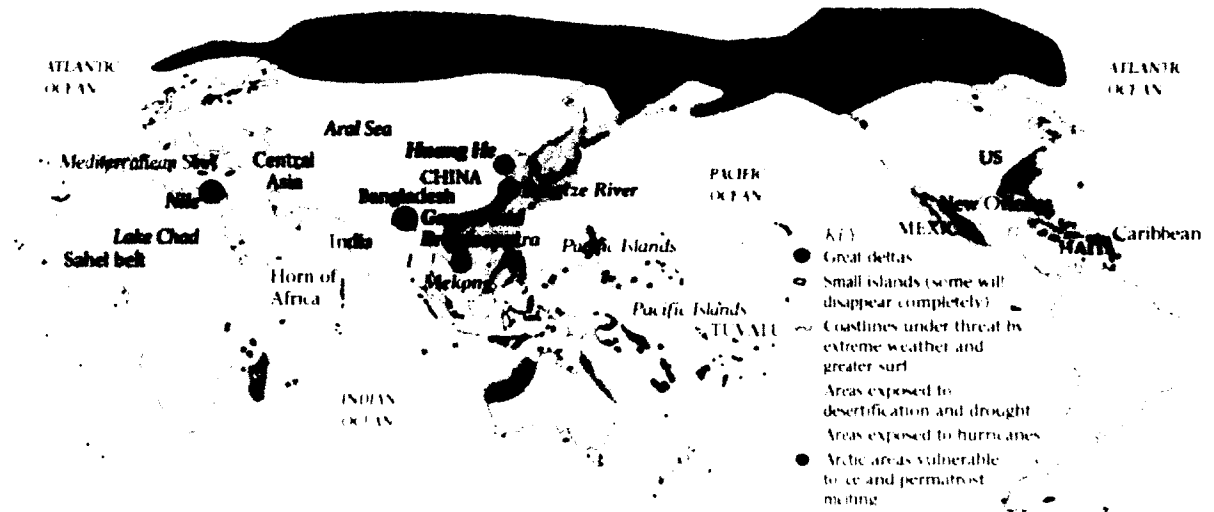


Figure 1.1: Map by Emmanuelle Bournay

It is extraordinary that Shishmaref is labeled on this map. The only other city to be named explicitly is New Orleans – and more commonly labels are only given to entire regions or countries: the Caribbean, Bangladesh, India, the Mekong River delta, Mexico, Haiti, the Yangtze River (the third largest river in the world) and Central Asia, as examples. One label, the Sahel Belt, for example, has a population of *58 million people*, is one of the poorest areas of Africa, and cyclically experiences extensive famine linked to desertification, land degradation and socio-economic structures (Batterbury and Warren 2001). The United Nations International Children’s Emergency Fund (UNICEF) as recently as June 12, 2012 put out a special call for funding to alleviate up to 5 million children in the Sahel suffering from acute malnutrition (Niles 2012). Excepting Shishmaref, the labels on this map refer to large populations, in many cases under extreme duress – and large, migrating populations under duress are exactly what policy reports on environmental migration highlight (IOM 2008, 2011) and what drives concern

about environmental migration from the IPCC and other policy makers. So, again, why care about Shishmaref?

1.3 Climate Change, Environmental Migration and Shishmaref

There are a few facts that remain relatively uncontested for Shishmaref as a case study of environmental migration linked to climate change. First, there is an extremely high probability that the village of Shishmaref will have to be relocated in the foreseeable future because of continued erosion and an increased chance of flooding (multiple interviews with local residents, USGAO 2003, 2009; USACE 2006). A 2003 and 2009 government report identified Shishmaref as one of four villages in Alaska (Shishmaref, Kivalina, Koyukuk and Newtok) that face imminent threat of disaster related to erosion and flooding, and one of three villages (Shishmaref, Kivalina, and Newtok) that would likely need to relocate in the next 10-15 years before the village sites were 'lost to erosion' (USGAO 2009:10).

Second, climate change has affected Alaska and the Arctic in serious and dramatic ways. From 1954 to 2003, the mean annual atmospheric surface temperature in Alaska and Siberia has risen between 2 and 3 degrees Celsius. This warming has been particularly salient in the winter and spring (ACIA 2005:992). Along with warming, snow and ice features have diminished, there has been an increase in windiness (Huntington 2000) and storminess (Hinzman et al. 2005) along the coast, and permafrost boundaries have moved north, meaning that previously stable permafrost areas have

thawed, causing foundation problems for structures in Alaska and problems with erosion (ACIA 2005:997).

Third, increased erosion (Hufford and Partain 2005) has led to increased vulnerability to flooding (USGOA 2003, 2009; USACE 2006, Smith and Levasseur 2002) for multiple villages in Alaska. Erosion along coastal areas in the North is increasing at greater rates today than in the past due in part to links with increasing temperatures (Solomon et al. 1994; Syvitski 2010).

Whether and how these three uncontested facts are connected in Shishmaref is less clear. However, the combined effect of these three indisputable circumstances – (1) that Shishmaref will have to relocate because of erosion and flooding; (2) that Alaska and the Arctic have had, more than any place on earth (Perovich and Richter-Menge 2009: 418) demonstrable effects of anthropogenic global warming, including increased erosion and increased severity of storms (Hinzman et al. 2005); and (3) that increased erosion and flooding events during storms that threaten rural villages are occurring at greater rates today than in previous years – has helped to make Shishmaref a quintessential example of environmental migration linked to climate change, and caused researchers and media outlets to focus on this small village as an epicenter of the issue – as a meaningful label on the environmental migration map.

In contrast, drought and possible migration linked to drought has been reoccurring and linked to environmental conditions not directly attributable to anthropogenic climate warming. During the great famine from 1983-1985, millions of people in the Sahel belt experienced malnutrition – causing significant, avoidable death (Ibrahim 1988). If there

have already been environmentally tenuous conditions in the Sahel Belt, what can we really attribute to climate change? On the other hand, Shishmaref – like the concept of environmental migration itself – burst onto the scene, providing what seemed like an unmistakable example of climate change (the ice is melting!) paired with outcome (the people are fleeing!). Shishmaref became an example of what anthropogenic climate change meant in real terms, for real people, on the ground. Media representations and critical consequences of media exposure are explored in chapter six. What is important to understand for now is the backdrop under which this research has unfolded. Shishmaref had been a familiar place to myself and other Bering Strait researchers and then, quite suddenly, became a place that had been exported to the world's imagination. This ever growing spotlight spurred my own interests (and suspicions) about the narrative being created about Shishmaref and its link to climate change.

1.4 Climate Change as Discourse

The public, media, and academic surge in interest about environmental migration and about Shishmaref co-exists with growing public awareness and public debates about climate change. This dissertation engages the complexities of multiple climate change discourses: the bio-physical realities of warming, what we collectively attribute to the bio-physical realities of warming, policy frameworks and attention, government funded research agendas, and academic program directives that contextualize and define '*climate change*.' In Shishmaref, flooding, erosion, vulnerability and relocation are all aspects of the climate change debate, and therefore this research must acknowledge and engage the

climate change literature, even if, as Owen Mason suggests, a changing climate may not be the primary driver of erosion, flooding, and migration in Shishmaref (Mason et al. in press).

Climate change is a large and unwieldy pair of words that incorporate an inexhaustible set of bio-physical and ecological phenomena, as well as an equally inexhaustible set of values, ethics, policy recommendations and agendas – all set in motion for the purposes of solving a dire humanitarian crisis and/or to promote agendas completely *unrelated* to the dire humanitarian crisis. As with any disaster, there are people poised to leverage crises to promote personal agendas and influence policy (Scanlon 1988). The remainder of this section provides a brief introduction to how climate change interacts with environmental migration, and how Shishmaref fits into this ever-evolving history. Climate change is specifically highlighted as a discourse. This framing is not meant to suggest that anthropogenic climate change is *only* a socially constructed phenomenon – merely that climate change enters into social life through engagement with small- and large-scale discourses.

As information and data on climate change entered the public sphere, climate change discourses likewise came into being (Hulme 2008; Lorenzoni and Pidgeon 2006). By discourse we mean the identification of subject, agents of knowledge, norms of speech and acceptable concepts and theories that constitute any topic (Foucault 1972, 1977; Woolgar 1986; Marino and Schweitzer 2009); in other words, the rules and rules of authority over what we call '*climate change*.' The academic, political and public

discourses that have emerged following these growing knowledge sets, experiences, and ecological threats have been stunning in their scope, difference, and contentiousness.

Climate change discourses are divisive. In 1997, the United States Senate passed a resolution to veto any bill that put caps on green-house gas emissions, and following, the US and Australia refused to sign the Kyoto Protocol. These decisions set the stage for a political imbroglio that dichotomized climate change camps into ‘believers vs. deniers’ and ‘intervention vs. inaction.’ Incidents such as ‘climategate’ (Nerlich 2010), growing accusations of American and Canadian politicians as anti-science (Krugman 2011; Stewart 2011), and the Danish text leak during the United Nations Framing Convention on Climate Change (UNFCCC) in Copenhagen, which called for increased power to economically powerful countries (Vidal 2009), have all exhibited the emergence of distinct discourses with different vernaculars, different ethical guidelines, and different agendas. These competing discourses each sought and continue to seek validation – through both scientific evidence and public consensus.

Candis Callison has designated the dominant domain among climate change discourses as the *science-policy-media* discourse, reflecting the powerful consortium of actors under whose direction the overriding discourses of climate change unfold (Callison 2010:11) and under whose direction the rules and norms for the ‘climate change discourse’ are devised. There are, of course, other climate change narratives, including the narratives about climate change that unfold in Shishmaref itself. But in national and international arenas backed by the legitimacy of formalized institutions (the United Nations (UN), nation-states, universities, widely distributed newspapers and media

programs), the *science-policy-media* discourse is unfolding and solidifying (while not singular), and creating information and knowledge for an engaged public.

Important in the *science-policy-media* climate change discourse is the ‘call to action’ (Gills 2008). This call for action includes two types of intervention policies. The first type of policy, and the one that has garnered the most attention through the Kyoto Protocol, is climate change mitigation. Climate change mitigation policies are directed towards stopping climate change from occurring and temperatures from (further) increasing – by capping green house gas emissions at the level of the nation-state, creating carbon markets, promoting green energy, and protecting carbon sinks through healthy forests, among other strategies (Rogner et al. 2007). The second type of climate change intervention policy promotes intervention aimed at giving aid to those already experiencing the consequences of climate change and those who would experience climate change in the future (Caney and Bell 2011; Adger 2003a; Adger et al. 2006; Mearns and Norton 2010; Baer 2006; Bronen 2009; Humphreys 2010; Posner and Sunstein 2008). Climate change adaptation policies aim at equitably distributing burdens of climate change by offering aid for adaptation planning, outcome prevention, and outcome relief in the event that environmental conditions linked to climate change cause significant damage to communities.

In order to provide aid to people who needed to adapt, the outcomes of climate change were important to identify and map. This research agenda became particularly impassioned as research began to demonstrate that the most dramatic climate change disasters would likely occur to already vulnerable and impoverished populations in the

developing world. As scholars looked for test case studies to examine how climate change will affect communities, the Arctic appeared to be a particularly well suited geographic region for testing outcomes, given the early warming happening in the North. As environmental migration received increased attention as a critical outcome of climate change, an environmental migration case study linked explicitly to anthropogenic warming was important to research. Within these scientific circumstances, Shishmaref became particularly suited as a case study for the *science-policy-media* climate change narrative.

Anthropogenic climate change is occurring and the effects of warming across short, medium, and distant time-scales warrant political, personal, and collective concern and intervention. The Arctic as a land of ice, and the Iñupiat as a people that rely on that ice, are legitimately threatened by the warming projected in recent models (Dow and Downing 2007:37). This is one clear reason why Iñupiaq leaders have been at the forefront of the climate change debate (Callison 2010:11). An editorial by Neil Adger entitled: *The Right to Be Cold* (2003b), is a commentary that specifically points to high latitude cultures as particularly threatened by wide-scale warming.

For the purposes of this dissertation, however, we return to Shishmaref. Is Shishmaref really the ‘canary in the coal mine’ for climate change disaster? Is the environment changing so quickly that it is overwhelming local adaptation strategies? Is Shishmaref vulnerable because of green house gas emissions into the atmosphere by industrialization? What makes Shishmaref, in particular, vulnerable to these climatic changes?

1.5 Shishmaref, Alaska: The Familiar

Shishmaref, Alaska is a small Iñupiaq community in western, coastal Alaska that sits on Sarichef Island just off the coast of the Seward Peninsula between the Shishmaref Inlet and the Chukchi Sea (see Figure 1.2).



Figure 1.2 Map, photograph, Shishmaref and Sarichef Island

The village has a population of between 563 residents (US census) and 609 residents (Tony Weyiouanna, ex-transportation coordinator and relocation activist). Acutely rural, Shishmaref is located in the very center of Inuit subsistence hunting practices and animal migration routes, but is spatially isolated from the rest of the world. Small planes and infrequent barges are the only way to transport both goods and people in or out of the

village. Travel through traditional hunting and picking territories, over tundra, ice, rivers and the ocean, are done using all-terrain vehicles (ATVs), snow machines, and small motorboats. Increased windiness (Huntington 2000) and storminess (Hinzman et al. 2005), increased erosion (USGOA 2003, 2009) and diminished sea ice threaten the low-lying island with habitual flooding. As significant, ocean side bluffs continue to erode, the possibility of a life-threatening disaster that renders the island uninhabitable increases.

As flooding events increase, Shishmaref residents face two distinct possibilities. They must either successfully petition government agencies and/or private donors to fund the rebuilding of essential infrastructure including an airstrip, a barge landing, and a school on nearby, tribally-owned land on the mainland, or they will eventually be forced into diaspora, away from traditional homelands before, during, or after a major disaster.

A third option of relocating to nearby, tribally-owned land without government aid and/or intervention is unlikely for two reasons. First, the cost of building infrastructure in the US Arctic is prohibitively expensive for the small population of residents to fund themselves. Second, migration to an area without basic infrastructure is unlikely because of dependence on electricity, gas, motorized vehicles, and other non-local products that mark contemporary life and have since the colonization of western Alaska (Berardi 1999).

Shishmaref people, the *Kigiqtaamiut*, have inhabited the coastal and river drainage areas around the island for thousands of years, developing a rich tradition and a particular expertise for living in this location. Historically the *Kigiqtaamiut* food

harvesting techniques and adaptation strategies for climate variability and extreme weather events have been highly successful in this Arctic landscape (Burch 1998, 2006; Koutsky 1981). Beginning in the early 1900s the coastal communities that make up today's *Kigiqtaamiut* people began to settle more permanently on Sarichef Island with the creation of a school, church and post office.

Kigiqtaamiut translates to people of the island, from the stem noun *Kigiqtaq* meaning island, and the suffix *miut*, meaning 'the people of.' *Kikiqtaq* was also the proper name of the island that the village now sits on according to the Kawerak summary home page (<http://www.kawerak.org/tribalHomePages/shishmaref/index.html>), and according to friends in Shishmaref. The 'island-ness' of Shishmaref dominates daily life even as technology and wage labor jobs make their way into the village. Passage on and off the island via ATV, boat, or snow machine is possible only when the ice is gone or when the ice is firm, creating distinct fall and spring shoulder seasons during which people stay primarily on the island and seasons when people are active throughout the area, engaged in subsistence activities.

Today, *Kigiqtaamiut* residents harvest and consume an extensive variety of local subsistence foods including bearded seal, spotted seal, caribou, walrus, musk ox, fish (of all sorts), berries, and greens (Sobelman 1985; Wisniewski 2011). The location of the village is uniquely positioned to take advantage of both land and sea mammals, and as Fred Eningowuk said in an interview, "It's like Shishmaref is in the middle of a circle of subsistence" (September 2009).

The circle metaphor has two uses for Shishmaref residents. First, food is available throughout the year –as one resource migrates out of traditional hunting and fishing territory, another becomes available. The cyclical turn of the year is full of a variety of subsistence foods, meaning literally that before the 1900s (and also, in slightly different ways today) hunger was preventable because of the natural patterns of animals, plants, and landscapes. The second metaphorical use of the circle of subsistence metaphor is that the people of Shishmaref themselves exist within the natural cycle of the area. I was told more than once that if the people of Shishmaref abandoned the area, the animals would also ‘go away,’ that the landscape would become fallow. In this way too, Shishmaref people are in the ‘circle of subsistence’ – existing inextricably with the plant and animal life and the landscapes that they inhabit.

The economy in Shishmaref is a mixture of cash and subsistence economy. Employment on the island is limited. Nearly forty-six percent of adults are not in the labor force. Most jobs on the island are in government service provision, with the tribe, with the school, or with the local medical clinic. The economy is considered heavily subsistence based, subsidized by part time employment or transfer payments. Per capita, the average income in 2010 was \$10,203 and almost twenty-seven percent of all residents live below the poverty line. Ninety-five percent of residents are Alaska Native (DCRA n.d.).

The other important economic sector in Shishmaref is the creation and exportation of Iñupiaq art work. Shishmaref is the carving and artistic center of the Bering Strait. Small-scale sculptures, jewelry, masks, and carvings of all kinds are produced in

Shishmaref by older, experienced carvers and by young, informally apprenticed (mostly) men. These sculptures and jewelry are made of bone, antler, or ivory and are widely distributed throughout the state of Alaska and the world.

Women in Shishmaref are sewing entrepreneurs, known particularly for their use of spotted sealskin for mittens, hats, slippers, and gloves, and increasingly hard bottom mukluks, though these are mostly kept within the community. Women also make smaller textiles, which are sold and/or used as gifts when traveling or when welcoming guests. These include sealskin Christmas tree ornaments and small beaded items. Sewn crafts, such as slippers and gloves, often incorporate beaded patterns as decoration. Most common is the Shishmaref star, an intricately beaded star pattern that is, to the best of my knowledge, unique to Shishmaref.

Shishmaref is also the only village in the Bering Strait region to rely heavily on the bearded seal or *ugruk*. This strong tasting seal meat is ubiquitous in the village and can be identified by the white 5 gallon buckets located in many people's *kunituk*, or arctic entryway. The white bucket contains *panaaluk* – dried *ugruk* meat (black meat) that is thin with a texture something like beef jerky – along with other cuts (e.g. stomach, intestines) of the *ugruk*, and is filled with seal oil – rendered seal blubber that is clear to opaque (depending on the quality of blubber and conditions under which it was produced) and full of fat and Omega 3 fatty acids that are important for a human diet.

Research suggests that daily intake of seal oil significantly lowers glucose intolerance and the pre-conditions for diabetes (Adler et al. 1994:1498). Aside from health benefits, locally consuming traditional food, particularly seal oil, is a necessary

part of expressing local culinary expertise and is cultural performance. The best seal oil is kept in the freezer and when spooned on a plate dissolves into a nearly perfectly clear pool when it is the highest quality. Seal oil is to Shishmaref what the truffle is to northern Italy: delicious, expensive, painstakingly produced, and dependent on a multitude of factors to develop the richest flavors and most subtle complexities. Seal oil is a delicacy and Shishmaref is both the pinnacle of the art and the place of connoisseurs.

Through carvings, the Shishmaref star, the subsistence harvests and traditional foods, and through small idiosyncrasies that are difficult to name, Shishmaref is unique on the Seward – a village sometimes called the black meat capital of the world. The endurance of this way of life shared by the *Kigiqtaamiut* is being threatened by the urgent need to relocate because of erosion and the risk of intense flooding that is increasingly making the island uninhabitable. The village has been in talks with the state of Alaska for at least 34 years about relocation. These discussions have yet to result in a comprehensive plan for relocation and a 2009 report declared that little progress has been made on comprehensive planning and/or implementation for the relocation of most villages, including Shishmaref (USGAO 2009). The following chapters will explore what is happening in Shishmaref today regarding vulnerability, experience and relocation.

1.5 An Ethnography of Vulnerability

Ultimately, the goals of this dissertation are: (1) to identify the key variables that contribute to Shishmaref residents' vulnerability to flooding and erosion; and (2) to consider what this vulnerability may mean for the future of the *Kigiqtaamiut*. In pursuit

of these objectives, this research emphasizes local experiences of vulnerability to climate change. *Local experiences* refer to the differentiated perceptions and engagements that local residents and other stakeholders have with risks, with adaptation strategies, with individual and communal resiliency and responsibility, with the media attention, and with American Indian/ Alaska Native politics – historically and contemporarily which constitute the experience of vulnerability.

The Shishmaref case study is presented in seven chapters, including this introduction. These chapters are meant to offer a holistic analysis of vulnerability through theoretical frameworks, ethnographic data, historical information, archeological and engineering reports, the mounds of gray literature that relocation planning has created, and personal reactions and observations. The following is a summary of what to expect.

In chapter two I discuss the methods used to address the research objectives outlined above. This chapter explains the time I spent in Shishmaref, spanning a three-part personal history of engagement, from local newspaper reporter, to contracted Army Corps of Engineer researcher, to PhD student. Chapter two will also include a section on multi-sited ethnographies and a section examining the reflexivity of knowledge creation – particularly relevant for a location such as Shishmaref, where extensive media coverage and research attention has carved a network of ‘expert’ interviewers for outsiders. I briefly describe the methodological toolkit employed, including interviews, ethnography and survey – and some challenges that arose out of these methods.

Chapter three addresses the question, ‘*to what* is Shishmaref vulnerable?’ This chapter begins by delineating core conceptual frameworks of vulnerability from the

existing literature. Here we also offer definitions of disaster and hazard. Chapter three examines how the literature informs the Shishmaref case study by positioning disasters within a theoretical framework that understands vulnerability as existent within a complex web of social and ecological conditions. Positioning the Shishmaref case study within the anthropology of disaster and vulnerability literature makes climate change induced migration legible as an ethnographic study in anthropology, and, most importantly, gives meaning to the grounded experiences of vulnerability.

In the end, chapter three outlines what residents in Shishmaref are vulnerable *to* – this develops the concept of vulnerability from being specifically linked to flooding (a hazard) to being linked to the outcomes of flooding, including physical consequences (drowning, exposure, death) and social consequences (diaspora, increased poverty and landlessness, social disarticulation, and cultural and linguistic hegemony). These outcomes will finally be linked to immobility – and the ‘infrastructure trap’.

Chapter four looks at the nexus of climate and history – which combine to create the infrastructure trap. This chapter begins by comparing and examining local perspectives of climate change data with climate change outcome data in the literature. Following this chapter engages Owen Mason’s claims that climate change is not a significant factor for erosion in Shishmaref.

Chapter four goes on to examine how and why the built, mostly immobile, physical infrastructure of Shishmaref came to exist in this particular location that, subsequently, is exposed to flooding and creates hazard and risk. This chapter describes immobility as it comes to exist through time within an historical context that includes

colonial projects and ideologies of the state and examines how development and vulnerability are intertwined – both theoretically and through archeological work on mobility, labor, and skill.

Chapter five outlines the responses to vulnerability in Shishmaref, and Shishmaref residents' experiences of governance and intervention. Following chapter four's investigation of the history of development, this chapter looks at the processes of adapting to risks now present in and around that development. This chapter presents data on local perceptions of risk and perceptions of governance through a mixture of survey, interview, and ethnographic data. This chapter also examines the relationships Shishmaref residents have had with the media and the press. Ethnographic data presented in this chapter suggests that engaging the media is a local adaptation strategy – one that exists to offset vulnerabilities particular to very small, extremely rural populations, such as those rural Iñupiaq communities in Alaska. Engaging the 'media circus' has its own critical consequences.

Chapter six uses ethnographic and interview data to explain what local residents consider important factors in the relocation process – focusing primarily on the local value put on subsistence practices as a method of reducing vulnerability. Using the concept of tenacity, we explore how and why subsistence and subsistence traditions play such an important role in the relocation discussion – and how local residents make a case for remaining on traditional land instead of relocating to a more urban environment or merging with another village.

In conclusion, this dissertation will argue that Shishmaref is vulnerable to a complex mix of social and ecological shifts occurring simultaneously, and that a grounded understanding of vulnerability to climate change is complex, multi-faceted, and exists as an ethical problematic in multiple ways. This dissertation will describe how vulnerability is intertwined with colonial histories, is exacerbated and abated in representations with government power brokers, is incorporated into daily decision-making, is reified in narratives for outsiders, and finally how vulnerability is mitigated with great tenacity and local resiliency exercised through extraordinary flexibility in response to change.

Shishmaref, it turns out, is an epicenter of climate change research for social scientists because it has become an epicenter of climate change attention. The social life of climate change plays out in Shishmaref. The discourses created at multiple scales of governance, in the media, among researchers, and among residents is a study in how we deal with disasters and disasters that have the cache of climate change about them. Shishmaref and the changes in Shishmaref are extraordinary to residents, observers, and outsiders alike. These changes are also familiar to an indigenous culture that is and has been in constant negotiations for the right to exist.

Chapter Two: Methods and Knowledge Making

2.1 Methods

This project was sponsored by the National Science Foundation under Grant No. 0713896 in conjunction with the larger project Moved by the State: Perspectives on Relocation and Resettlement in the Circumpolar North (MOVE). MOVE is an international effort to understand relocation issues over time throughout the Arctic. My research allowed MOVE participants to examine a relocation effort oriented towards the future – an unusual glimpse into relocation planning in process.

The data for this project was accumulated through a series of visits to Shishmaref that span a personal history of ten years, including 3 (4 to 6 week) field work sessions in the village that occurred between 2008 and 2010. During the time that this research took place I also engaged in person or via phone with state and bureaucratic agency workers during meetings of the Immediate Action Working Group (IAWG), a joint working group of state and federal agencies including the Army Corps of Engineers, the Department of Commerce, Community and Economic Development, the Department of Natural Resources, the Department of Transportation and Public Facilities, the Denali Commission, and the Department of Homeland Security, among others . These interactions involved discussion of Shishmaref risk reduction and/or relocation, examination of gray literature and media representations of Shishmaref, and participation in expert dialogue relevant to Shishmaref at national and international climate change meetings.

The research methods I employed ranged from conducting surveys and formal interviews to orchestrating informal discussions, recording life histories, making ethnographic observations in bureaucratic meetings and science/policy expert meetings, and analyzing accumulated gray literature, online news stories, and film documentaries. In total I collected over 40 formal interviews, 30 surveys, 2 multi-day interview life histories (UAF Institutional Review Board protocol #07-10), and numerous pages of ethnographic field notes taken in a variety of settings, including IAWG meetings, United Nations University symposia on global environmental migration (these were some of the earliest meetings focused on environmental migration linked to climate change) with environmental migration scholars and politicians, and the Indigenous Peoples Summit on Climate Change. Research for this dissertation officially commenced in the fall of 2007 and concluded with my final fieldwork session in Shishmaref during the summer of 2010.

This research is firmly situated in the tradition of ethnography, but with an understanding that today, ethnography “plays a complex and shifting role in the dynamic tapestry that is 21st century social science” (Hammersley and Atkinson 1983:2). This is ethnography as a process of determined and focused observation of a subject and the way that subject is engaged in formal and informal settings. This research is *not* an ethnography of the Iñupiat in Shishmaref. Rather, it is an ethnography of risk and vulnerability that occurs in a specific geographic location (Sarichef Island) to mostly *Kigitaamiut* people – whose Iñupiaq-ness is inseparable from, but not the primary subject of, this research.

Today relocation is the focus of most adaptation efforts in Shishmaref. Relocation in and of itself does not create vulnerability – and relocation has been a successful adaptation strategy for humans encountering ecological shift for millennia. Forced migration in the 20th century, however, has led to a multitude of social, cultural and economic hardships of migrating populations, particularly indigenous populations (Cernea 1996, 2000, 2002). With these complexities of relocation in mind, it became apparent early on in this project that a methodology had to accommodate describing the processes and experiences of localized vulnerability and risk among the *Kigiqtaamiut* – without assuming relocation was necessarily a ‘bad’ thing (a maladaptive strategy) or a ‘good’ thing (an adaptive one).

This strategy is particularly important when working with indigenous populations. Appadurai warns that anthropologists have a tendency to ecologically conjoin indigenous people to the landscape through either a “language of incarceration” (Appadurai 1988:37) or through implicit assumptions about the ‘naturalness’ of indigenous people’s tie to place (Appadurai 1988; Gupta and Ferguson 1992). Thus, the methodological approach sought to take into consideration the experience of *Kigiqtaamiut* desire, in some cases, to remain on the island, and to mourn the loss of home, without conflating ‘nativeness’ with ‘rootedness,’ or the *Kigiqtaamiut* with Sarichef Island.

The methodology also had to investigate and describe the importance of place among *Kigiqtaamiut* people, examine relationships with landscapes that may be fundamentally different than Western conceptions of place and place-making (Kingston and Marino 2009), and understand how these relationships determine culturally

appropriate adaptation possibilities in response to flooding and erosion. Unlike the interdisciplinary literature on climate change, migration, and disaster – which marked the bulk of theoretical framing for this research – I looked to important Northern anthropologists such as Paul Nadasdy and Tim Ingold to frame complex, culturally-specific worldviews on the sociality between animals, landscape, and humans. Understanding place and engagement with place was a fundamental aspect of this work – and many interview questions and ethnographic moments attended to the way people discussed the landscape in and around Shishmaref. These discussions framed social-ecological engagement in a much different way from the disaster and climate change literature – though these discussions were very consistent with the way Northern anthropologists discuss human engagement with the environment.

To understand the experiences of place and of traditional territory without assuming the conflation of the *Kigiqtaamiut* with Sarichef Island, it was important to investigate the past, the present and the future, both through current interviews as well as past research literature. By positioning this relocation in a longer history – and into the future of the *Kigiqtaamiut* – it was possible to understand place-making and connection to place over time without assuming a naturalness between the Iñupiat in Shishmaref and the land on which they currently stand.

The research methodology also needed to frame and describe national and international discussions on environmental migration and climate change – which in many cases were very different than local discussions. In national and international conversations about environmental migration and climate change, Shishmaref residents

were active participants, not only as members of a local population at risk, but also as global citizens (Farbotko and Lazrus 2012), carbon emitters, and indigenous activists. In these conversations, climate change and environmental migration are understood as products of global systems that are highly abstract, yet Shishmaref residents embody and bear witness to outcomes of these systems that are highly concrete (e.g. intensive erosion and flooding). In other words, the methodology had to frame vulnerability as a dilemma caused by anthropogenic climate change, which itself is a product of industrialization, constituted historically from industrialized Europe and North America, that increasingly causes a rise in global temperatures (Dow and Downing 2007:39) and is a precipitating factor in increasing rates of Arctic ‘erosion’ (Hinzman et al. 2005:264). Simultaneously, vulnerability had to be framed in terms of the erosion that occurs when the bluff in Figure 2.1, meets the storm in Figure 2.2 and threatens the house in Figure 2.3 with flooding.



Figure 2.1: Bluff erosion in Shishmaref (*Photo courtesy of Tony Weyiouanna*)



Figure 2.2: Weather map 2011 “super storm” (Photo National Weather Service “Bering Strait Superstorm” 11/09/2011)²

² In the fall of 2011 the Seward Peninsula braced for a large storm that threatened most villages on the Peninsula with flooding. The storm did cause damage to fishing racks and other infrastructure in Shishmaref, but the prevailing winds were not from the southeast, making the storm surge much less impactful than it may have been if the winds had shifted.



Figure 2.3: The end of the sea wall / a house in Shishmaref (*Photo by Elizabeth Marino*)

The conflation of the local and the global, the abstract and the concrete, is a tension present throughout this dissertation, beginning in the current methods section.

A mixed-methods platform was clearly the most effective manner of apprehending these distinct discourses and the points at which these discourses co-exist within one person, event, or experience. By listening to Tony Weyiouanna speak at the Indigenous Peoples Summit on Climate Change, in an IAWG meeting with Alaskan residents, to his peers and family at a local Shishmaref Relocation Coalition meeting, and at home with his wife Fanny about his life story, much deeper insights were obtained into what the experiences of vulnerability are and how they accumulate. This process of data collection impressed upon me the extent to which the dialog between locally specific vernaculars and meanings and the meanings that arise out of global discourses are in

constant negotiation (internally and externally) and can often require a complicated process of translation (Callison 2010).

The following discussion on methodologies lays out a personal history of engagement with Shishmaref, and then provides a more theoretical discussion of multi-cited methods. I move on to discuss the challenges of conducting an ethnography of vulnerability in Shishmaref– while still engaging actors and discourses that affect risk, but are far removed from the location of risk. Finally, I consider some of the methodological consequences of Shishmaref’s engagement with the media, and conclude by discussing this work in the context of the larger research project in which it was conceived.

2.2 A Personal History of Engagement

It has been 10 years since I first visited Shishmaref – first as a newspaper reporter and Seward Peninsula resident, later as a hired researcher, and finally as a PhD student. If part of an anthropologist’s authority rests on familiarity, then this extended history is particularly suited for an anthropological study, though I do not claim full cultural competency in Shishmaref – in local vernacular or social experience. Instead, what is most helpful about having an extended history of engagement with the Seward Peninsula and Shishmaref as I conducted interviews, surveys, and ethnography was circumstantially shared values, social networks, and experiences.

I, too, played basketball in the Iditarod tournament in 2002, when the Shishmaref women’s team won the tournament. “I remember you – you played for Bering Air” – I

was told early on in this research project. I, too, knew Rita Buck from White Mountain, a traveling mid-level medical clinician on the Seward Peninsula. I already knew that women had to go to Nome a month before they had a baby and that elders got free lunch at the XYZ center. I already knew what to do with (and already enjoyed) seal oil, and understood that it's good to bring baked goods when you visit someone. I had been to Pilgrim Hot Springs, if not Serpentine, and ate blueberries with sugar and sometimes milk – if caribou fat mixed with white fish (*agutuk*) weren't available. I knew (and appreciated) the good spots for salmon berries outside of Teller. I knew, not just idiomatically, but also experientially, what people were talking about when they said, 'good water', 'clean air', and 'dry fish'. I already felt at home in the tundra, without trees, on snow machines, in houses with no running water. I could do a sink of dishes using as little water as possible, sing at least one Iñupiaq church song, and sew felt onto fabric for banners at church service.

Before this research project formally began, I had a family – whose matriarch my daughter calls grandma – to stay with, key interviews I knew I was going to conduct, a place to work in the church basement, and an understanding of who, regardless of job title, was actually active on relocation issues. I knew the possibly complicated dynamics between regional nonprofits and local tribal councils and I knew that to avoid conflict some of my questions about these dynamics could not be answered. In other words, my cultural learning curve for studying vulnerability in Shishmaref – while surprising, informative, and meaningful – was less steep because of my prior cultural experience.

2.2.1 2001-2002

From fall 2001 through December 2002, I worked as a newspaper reporter in Nome, Alaska, the service hub for the Seward Peninsula, and traveled to Shishmaref three times to report on newsworthy stories. The most important trip was to cover a vote Shishmaref residents held to gauge consensus on relocating to the mainland (an overwhelming majority voted in favor of relocation). This was my first exposure to the people, advocates, and challenges to relocating. Having this historical depth to my experience of the Shishmaref relocation was crucial to this research. Not only did it foster deeper and more personal relationships with individuals in the community, it also allowed me to experience how relocation discourses change over time, and how authority shifts among actors, while leaving an imprint of that engagement.

In 2002, one of the most outspoken relocation advocates was a Kawerak employee named Julie Baltar. By 2012 no one outside of Shishmaref and Kawerak remembers Baltar as being a critical actor in the Shishmaref relocation, and yet she is ultimately the reason the Kawerak transportation coordinator is the point person for state and federal agency workers concerning Shishmaref relocation. Baltar herself and her role in relocation is not as important to understand as is this process of different actors expressing opinions, maneuvering funding, strategizing about relocation and risk reduction, and then moving on – while leaving an imprint of their actions on future actions that reduces and/or exacerbates vulnerability and/or progress. For researchers or agency workers who interact with *Kigiqtaamiut* people for one year or one season, this shifting formulation and definition of problems and solutions are invisible – instead the

problem and solutions seem overwhelmingly static. The time-depth I had of engagement with the issue of relocation in Shishmaref revealed the dynamism of defining and redefining problems and solutions.

2.2.2 2004-2006

From 2004-2006, I participated in two different research projects in which Shishmaref was a field site and during which I spent time and effort conducting interviews and ethnographic observation. The first research project was a multi-disciplinary project that investigated the intersection of water, climate, and humans in the Arctic. The goals of this project were to record traditional use of fresh water and fresh water use changes over time through ethnographic fieldwork and interviews. I visited Shishmaref twice for this project and began to establish more robust friendships during this time.

From 2004-2006, I also participated in a research project sponsored by the Army Corps of Engineers. This project explicitly dealt with the relocation of Shishmaref and produced a final report entitled: The Collocation Cultural Impact Assessment (Schweitzer and Marino 2006). The purpose of this research and report was to gauge the cultural implications of relocating the entire population of Shishmaref into the larger hub communities of Nome or Kotzebue. I was second author on the final report for the US Army Corps of Engineers and conducted and analyzed most of the interviews in Shishmaref for the report. In total I conducted or helped to conduct 48 interviews with 54 people in Shishmaref. I took multiple trips to Shishmaref during this period for up to 3

weeks at a time. It was during this research project that I met and made friends with the Stasenکو family. Richard Stasenکو is a Native Ohioan, who moved to Shishmaref to teach in the 80s. Rachel Stasenکو is Iñupiaq, from Shishmaref, with a relatively large family. They have three daughters and two sons. One son is Rachel's biological son and Rich's stepson. The three daughters, Mary Huntington, Stacey Paniptchuk, and Kate Kokeok are more or less my age, and Stacey and Kate have become very close friends. Kate married John Kokeok from Shishmaref and I hung out at their house with some frequency while I was in the village when in need of an age-cohort of social life. At Rachel and Rich's house, I felt like a daughter. Ultimately, the Stasenکos were my home base for continued research in Shishmaref. These were the people whom I lived with, with whom I vetted interview and survey questions, and who brought me into familial social networks. My relationship with the family remains strong – and I've sent them ethnographic accounts to read through and ensure accuracy.

Our research for the US Army Corps found that there would be significant negative cultural and social consequences from relocating Shishmaref residents into Nome or Kotzebue. This became important to at least one of my close contacts in Shishmaref. This contact's continued help throughout this project and his friendship were a product of his belief that Dr. Schweitzer and I had "helped save Shishmaref from Nome."

The Collocation Cultural Impact Assessment contributed to the formation of my initial ideas about a dissertation project on vulnerability and risk. It became clear to me

throughout my early field experiences that vulnerability, risk, and response in Shishmaref were extraordinarily complicated and multi-faceted.

2.3 Personal Experience as Authority

Personal experience as the granting principle of authority for anthropologists and ethnographers can be as problematic as it is historical (Clifford 1983). Experience does not ensure an accurate, emic interpretation of social events. Interpretation of ethnographic field notes is also problematic, as Clifford points out, because interpretation flattens dialectic events that happen in real time into remembered texts – that weeks, months or years later are then reinterpreted into research statements of fact, erasing the dialectic creation of information (Clifford 1983:133). What the previous account of personal experience granted me in relation to this research project was: a) exposure to cultural vernaculars, which allowed me to create meaningful questions for interviews and surveys; b) exposure to and the building of social networks, allowing me to begin data collection immediately; and c) an authentic personal connection to a discrete set of items, people, and experiences rooted in the Seward Peninsula, to which many Shishmaref residents also had a personal connection.

This personal background provided support for developing my research questions and interviewing style, and maintaining social connections in the village. To keep the dialectic – the intersubjectivity of knowledge creation – integral to my research, I focused a great deal of my time around recorded interviews – not just ethnographic field notes, though I did use both methodologies. This personal history was very helpful in

conducting research in Shishmaref – but this research project was not located only in Shishmaref, as the next section highlights.

2.4 Multi-Sited Ethnography

This research was multi-sited. Outside of a lab, anthropology projects are always, in some sense, multi-sited – observations are carried out in a friend’s kitchen, another friend’s boat, at fish camp, in the country. When these sites fail to fall within one village, one city, or one city block, then they are more particularly identified as ‘multi-sited.’ This research is multi-sited because key ethnographic observations came from outside of the village of Shishmaref (Anchorage, Oxford, UK, Hohenkammer, Germany), in larger social-networks where key research participants or myself traveled – and in places where vulnerability to flooding and erosion, environmental migration, and climate change discourses were being formed.

Conducting multi-sited ethnography is consistent with a trend in anthropology to decouple particular cultural groups from traditional homelands or places where the group has resided (Gupta and Ferguson 1992); and to explore social phenomena as a product of global systems of power, distribution, and cultural production (Marcus 1995). Gupta and Ferguson describe the process of coupling people with place as a bias in anthropology to bounded, geographically determined, spaces and cultures. The product of this spatial assumption, they argue, has been the practice of rooting people, and producing – particularly among indigenous populations – a naturalized notion of a people and a homeland (Gupta and Ferguson 1992:11), as mentioned earlier. It was particularly

important to employ multi-sited research for this ethnography of vulnerability in order to avoid describing a ‘naturalized’ rootedness among *Kigiqtaamiut* people. Multi-sited research in this case, allowed me to see Shishmaref residents present their own impressions of relocation and vulnerability to outsiders (an important tool for understanding vulnerability experiences) and allowed me to witness local advocates engaging and speaking with non-Shishmaref audiences – demonstrating bicultural fluency of residents outside of the village and decoupling in my own experiences and imagination of my Shishmaref friends as rooted to place.

Methods and theory became rapidly intertwined in this project as I set out to investigate Shishmaref as a homeland that community members both resist and advocate *leaving*. The romanticization of a homeland as a land *left*, is common. Gupta and Ferguson state, “remembered places have often served as symbolic anchors of community for dispersed people” (Gupta and Ferguson 1992:11). As a research project conducted before dispersal, but with the threat of dispersal immanent, there were uncommon ethnographic moments in which to critique and explore the notion of place as being, essentially land-based (rooted), practice-based (habit), or imaginative and symbolic (nostalgic) – and in Shishmaref, all of these constructions of place circumscribe vulnerability and adaptation.

The landscape itself, the bluffs, the water line, the physicality of earth and permafrost, all take on preeminent importance in Shishmaref because these physical geographies create risk and vulnerability for Shishmaref residents. At the same time the symbolic interpretations of Shishmaref people and landscape will also affect experiences

for residents. Most stakeholders – both inside and outside the village – agree that solutions to rising water, erosion of earth, and rising temperatures, depend in part on large-scale discussions made at multiple bureaucratic scales. These conversations happen among people, the majority of whom will never see the bluffs, the water line, the physicality of earth and permafrost on Sarichef Island. Vulnerability for these decision-makers and power brokers is particularly dependent on the exported, symbolic creation of the island and its inhabitants. It was therefore important for me to follow some of these conversations and the symbolic interpretations of the lands, bluffs, and permafrost.

Using a methodology designed to understand how systems of power affect a particular location is not new in anthropology. Multi-sited ethnography is a trend described best by George Marcus (1995), and earlier with co-author Michael Fisher (Marcus & Fischer 1986). Multi-sited ethnography assumes that the delineation of any field of inquiry by geographical space is more or less arbitrary. Marcus's argument for multi-sited ethnography is systems driven. He was interested in capitalist political economy and its influence over small societies. His important 1995 analysis of the methodology comes out of research conducted in the 1980s (1995:95), as anthropologists became increasingly interested in the effects of powerful, global, economic, cultural, and political systems' influence in and over diverse groups of people around the world – including those that were previously considered 'isolated.' As the world became smaller, the interconnectedness between disparate groups and ideas, and the power disparities among these groups and ideas, gave rise to the need to explore multiple social spaces in order to understand consequences on the ground.

Marcus's observations about removed seats of power having an effect on local communities mimicked contemporary decision-making about vulnerability and risk in Shishmaref. It was clear early on that decisions were made in multiple locations and it was sometimes unclear which actors were having an influence on government response to erosion and flooding. The following is an example of a comment I heard in Shishmaref – and the methodological outcome of trailing that comment.

2.4.1 The multi-sited ethnography, an example

July 2008, in Shishmaref

Daniel Iyatunguk, co-chair of the Shishmaref elders council brings up and comments about a man named John Woodward – and a new plan for relocation that Daniel had heard of, but doesn't like. "I read it and it makes it where it's only their decision and I don't think that's right." Iyatunguk went on to insist that keeping decision-making within the Shishmaref community was essential and that he felt outsiders (regional and at the level of the state) should not have more control than local residents. This was something repeated frequently in interviews in Shishmaref. I never saw Woodward in Shishmaref – but I know he was accepted and well liked among some residents and considered controversial for others. I'm uncertain of his actual influence on government agency workers.

October 28, 2008 in Anchorage

In one of the first meetings of the IAWG a working group developed under Governor Palin's Subcommittee on Climate Change, representatives from the Army

Corps of Engineers, the Department of Homeland Security and FEMA, were all in attendance, as were a handful of casual observers. John Woodward is also in attendance and listed (as am I) in the meeting minutes as an ‘interested member of the public.’ In general, most government officials had not visited the villages and were unfamiliar with past relocation planning. During the meeting there was significant speculation about what would work and what wouldn’t work – and collective congratulations that the state and the feds had, unusually, come together to solve a complex problem. There were at least two village residents present – but no one was there from Shishmaref.

Steve Ivanoff, a Kawerak representative from Unalakleet talked about the flooding that happened in his village that year. How members of his community had to look up how to declare a disaster – how they Googled ‘declaring disaster’ as the water was coming up and into town. Ivanoff had a slide show of his community, of what the landscape looked like, of how it would be possible in Unalakleet to move slowly, building one house at a time as they were needed, up to the bluffs where a majority of the community was located. Ivanoff’s idea of a slow migration was a solution he said would work in Unalakleet, even if it wouldn’t work in other communities.

The meeting consisted of formal discussions and brain storming sessions; and participants in Anchorage moved through various scenarios: relocating people to hub cities, merging a village at risk with another village close by.

John Woodward was a builder who had helped to put triadecic foundations on seven houses in Shishmaref, houses that needed to be moved away from the bluffs on the ocean side in order to protect them from actually falling off of the cliffs and into the

water as erosion progressed. Based on his comments in the meeting and on comments from Shishmaref residents, Woodward seemed to believe that if he had coordinating power to make decisions for Shishmaref and negotiate with the state and the feds on behalf of the village, that he could have the village relocated in a couple of years due in part to triadetic foundations.

Woodward's experience and input channeled the conversation among agency workers to how to relocate 'at risk' communities quickly. For a full fifteen minutes the idea was thrown around by someone, "why don't we just move the school? That will get people moving their own houses in a hurry." Woodward agreed that moving critical infrastructure could be a catalyst for moving residents.

Seeing Woodward participate in the IAWG meeting gave me insight into how the processes of influencing decision-makers can occur. These meetings also made concrete the process power brokers go through to create discourses and discussions about vulnerability, risk, and risk reduction in Shishmaref. An ethnography of vulnerability in Shishmaref would not be complete without a perspective on these off-island meetings where Shishmaref and solutions to vulnerability in Shishmaref are discussed and imagined – and where unlikely 'experts' such as John Woodward and their solutions are considered alongside local Seward Peninsula residents, such as Steve Ivanoff.

2.4.2 Bringing a 'site' back into the research

Marcus's main detractor in the literature is Matei Candea. In the 2007 article, "Arbitrary locations: in defense of a bounded field-site," Candea argues that all research

projects are arbitrarily 'bound' and that location provides a consistent, manageable, and clearly communicated boundary from which to explore the goings on within as a coherent whole. This provocative article argues that the strength of ethnography is in the rich, contextualized detail it offers and which is only available if one limits the field of study. Limiting a field of study by location itself is 'arbitrary,' but the practice of limiting research to a bounded location enables the ethnographer to understand complexity inherent in social processes. By pursuing global phenomena around the globe itself, Candea argues, the complexity of social phenomena will necessarily be diluted. Location coherently binds a research subject, and provides researchers the opportunity to say something meaningful about how social processes actually play out on the ground (Candea 2007).

As this research project progressed, my desire to explore, interview, survey and conduct ethnography in multiple locations waned for the same simple reasons outlined by Candea. First, time and subject constraints for any research project must be imposed in any case; and second, location is a useful and internally-coherent method of limiting a research subject.

Additionally, the notion of place – as socially constructed and as a land-base – reemerged in the research process as an important aspect of this project. People and the practices that they employ and inscribe in particular landscapes are physically and symbolically dependent on place and place making (Basso 1996:7; Amit 2002:7-8) and actively resist decoupling (Kingston and Marino 2009) – in the absolute way suggested by Gupta and Ferguson (1992). *Kigiqtaamiut* people conduct meetings, grant interviews,

and engage government agencies often in Shishmaref and on Sarichef Island – with the emergent, dynamic relationships between *Kigiqtaamiut* and the landscape exerting particular pressures and social obligations (see chapter six). Particularities of discourse and social engagement at all levels of relocation planning became interesting in part *because* they were tied to place.

In order to address the following two facts: 1) that place is a grounding and motivating force in determining how people in Shishmaref respond to vulnerability and risk; and 2) that decisions are made in multiple locations; I employed multi-sited ethnography loosely and in a limited way. I traveled to government and non-profit meetings, but did not interview or survey government representatives. I spent time in Anchorage, Alaska, at meetings with the IAWG. I also spent a week at the Indigenous People's Summit on Climate Change with Shishmaref relocation activist, Tony Weyiouanna. When I was in national and international climate change meetings I would take notes on how and when Shishmaref was used, particularly by people who had never traveled to Shishmaref, Alaska, or the Arctic, as a case study. Still, and happily, the great bulk of this research was conducted in Shishmaref.

2.4.3 Island bound

For the majority of field research I was located in Shishmaref – and I was explicitly located in the village, on the island, not traveling significantly to traditional subsistence territories either on land, on the sea, or on the river systems. Traditional subsistence territory is significantly larger than the island itself.

My immobility – the lack of travel throughout traditional subsistence territory is particular to this project and is not representative of a great number of Shishmaref residents. In fact, one irony in the Shishmaref relocation project is that many residents are ‘stuck’ on a sinking island, and at the same time residents prize high mobility and pragmatically practice high mobility throughout the year. Movement off of the island is a constant and ubiquitous part of life in Shishmaref. Travel by snow machine, boat, and 4-wheeler are constant and, so long as the lagoon is free of ice, or the pack ice is stable enough to ride on – people are on the move.

Because many residents practice high mobility, anthropological work in Shishmaref almost always incorporates mainland environments and sea ice environments in the field of study, and topics of research are often framed around Iñupiaq engagement with landscape in some way, either through place naming (Fair 1997), hunting practices (Wisniewski 2011), ethnobotany (McIntosh 1999), or archeological studies (Mason and Gerlach 1995, as an example).

These research projects, which often put high value on traditional ecological knowledge (TEK) (though there are problems with the label TEK, see Wisniewski 2011) and lifestyles of the past, have a methodological necessity of traveling through the landscape. My project and therefore what fit within the scope of ‘field’ was notably more limiting.

Stories about traveling through the landscape in Shishmaref are important to local residents. In 2004 I traveled to the Serpentine River with the Stasenkos and this is the single most referred to event from my time in Shishmaref when I speak with

Kigiqtaamiut friends. I have spent many, many weeks and months in Shishmaref since 2004, including Easter, through the birth of a close friend's daughter, through illnesses, death, and church services; yet these 48 hours in the country are the times that my friends always refer to. Traveling through the landscape and coming to know the practices that people engage in throughout *Kigiqtaamiut* territory are rites of passage and a demonstration of belonging.

My research in Shishmaref became fundamentally island bound for a number of reasons. First, I was identified locally as someone interested in flooding and relocation and, following, I was funneled into knowledge networks and sites where 'paper' work and government work was being conducted, or into elders homes who knew about the past. My 'field' – dictated as much by local perception as by a research plan – was in the living rooms of local elected leaders, in the homes of elders who knew about change, in the church basement where city offices are housed, and other locales where bureaucratic work and organization occurs, or among traditional decision-makers. This identification of spaces where relocation planning occurs demonstrates local perceptions of relocation and adaptation planning and its position within the formal and informal political structure of the village. This was very important. In Shishmaref, relocation discourses are highly formalized. In casual conversation, I found, relocation planning is divorced in some ways from daily activities, including subsistence practices. When I was a person in Shishmaref 'doing research on relocation' it made sense locally for me to be among decision-makers.

One other factor that affected my island-boundedness was that, during my last field season in Shishmaref, I was 5-to-7 months pregnant. This was a great pleasure. As a

researcher traveling to Shishmaref as a childless, 30-something year old woman I was an anomaly. Family-less, childless, taking notes, attending meetings, I had made a handful of female friends through basketball games and through the Stasenko family; but I definitely met, interviewed, and engaged more men than women in Shishmaref – this is associated with the observation above that I was often directed towards elected officials or other decision-makers, which, in Shishmaref, tended to be men.

These engagements were relatively formal. When I arrived, pregnant, in my last field season there was a stark change in the way I engaged with both men and women. This is no doubt the result of both my own changing perceptions and others' changing perceptions of me. I became much more 'off limits' to single men – the people who would have typically given me snow machine rides from one end of town to the other and who were most likely to be traveling into the country.

Conversely, I was much more interesting to women, particularly women who were not actively in the work force, whom I had not had much contact with previously. This demographic – single mothers and married mothers who are not community leaders – are almost invisible in the anthropological literature of the indigenous Arctic (exceptions are Lee 2002, and among Yupik women, Morrow 2002, Jolles 1997). Standing in line for cake after high school graduation, women would come and talk to me about the baby, about how to behave, about how to think, about keeping my mind right and not raising my arms above my head, about eating right and eating plenty, about whether or not I still drank coffee. These are people who definitely travel into the

country, but who travel much less than their male counterparts and, during pregnancy, I was rooted firmly within this female demographic.

2.5 Ethnography as Humility

Being island-bound and becoming identified as a ‘mother’ created its own practices and ethnographic moments. During my last six-week field trip I spent a lot of time in kitchens, when I was not conducting formal interviews, baking bread and cooking my own traditional foods (Louisiana shrimp, gumbo, etouffee) for others. When I brought homemade cinnamon rolls to one local businessman during an interview he said, “Ah, you ask questions like an Eskimo.” I overheard another local entrepreneur tell a client, “I have this girl who cooks Cajun food for me.”

Considering these dynamics now, I appreciate that one challenge to this project was not representing myself as someone who was either pitying residents or someone who had all the answers. As the ethnographic example above mentioned, keeping decision-making power about relocation in the hands of local authorities was a sensitive topic and a very important challenge. All of the journalists and researchers that I met in Shishmaref were there for less than a week – but many of them (certainly not all) had very strong opinions about what should be done in Shishmaref.

By becoming “the girl who cooks Cajun food for me,” or “who makes good cinnamon rolls,” or “who makes good salmonberry bread,” or “who is becoming a mother,” put me into a more diminutive position in the community – and was helpful in avoiding the impression that I knew what Shishmaref ought to do. In the highly politicized, public, and vulnerable

conditions present in Shishmaref, it was important to actively cultivate and demonstrate humility. This humility was appropriate for my position. Waiting, cooking, asking questions, walking, spending time in kitchens with women who were not wage earners, all demonstrated humility. Within these more traditionally female oriented roles there existed the possibility of demonstrating patience; of not aggressively testing, questioning, or doubting the expertise, knowledge, and authority of relocation experts on the island. This position worked well for the research project, but was also an appropriate position for someone who does not know the ways and decisions of the community.

Outside of ethnography and participant observation, I also relied heavily on more formal modes of research. These more formal interviews and surveys also felt directed in part by local expectations. Because this research was about a highly formalized topic, I felt local leaders were very comfortable responding to questions in a more formal setting. So I chose a suite of research methods which included semi-directed interviews and surveys.

2.6 Semi-Directed Interviews

The largest body of research for this project was collected using semi-directed interviews. These interviews asked a series of questions about people's experience of place and family history, about past flooding experiences, and visions of the future. Research questions were vetted with local participants to assure cross-cultural and linguistic accuracy. All interviews were conducted in English, and dialect differences were taken into account through the vetting process.

Research questions ranged from asking participants about the aftermath of past flooding events (e.g. Can you describe to me what happened during the flood of 1997?) to asking about experiences in government planning meetings (e.g. Is Shishmaref being adequately represented to state and federal agencies?). Interview data was transcribed and analyzed to identify recurrent themes of experience.

Disasters are emotional topics that are therefore highly sensitive. “It is frequently in extreme conditions, particularly those characterized by loss and change, that human beings find themselves confronted with difficult existential questions” (Oliver-Smith 1996:308). Discussing vulnerability and future relocation as response to flooding is therefore particularly challenging. These already delicate discussions are even more complicated in a cultural context where speaking of the future is linked to hubris (Marino et al. 2006) and where most respondents’ cultural scaffolding for addressing the future differed from my own. In the end, I asked questions about the future, but did not push for answers when an interviewee hesitated to answer explicitly. I accepted the linguistic structure with which future-oriented questions were answered or remained unanswered by interviewees and friends.

Because people in Shishmaref are often cross-culturally competent many people responded to the questions similarly to what I expected when constructing interview questions. For example, when I asked about what the future looked like for Shishmaref residents, many people, particularly people under the age of 45, responded with descriptions of a new village. In other cases, respondents did not respond in ways the

author expected or respondents avoided questions about the future completely (see chapter seven for a discussion).

In one case, a respondent told me that I needed to learn how to talk about the future in Shishmaref. While I don't believe I picked up all the cultural nuances that frame discussions about the future in Shishmaref, I felt that asking about the future – using a method of scenario building – worked well and that I became increasingly comfortable and competent at interpreting answers, whether those answers were delivered in the discursive forms to which I was accustomed or not.

2.7 Survey

In total I conducted 30 surveys. Five of these I did not analyze because of clear miscommunication concerning the numbering system and other difficulties having to do with a lack of clarity at the beginning of my survey distribution. In this survey respondents were asked to indicate the extent to which they agreed with a set of attitude statements on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). Survey questions were vetted with local Shishmaref residents to assure cross-cultural clarity. Surveys were analyzed with Statistical Package for Social Sciences (SPSS).

Surveys are not as common a methodological tool in anthropology as they are in other social science fields such as psychology and sociology. Rightly, anthropologists tend to be critical of surveys for being overly simplistic, for including measurements of those people who feel uninformed, and for constructing situations in which people try to give the 'right' answer (Launiala 2009; Cleland 1973; Pelto and Pelto 1997). I recognize the

limitations of conducting surveys. This survey gave a snap shot of correlations that would have been meaningless without interviews and ethnographic data. With the interviews and ethnographic data, however, I found some survey responses surprising and insightful. Anthropologists are uniquely poised to write and interpret meaningful surveys, given their often long-term relationships with those being surveyed. These circumstances make surveys a profound and useful tool for an anthropologist when selectively employed.

2.8 Sampling

Sampling has been literally overlooked, qualifying as the least ‘sexy’ facet of qualitative research. Yet sampling procedures are unique facets within any paradigm within which empirical research is pursued. Both inevitable and invaluable, these procedures amount to crucial moments within the overall research design; moments where the type of contact between researcher(s) and information is conceptualized – to be later embodied (Noy 2008:328).

Sampling methods in anthropology are frequently invisible. For this research project interview sampling was conducted through what is commonly known as snowball sampling, the use of preexisting social networks through which a researcher comes to know research participants. Noy argues that this method of sampling incorporates a feminist approach to knowledge construction by decoupling knowledge from hegemonic stasis – the false assumptions that knowledge ‘exists’ and the researcher’s job is to

'collect' it. Instead, "snowball sampling relies on and partakes in the dynamics of natural and organic social networks" (Noy 2008:329).

Knowledge, under these circumstances, is not a pre-existing 'item' for the researcher to uncover; but a flexible, changing river of meaning that exists in the dynamic between people, as much or more than it resides in a single person. Snowball sampling locates the researcher squarely within those social circumstances. She brings with her the social capital derived from having spoken with someone located within a particular social network and releases power over 'identifying authority' to interviewees. Noy asserts, "unlike the bulk of sampling procedures and designs, in snowball sampling the researcher relinquishes a considerable amount of control over the sampling phase to the informants" (2008:332).

In Shishmaref, I recruited interview participants through two social networks. First, I interviewed official, mostly elected, political figures. This included members of the city government, the tribal government, the Shishmaref Relocation Coalition, and people who worked as agency workers within tribal or regional corporations or the city. Second, my contacts in Shishmaref referred me to people in town they considered knowledgeable about flooding, etc. This often included elders and skilled hunters within their families. Third, I interviewed people who were present within my fairly extensive social networks. After several trips to the island, cousins and aunts of the family I stayed with were curious about my project, and after spending time with them I was curious about what they would say. Subsequently, interviews naturally sprung up.

2.9 The Reification of Expert

As an anthropologist interested in the local, it was important to interview and engage local experts. As I asked about who was considered an ‘expert’ in relocation issues, flooding, or traditional land use issues, I frequently was routed to people who often also showed up in newspaper and magazine stories. This was true when Peter Schweitzer and I were interviewing in 2004 and 2005 and true as I continued this research. As I observed these ‘experts’ over the years, I began to understand how complicated it was to be the locus of information for so many journalists and researchers – and how the ‘expert’ becomes reified in situations where knowledge and narrative are being produced in large part for outsiders. The following section explains how this expert social-network came to be – and how I came to walk through it and view it as I was conducting this research.

I ‘went to work’ most days in the Lutheran Church basement – where there was internet, a public computer, and always someone sitting around drinking coffee. The church basement acts as an office for the Environmental Protection Agency (EPA) staff member, Kawerak’s transportation coordinator, and the city grant writer, among others. These ‘official’ leaders of the community allowed me to conduct interviews with them and directed me to other people in the community with whom to conduct interviews.

As Shishmaref has increasingly hosted journalists, researchers, and filmmakers interested in climate change and environmental migration, Shishmaref leaders actively guard against the production of incorrect or misreported information. A friend who conducted an interview with a journalist who inaccurately identified a flooding event as

coming from the ocean side of the island instead of the lagoon side was held in-part responsible for the misinformation. I witnessed myself and other researchers being pointed to specific experts over and over again. This repetition of experts who present information about the relocation has informally developed a network of individuals who have become adept at discussing Shishmaref relocation with outsiders. By this I mean that through habit, experience, and insight, leaders seem to lead outsiders to specific individuals in the community who are skilled at telling the story of Shishmaref and Shishmaref's likely relocation to the outside world. In this way, leaders exert some (subtle) authority over how the Shishmaref narrative is constructed for the media. They do this by directing journalists and researchers through a well-worn path of interviewees that, in turn, produces a specific, coherent, consistent narrative.

Other researchers have noted that in northern communities there is a high priority on the accuracy of specific events and information (Briggs 1991; Morrow 1990). Perhaps the development of this reified social-network of experts is an effort to maintain this accuracy. The network I am describing is not rigid – there is significant flexibility – and, throughout my research, autonomy for both the local agents of knowledge and for myself as a researcher was respected, so that knowledge production is specific to every interaction and can evolve as relationships evolve. However, this semi-formal inscription of authority, under the highly unusual conditions of such a small community being thrust into an international spotlight, has reified the ‘narrative’ of Shishmaref for outsiders in ways that are at least semi-intentional.

This narrative is important. There is no ‘real’ truth to uncover beyond this narrative. As Noy explains, it is in relinquishing power over the next interview to the previous interviewee that social scientists are able, in practice, to recognize the social embeddedness and social construction of knowledge in all cases.

However, in Shishmaref there may be alternative truths; or co-existing, socially mitigated knowledge that is not situated among this network of experts constructed for outsiders. It was important for me to be aware of the various social networks within which different types of knowledge and information are embedded. Time in place and long-standing friendships in Shishmaref allowed me to experience this reified narrative of Shishmaref and experience other co-existing narratives. By heuristically investigating sampling methodologies, I became aware of the reflexivity of knowledge creation and this opened up new areas of inquiry. Understanding knowledge streams as a function of publicity became crucial outcomes of this research and began with interrogating my own sampling methodologies.

2.10 Paying Interviewees

For this research I compensated interviewees for their time by giving them a monetary gift of \$20/hour. In almost all cases interviews lasted between 20 minutes and one hour. Survey participants were given \$25 for taking a written survey (an oral survey option was also offered), and answering a handful of short questions following the survey. Some interviewees declined payment.

While paying participants of research studies has been commonplace in psychological and medical research, it is becoming clear that compensation for research participants has recently become more common in other social science research (Head 2009:335). Of paying social science participants, Head writes,

One point is clear – the use of payments in qualitative research projects should be reflexively considered by the social research community, and the use of payments in research projects should be moved out of the margins and be more fully discussed in research publications and in the ethical guidelines produced by social research associations (2009:336).

As Head suggests, the decision to pay participants creates its own critical outcomes, including but not limited to: selecting for people who would benefit most from a cash incentive; making the possible power disparity between interviewer and interviewee explicit and possibly public; creating the implication that interviewees owe something to the interviewer which could lead to the interviewer feeling coerced and cause harm (Head 2009:337).

These three possibly negative attributes of paying participants, however, are present in non-compensated research interviews as well and researchers can address the possibly negative scenarios created by compensation. The researcher can avoid sampling issues by being aware of the sampling techniques being used and reflexively identifying the outcomes of those techniques. Power disparities between interviewer and interviewees are problematic in anthropology regardless of money exchanges. In this case, compensation was a relatively small sum. Power, like knowledge, is fluid and

embedded in social context. This means that often, in Shishmaref, I was powerless in some situations and recognized my relative position of power as an outsider, a funded researcher, and a scientist in others. To avoid or mitigate the possibility that interviewees would feel coerced by compensation, and would therefore admit to or reveal something they otherwise would not have, I was explicit in every interview that the interviewee could stop the research at any time, without explanation. I allowed people to remain anonymous if they so desired; and, as I mentioned above, I never asked a question twice or pressed for an answer from interviewees.

There are benefits to compensating participants for their time. First, in many cases interviewees were local experts and experts are typically compensated for interviews. Second, people's time and knowledge is valuable and compensation is an outward acknowledgement of that inherent value. Third, funded research projects offer compensation to the researcher for his/her time and efforts. It is reasonable to redistribute part of these funds to interviewees and local experts in any research project that uses interviews to collect information, as the research in these cases becomes a joint project. Fourth, people in Shishmaref are often relatively poor. Because of this it seems reasonable to offer monetary compensation roughly equivalent to the cost of dinner from the local store as a meager contribution in exchange for time. Lastly, a stream of journalists, government officials, and other researchers have funneled through Shishmaref and expect residents of the village to donate their knowledge ad nauseam; and residents often do so out of a sincere desire to aid Shishmaref in the relocation process and also as a demonstration of politeness to strangers. One simple finding from

this research was that this constant retelling is difficult work, which becomes highly tedious and frustrating to residents. Interviewees' ability to reap some benefit from giving *yet another* interview was important.

Many interviewees declined compensation; and many others seemed surprised and thankful for it. As a general rule of thumb, an individual's decision to accept or decline compensation was correlated with two factors. First, how close a personal relationship the interviewer and I had prior to the interview (the closer, the more likely to decline) and second, whether or not the interviewer would benefit from compensation (the more relative value \$20-\$25 had, the more likely to accept).

In retrospect, I would not change compensating interviewees for their time. I continue to feel that in research projects which do not offer extremely concrete deliverables to researched communities, compensation for residents' time and knowledge along with clear and open communication about likely research outcomes is one method by which honesty and integrity between researchers and the communities in which they work is maintained. This exchange in no way lessens the researcher's ethical obligation to report findings back to communities, protect human subjects from harm, or produce final research products that contribute to the overall well-being of communities.

As a final point, I feel compensation did not – in almost every case – change the overall tenor of the interviews or the data that came out of interviews. In prior research in Shishmaref I conducted unpaid interviews and, comparatively, these interviews felt similar. In some cases paying interviewees and survey participants did formalize the

relationship between myself and the research participant. This may have created some distance between myself as an anthropologist and some members of the community.

In many cases I established very real and intimate relationships with people in Shishmaref – but I was not a fully participating community member, and was rather a researcher, ‘collecting’ information, who made a handful of very dear friends. Paying interviewees helped to establish this role. Because of the nature of this research, I was comfortable with this role and felt it was an adequate and accurate collective identification of my role within the village.

2.11 A Concluding Discussion

All the information collected through this research project (survey, ethnography, semi-structured interviews) was compared and analyzed. The multitude of methodological tools used in this research project mimics the multitude of stories, pieces of knowledge, ideological positions of actors, historical circumstances, and subjectivities which construct the current moment in time where Shishmaraf residents are a) an internationally recognized symbol of climate change and b) poised to move from an island that has been an integral staging ground for sea mammal hunts for a small group of Iñupiaq people for thousands of years, and c) hoping to do so before a major disaster. This is a case study of vulnerability – in all its complexity and grace. These are the glimpses of lives that are considered to be in a condition of vulnerability. The question the next chapter will answer is, vulnerability to what?

Chapter Three: Vulnerability, Prelude to Disaster

I must say, this storm is much bigger than anyone expected.

-- FEMA Director Michael Brown, Aug. 31, 2005

Act of God is the legal term used to denote events occurring outside of human control. These include sudden floods or other natural disasters, for which no one can be held responsible.

-Wikipedia (Act of God)

3.1 Vulnerability to Flooding

The village of Shishmaref sits on a barrier sand island. The island itself is one half mile wide and is sandwiched between the Chuckchi Sea and Shishmaref Inlet. In the past three decades, the village has experienced increasing erosion and flooding. Erosion and flooding in Alaska has been linked to linked to anthropogenic warming (Hinzman et al. 2005; ACIA 2005:997; USGAO 2003, 2009) and infrastructure changes (Mason et al. 1997). The island is prone to flooding following fall storms that come off of the Chukchi Sea. These storms and the erosion that follows are making the island uninhabitable and causing an imminent threat to lives and homes.

According to residents, the island loses approximately 10 feet (approximately 3 meters) of land to storms and erosion every year. In 1997 a large storm took 30 feet (approximately 9 meters) of shoreline in a single night (Tony Weyiouanna, interviewed by Elizabeth Marino, July 2008). This is significant to an island that has only 2.48 square miles (4 square km) of land. Government agencies, non-governmental agencies, and the local population all acknowledge that permanent, year-round habitation of the island will

be impossible in the near future, and the migration and/or relocation of people living on the island is imperative.

Sea walls and revetment projects have been and are currently in construction, but this expensive technology is reliable only for 15 years before major reconstruction will likely be necessary to maintain structural integrity. Both elders and younger generations repeat the local wisdom that acknowledges, “our elders say that these islands were made just from beach, and they were built up over the years, and the ocean is going to take back, take back what it created” (Fred Eningowuk, interviewed by Elizabeth Marino, September 2009). Scientists and community members both agree that increased flooding and erosion will cause Shishmaref residents to experience negative consequences.

To better understand the nature of vulnerability for this community, it is first helpful to consider the diverse relationships that exist between humans and the ecologies they inhabit. Flooding itself is simply a condition of high water, and conditions of high water alone do not necessarily produce negative consequences to humans. Indeed, livelihoods can be predicated on flooding in some circumstances:

In Africa one of the most significant downstream riparian ecosystems in river basins are the seasonally inundated savanna or forested floodplains. These “wetland” ecosystems are relatively flat areas adjacent to rivers created by sedimentary deposits of meandering channels as well as periodic flooding. During seasonal flood events, water often leaves the main river channel and inundates a floodplane. ... As this occurs, sediment rapidly falls out of the floodwater and is deposited. These

alluvial deposits make for extremely fertile soils, which have been exploited for centuries in many regions of Africa by traditional “flood recession” agriculture. That is, as floods abate and recede, crops are planted in the naturally irrigated soils (Barbier 2002:3).

In the Hadejia’ Jama’ floodplain in Northern Nigeria, flooding is an essential part of agriculture, both small and large scale. Today, water diversion upstream increasingly prevents significant seasonal flooding downstream, making communities that are dependent on agriculture for subsistence or for small-scale market production vulnerable to the *lack* of flooding. Thus, flooding and lack of flooding can both be disastrous – which raises questions about what exactly constitutes a disaster. If conditions of high water do not necessarily cause disaster, then *to what* are Shishmaref residents vulnerable?

Shishmaref and Northern Nigeria are vastly distinct ecosystems, but the ecological conditions of high water in Shishmaref produce state and federally declared disasters, and in Northern Nigeria produce the necessary conditions for subsistence farming. The differences between these two situations rest in the social and economic relationships between people and ecosystems – not in the ecological conditions themselves. In Nigeria, the floodplain is farmland. In Shishmaref, current flood-prone areas are residential. Conducting informed research in Shishmaref, and making valid comparisons with other flood-prone areas of the world requires an intellectual unbinding of the idea of disaster from the ecological condition of flooding.

This unbinding, in actuality, is very difficult. During interviews, I asked *Kigiqtaamiut* people to discuss the flooding events in Shishmaref. Transcripts indicate

that residents responded emotionally and physically to rising water and falling shoreline – to ecological conditions. Experiences of these flooding events are experiences of the physicality of landscape. In the interview excerpts below, interviewees give descriptions of how the land behaves and how people respond to the land as it changes during a flooding event.

Interview with Anonymous 1.a., September 23, 2009

Anonymous: It was just flooding, I mean, the water was just breaking off the high beach, I mean over the cliffs. And then like, it was going on for a while. Because within a week or something, I don't know maybe a month, that's when they moved those 7 houses. That was pretty weird though.

EM: Were you here during the flood of 2004?

A: That one was not as bad as '97, but it was coming from both, the ocean and the lagoon.

EM: So you had high water both directions?

A: (Indicates yes by raising eyebrows) In 2004 I think the water was going over the sea wall and making a little river.

Interview with Jennifer Demur, September 23, 2009

EM: Were you here during the flood of 1997?

JD: Yeah

EM: Can you tell me what happened then?

JD: That was pretty scary. Thinking how we're going to get out of here. You know, and is it really going to flood all the way over. But there was a

lot of really excited people and we were on the edge of the beach watching the waves and making sure nothing was going in. And I think that's when those houses were falling in. And I remember we were out there watching.

EM: What were those people who owned those houses doing?

JD: Rushing, emptying the house. There was lots of people helping.

EM: Did you think those houses were in danger before the flood or was it a surprise?

JD: Well, we didn't think it would go that quick.

These prototypical comments demonstrate that in real time, disasters appear to be completely contained by the ecological conditions in the present. "The water was just breaking off the high cliffs." "The water was going over the sea wall and making a little river." "There was a lot of really excited people and we were on the edge of the beach watching waves ... we were out there watching." It is the experiences of water, waves, and the breaking of high cliffs in these excerpts that are the catalysts for danger. In a disaster situation, human beings are intimately connected with changing landscapes – and are imminently threatened by those changing landscapes. The earth moves in a quake, the waters rise in a flood, the wind blows in a hurricane, and in Shishmaref the water breaks off the high cliffs – the experiences of disaster are inextricable from feeling abnormal, dangerous ecological conditions.

The following excerpt from an interview is a conclusion that stems from these experiences, where the onus of needing to relocate is put on 'mother nature' – the ecological conditions themselves.

Interview with Anonymous 3.b, conducted by myself and Stacey Stasenکو, former Shishmaref resident, September 2005

A: I sure don't want to move.

Stasenکو: No one wants to, but Mother Nature seems like she's moving us.

3.1.1 Hazard-centric disaster research

The ecological conditions that cause disasters (e.g. floods, hurricanes, earthquakes) have been the subjects of disaster research for most of the 20th century. In 1976, a book entitled *Natural Disasters*, by John Butler, a researcher who comes from a 'mainstream natural hazards tradition' (Adger 2006:271), was arranged into the following chapters: 1. Earthquakes; 2. Volcanoes; 3. Tsunamis and Storm Surges; 4. Tropical Cyclones and Tornadoes; 5. Flood; 6. Drought; 7. Fire; 8. Landslides; 9. Freezes and Avalanches; 10. Disease; and 11. Disasters in General (Butler 1976). These types of studies are recognized as hazard-centric approaches to disaster research and are characterized by a focus on the natural hazard itself (e.g. the tornado, the hurricane, the flood) as the mechanism for disaster and an understanding of these natural hazards as rare, aberrations from normal conditions. Within this framework, people (and cultures) can only respond to their environments during times of disaster (White 1945; Wallace 1957), and the better the emergency-preparedness is for the episodic event, the less the damage we can expect to human society. The hazard-centric disaster perspective is characterized as a behavioral response approach, according to Anthony Oliver-Smith

(1996:305-306), which concentrates on individual and institutional reactions to disaster conditions. The environment acts, and people respond to those actions.

Disaster prevention within a hazard-centric ideology almost always focuses on warning systems, forecasting and prediction, and protecting populations from the hazardous ecological conditions themselves through the manipulation of ecological features. For example, Butler (1976:69-70) recommends the following 10 strategies as essential flood prevention and risk mitigation techniques: forecasting, levee systems, large dams on rivers, small dams on urban creeks, river channel improvement and straightening, drainage works, floodways, soil conservation and small dams on upper catchments, flood-proofing buildings, and zoning of flood plains. All but two of these suggestions (flood-proofing and zoning – mentioned last) focus on containing and manipulating rivers and shorelines, and do not consider changing human behavior or human social conditions.

Hazard-centric ideologies retain their currency in some disaster prevention circles. Technologically-driven, hazard-focused disaster prevention strategies are popular, particularly in response to deteriorating conditions along Alaska's coast. A first response to erosion in and around villages in Alaska is sea wall protection. Ten million US dollars have been spent on sea wall construction in Shishmaref since 1981 – a technological response that focuses on protecting existing infrastructure, something endorsed by the community. Sea walls are expensive and short-lived. The Shishmaref sea wall is projected to have a 15-year lifespan if not maintained and a 25-year lifespan if properly

maintained (Gray et al. 2011). Maintenance funding was not earmarked in the original construction phases of the sea wall.

Hazard-centric research also aligns with how many people commonly explain disaster experiences – as rare, aberrations from normal ecological conditions, as floods and hurricanes, with words we only use in extreme, dangerous situations. The narrative of ‘*We survived a flood,*’ has cultural value to explain an extreme event.

Despite their intuitive appeal, hazard-centric research efforts and techno-engineered solutions to disaster began to fall out of favor among social scientists by the late 1970s and early 1980s, as new research demonstrated that disasters were also highly dependent on social systems and social-ecological interactions (Hewitt 1983; Oliver-Smith 1996 for reviews). High water did not always produce a disaster. A high poverty rate or inappropriate development (Oliver-smith 1996:315), in association with high water, was likely to produce a disaster. So to say that Shishmaref residents are vulnerable to flooding is somewhat accurate – vulnerability is certainly associated with flooding – but it is also an incomplete characterization.

Humans are not vulnerable to flooding per say; they are vulnerable to the outcomes of flooding, which can be dramatically different given different social, ecological, and cultural conditions. In Alaska, even low level flooding can lead to hypothermia. In Haiti, flooding accompanies water-borne diseases. In Louisiana, there is widespread fear of snakes. In Shishmaref, residents are vulnerable to a suite of consequences under conditions of flooding.

To refine our understanding of vulnerability in the case of Shishmaref, we will subsequently refer to flooding and erosion as *hazards*, and the negative consequences of those hazards as conditions of *disaster*. Following the work of Susana Hoffman and Anthony Oliver-Smith's, we define hazards as,

the forces, conditions, or technologies that carry a potential for social, infrastructural, or environmental damage. A hazard can be a hurricane, earthquake, or avalanche; it can also be a nuclear facility or a socioeconomic practice, such as using pesticides. The issue of hazard further incorporates the way a society perceives the danger or dangers, either environmental and/or technological, that it faces and the ways it allows the danger to enter its calculation of risk (Hoffman and Oliver-Smith 2002:4).

While disaster is defined as,

A process/event combining a potentially destructive agent/force from the natural, modified, or built environment and a population in a socially and economically produced condition of vulnerability, resulting in a perceived disruption of the customary relative satisfactions of individual and social needs for physical survival, social order, and meaning (Hoffman and Oliver-Smith 2002:4).

The next section of this chapter shifts from hazard-centric to political, economic, and social-environmental systems approaches to disaster. Importantly, we tackle the complex notion of vulnerability. Who is vulnerable to a disaster? How is vulnerability

constructed, and how does this apply in Shishmaref? Following this, we examine in detail the numerous consequences to which Shishmaref residents are vulnerable – death, loss of land, infrastructure and property, and social and cultural disarticulation.

3.2 What is Vulnerability?

The term vulnerability is used in many academic fields, as well as in common speech. Its ubiquity makes it a difficult term – so much so that Hans-Martin Füssel quotes Tinnerman as saying “vulnerability is a term of such broad use as to be almost useless for careful description at the present, except as a rhetorical indicator of areas of greatest concern” (Füssel 2007:155). The Merriam-Webster definition of vulnerable is: “capable of being physically or emotionally wounded” and “open to attack or damage,” which could certainly be applied in Shishmaref under flooding conditions, but could also be applied almost anywhere.

The term vulnerability was linked to disaster theory first in the field of geography, and quickly migrated to the interdisciplinary disaster literature.

“The term ‘vulnerability’ was introduced as a response to the hazard-centric perception of disasters in the 1970s (...). With its growing recognition at the beginning of the 1980s, ‘vulnerability’ was used to express the understanding that the extent to which people suffer from calamities depends on (a) ‘the likelihood of being exposed to hazards’ and (b) ‘their capacity to withstand them, which relates to their socio-economic circumstances” (Schneiderbauer and Ehrlich 2004:13).

The concept of vulnerability has also been used in the fields of ecology, anthropology, engineering, and economics. It is used in policy and governance forums and has become a central issue in the International Panel on Climate Change (IPCC). The term vulnerability (and, following, the framing of analysis) is increasingly common in any field dealing with socio-ecological systems in general, and anthropogenic climate change in particular. There are multiple review articles about the myriad ways vulnerability is defined, and its perceived usefulness (Füssel 2007; Adger 2006; O'Brien et al. 2007; Downing et al. 2001). The following discussion applies Neil Adger's (2006) assessment of the four leading areas of vulnerability research to the Shishmaref case study, and then offers a critique of the concept of vulnerability.

3.2.1 Vulnerability in four parts

In Figure 3.1, below, four conceptualizations of vulnerability are represented: as a lack of entitlements, as a product of political ecology, as a function of pressure and release, and as an outcome of exposure. Derived from Adger's (2006) assessment of the existing literature, these four manners of interpreting vulnerability all consider disasters to be the product of both the environment (X axis) and social relationships (Y axis), but differ in the degree to which either is considered primary.

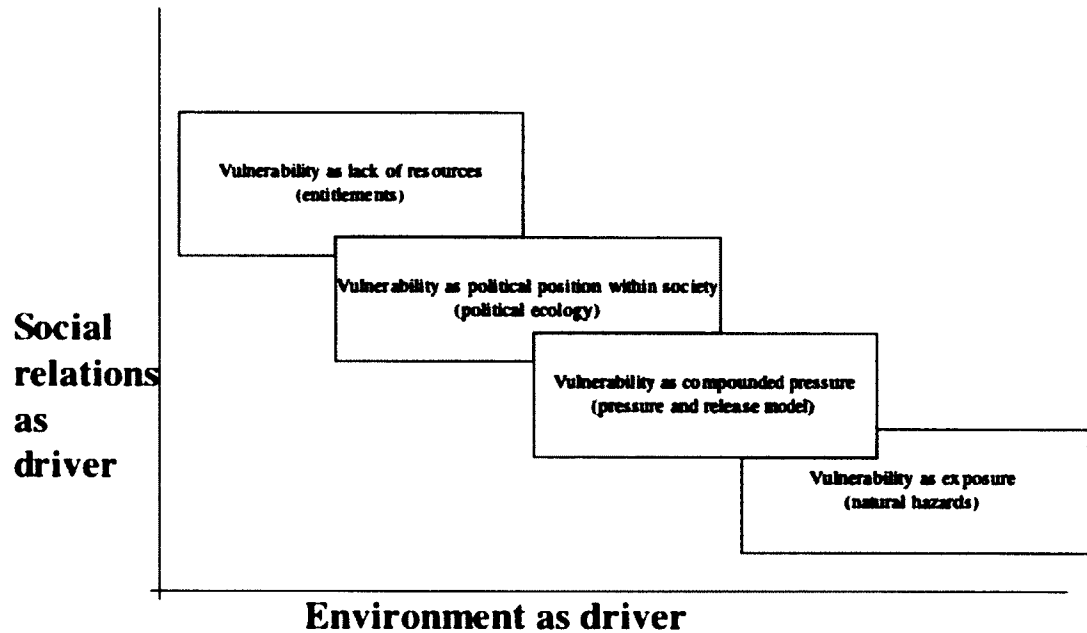


Figure 3.1: Conceptual diagram of vulnerability (based on Adger 2006)

When the concept of vulnerability is utilized in the hazard-centric literature, it is still equated with exposure (*natural hazards* in Figure 3.1). If you live where it is likely to flood, you are vulnerable to flooding. Flooding, in this case, is the center of research, as we discussed earlier; human interactions with the environment are secondary. Human-to-human interactions are rarely considered as a mechanism for disaster. This is described in detail in section 3.1.1, above.

At the other end of the spectrum, vulnerability is associated with impoverishment, a lack of social capital, and the inequitable distribution of resources (*entitlements* in Figure 3.1). Adger calls this the 'entitlements' approach to vulnerability (based on Sen

1984:497) – where an individual’s or community’s resources and assets (social and economic) are inadequate to respond to changes or stress. Vulnerability as a lack of entitlements can occur in the context of a natural hazard or not – such as is the case with death and malnutrition linked to famine and food insecurity. A drought may occur, and food insecurity linked to lean agricultural production follows; but this can happen in the absence of actual food *shortages*. As Adger states, “the advantage of the entitlements approach to famine is that it can be used to explain situations where populations have been vulnerable to famine even when there are no absolute shortages of food” (2006:271). In a case where poor subsistence farmers cannot afford to buy food that is available, or cannot depend on social networks or formal institutions to provide food, disaster is a product of the lack of entitlements – famine can indeed occur in the absence of a drought all together.

In the Shishmaref case, under the hazard-centric framework, one could say that residents are vulnerable to death and hardship because they live on an island that is experiencing rapid erosion and is prone to flooding without adequate technological protection from that flooding. Under the entitlements framework, one might consider whether or not the Shishmaref community has adequate resources (social and economic) to function in a way that allows for safety and growth. Vulnerability in Shishmaref under the entitlements approach, then, is tied to resource distribution – other communities may be able to buy, build, and foster safety and growth, while the Shishmaref community cannot.

In the hazards approach, all of the emphasis is on the flood. In the entitlement approach, ecological conditions are merely backdrop for social relationships and the distribution of resources. The entitlements approach is interesting in Shishmaref because in absence of flooding and erosion, there is still a question about whether the island is big enough to continue to house Shishmaref's growing population. This could easily lead to a 'disaster.' For example, a lack of space for houses in areas that do not flood puts pressure on residents to build houses where it is certain to flood. This could potentially create disaster in the absence of abnormal or changing ecological conditions.

Most prevalent in the anthropological literature on disaster is the political ecological model of disaster (Hewitt 1983; Dilley and Boudreau 2001; Cutter 1996, 2003, 2006; Cutter et al. 2008) (*political ecology* in Figure 3.1). This model incorporates exposure to risk – but understands exposure as a function of political ecological conditions. In this model, marginalized and impoverished communities tend to *live in riskier areas* and have lower adaptive capacity – through: (1) marginalization from political protection and decision-making; (2) inadequate infrastructure to cope with hazardous conditions; and (3) inadequate resources to cope with disasters before, during, and after the episodic hazard event occurs.

Susan Cutter describes her political ecological model of vulnerability as a geography of social vulnerability (Cutter 2006). This model is useful in explaining, for example, Hurricane Katrina – the hurricane that caused significant loss of life, property, and social and cultural disarticulation in and around New Orleans, Louisiana after making landfall on August 29, 2005. Cutter explains the outcomes of Hurricane Katrina –

which caused death to primarily poor African Americans living in the city of New Orleans – as a result of development that ignored ecological conditions (i.e. the city elevation is below sea level), followed by white flight which lowered the tax base, followed by levee corrosion and disrepair, followed by levee failure, which coincided with inadequate city planning for evacuation and the lack of personal and community resources to facilitate evacuation (Cutter 2006). In this analysis, the most vulnerable communities experienced marginalization and impoverishment in multiple ways, across extended time scales, which culminated in severe negative outcomes (a disaster) when these communities were exposed to hazardous conditions. This analysis explains why certain people are vulnerable to flooding because of an inability to cope with hazardous conditions in the present (e.g. lack of resources to evacuate), and why certain populations live in risky areas (e.g. history of political neglect, white flight, and infrastructure neglect). Cutter’s 2006 essay on Katrina begins with the statement that, “It was bound to happen” (Cutter 2006:1), implying that the accuracy of climatological predictions about whether or not this flood would happen was not the problem – more systemic social, political, and economic factors were.

This political ecological model of disasters – by which a vulnerable community is recognized through a conglomeration of variables that make them vulnerable *and* is located in areas of greater exposure – is instructive in the Shishmaref case study. Under this framework, we are encouraged to ask two important questions. The first is similar to the entitlements framework of disaster – namely, why does Shishmaref lack adaptive capacity or the resources (entitlements) necessary to cope with flooding and erosion in

the present? The second question is, why do Shishmaref residents live in a risky location, which is repetitively exposed to hazards, in the first place?

The last model of vulnerability (*pressure and release model* in Figure 3.1) is closely tied to the climate change literature and the adaptation and resilience literature (Turner et al. 2003), and is adopted from the field of ecology – most successfully through Wisner, Blakie and colleagues' assessment of hazards and disaster (2004). This model seeks to bring the environment-as-driver back into the analysis more directly – to balance the natural hazards model of disaster with the political ecological model. The pressure and release model of vulnerability understands any stress as a pressure to the system: the more pressure put on the system, the more likely the system will collapse or be forced to change into something new. Risk (of disaster) in this model is an expression of vulnerability and hazard – expressed conceptually as $R = V \times H$.

Expressed schematically, our view is that the risk faced by people must be seen as a cross-cutting combination of vulnerability and hazard. Disasters are a result of the interaction of both; there cannot be a disaster if there are hazards but vulnerability is (theoretically) nil, or if there is a vulnerable population but no hazard event (Wisner et al. 2003:49).

The pressure and release model is increasingly popular, particularly in climate change research and among planners. Ideally, the benefit of this model is that it incorporates root causes of vulnerability that are internal to a community and then understands hazardous conditions as an additional pressure on that community – while neither underscoring nor dismissing the physical reality and importance of the hazard

itself. In Shishmaref, we could say that this model would incorporate internal conditions of vulnerability (e.g. lack of entitlements, lack of political will to demand government intervention) and the physical outcomes of flooding (e.g. breaches of sea walls, changing atmospheric conditions that lead to larger storms) as a combined explanation for negative consequences in Shishmaref when storms hit the island today, which both must be systematically explored in order to understand why a disaster is imminent.

There are some important critiques of the pressure and release model. First, while the pressure and release model is successful in synthesizing social and physical vulnerability, it fails to provide a systematic explanation of the mechanisms and processes of vulnerability (Adger 2006). As Cutter et al. (2008) writes,

The pressure and release model tracks the progression of vulnerability from root causes to dynamic pressures to unsafe conditions, yet it fails to adequately address the coupled human–environment system associated with the proximity to a hazard, confounding issues within the broader context of sustainability (Cutter et al. 2008:601).

What is similar in both Adger's and Cutter's critiques, and is as of yet under-explored in the literature, is the failure of the pressure and release model to adequately take into account how vulnerability and risk exposure develop over time. Adger argues that the model is unable to explain the "processes and mechanisms of vulnerability," or, the daily exercises and assumptions that, over time, create vulnerable communities. Cutter argues that failing to understand 'proximity to hazard' confounds 'issues within the broader context of sustainability.' In other words, an understanding of sustainability is predicated

on understanding the processes and events that put people in harm's way. Both of these critiques imply an inability of the pressure and release model to describe the mechanisms for creating vulnerability over time – even if they accurately describe vulnerabilities in the present.

Whether or not vulnerability and risk exposure are a function of history in Shishmaref is an empirical question. It is a particularly interesting question because disaster in Shishmaref is linked to climate change. The pressure and release model of disasters has become an important analytic tool for climate change researchers because hazards themselves are changing as a result of anthropogenic warming (O'Brien et al. 2007:65; IPCC 2011:section 2.8). Following, climate change researchers ask what happens when the environment changes so rapidly as to overwhelm social mechanisms of adaptation.

We know beyond any doubt that disasters disproportionately affect the impoverished and marginalized (Watts and Bohle 1993; Oliver-Smith 1996; Thomas and Twyman 2005; Cutter and Emrich 2006). However, as hazards linked to climate change become increasingly unpredictable, does this overwhelm social systems? In other words, are there situations in which the hazard itself *does* exert similar outcomes on people regardless of their entitlements or political and economic positions within society? Are there situations in which new exposure to risk is so overwhelming that community vulnerability and political economy does not predict who lives in 'risky' areas, and even the wealthy and well-connected are unprepared? Is vulnerability in Shishmaref a product of history, social relationships, and colonialism, or is vulnerability a product of

overwhelming ecological shift for which the socio-economic, political economic, cultural and racial demographics of the community are circumstantial, not central?

All four models described above understand that the physical environment and social systems act in tandem as mechanisms for disaster. Disaster is produced when a hazard meets with a vulnerable population and produces negative outcomes and creates challenges to social functioning. Determining the extent to which vulnerability is best described in Shishmaref as a product of history, of political economy, or of climate change and increased exposure to hazards is a goal of this research. From here on, we employ insights from these four models to examine the case of Shishmaref, and we define vulnerability as the cumulative social and ecological conditions that put a population at risk of disaster.

3.3 Critique of Vulnerability

This research project explores the cumulative effects that create and intensify vulnerability in Shishmaref to flooding events, and that lead to negative consequences during and following flooding events. Because social circumstances predict vulnerability to disaster, communities that are vulnerable to one hazard (e.g. flooding) are often vulnerable to multiple hazards (e.g. flooding, erosion, high winds, hurricanes). Additionally, vulnerable communities also tend to experience any additional pressure (e.g. rise in gas prices, lean subsistence year, job losses) more profoundly than non-vulnerable communities (Ribot 2010; Marino 2012; Marino and Ribot 2012).

Vulnerability is often presented as a characteristic of a community – of a community up to its neck in water. For policy workers, this image is important. Response to hazards should not be unidimensional (e.g. preventing erosion) because these hazard-centric, unidimensional responses often fail to address root causes, as Cutter explains in her analysis of Hurricane Katrina discussed above. Addressing root causes of vulnerability is the most successful way to mitigate risk in the present and the future.

However, describing vulnerability as an inherent characteristic of a community is also dangerous. Describing habitual community vulnerability can incorrectly confuse complex social relationships and environmental factors that *result* in conditions of vulnerability with a trait-like characteristic, ‘vulnerable,’ inherent to a group of people themselves. As Dubois highlights, “Labeling groups as vulnerable can be stigmatizing or contribute to harmful stereotypes” (Dubois 2005:338). The label vulnerability can imply a lack of agency and competence. My experience in Shishmaref has been overwhelmingly one of witnessing competent, flexible, and resourceful individuals. The community of Shishmaref may be ‘standing permanently up to its neck in water,’ but the skills for survival under those circumstances are truly remarkable.

The vulnerability literature, outlined above, is the best model for explaining this case study of Shishmaref. Vulnerability scholars have, in the last 30 years, successfully shifted disaster conversations to root causes and, in the context of climate change, have been vocal about the inequitable distribution of burdens associated with climate change outcomes and issues of social justice. As will be described later, the results of the current study fall directly into this research tradition. However, the label ‘vulnerability’ does not

describe Shishmaref residents. It describes the weaker points of national and international flows of power, money, and resources, upon which the Shishmaref community falls, and which we will describe in detail in later chapters. If the vulnerability literatures were not fundamentally applicable to this research, or as robust as they are, I would use a different analytic term in order to avoid confusion that may result in misunderstanding Shishmaref residents in any way as incompetent or lacking agency.

For now, let us accept that the *Kigiqtaamiut* are not inherently vulnerable. They are vulnerable to a limited set of negative circumstances and events associated with flooding that are the result of complex social and ecological circumstances. Understanding why this vulnerability exists is the higher function of this research. What the limited set of negative circumstances is (or, what Shishmaref residents are vulnerable to) follows in the next sections.

3.4 Vulnerable to Fatalities

During winter in Shishmaref, when the ocean and the lagoon have frozen over and the land and sea are covered in snow – it is impossible from an airplane to discern where Sarichef Island begins and the ocean ends. The indistinctiveness of the island from the ocean is due in part to its height. Sarichef Island is, at its height, 20 feet (6 meters) above sea level. Much of the island sits at a lower elevation. An extensive sea wall and high bluffs on the ocean side of the island protect homes and land from being inundated when a storm hits. A storm can cause flooding from either side of the island, from the lagoon or

ocean, depending on high water, tide, and wind direction, but the most threatening storms are exacerbated by storm surges and wave action that comes from the ocean.

If both the bluffs or the sea walls were compromised during a major storm, then it is possible for the island to be inundated with water. How possible and what exact conditions are necessary to create this situation is unknown. What is known is that this scenario is most likely in the fall, when the largest storms come into the Chukchi Sea and when weather conditions make high water and wind more likely to cause damage to Shishmaref.

The Shishmaref Emergency Evacuation plan cached with the Shishmaref Erosion and Relocation Coalition documents state:

Sea wave conditions may develop which threaten the island, or actually cover up, a part or all of the island. ... Such a situation poses a grave threat to life and property; therefore, it is essential that provisions be made to evacuate the population to nearby safe areas on the mainland or to established evacuation centers in Nome or Kotzebue (Shishmaref local evacuation plan n.d.:10).

Temperatures in Shishmaref range from an average in summer of 47 to 52 degrees Fahrenheit and in winter from -12 to 2 (Department of community and regional affairs). In the fall, inundation of the island with nearly freezing water during a flooding event could be exceptionally dangerous. The emergency evacuation plan also states:

Evacuation of all individuals off the island is not feasible during a storm event. Sufficient aircraft and boat resources may not be available to move

all residents with very short notice and severe weather conditions would not allow aircraft or boat operations during the storm. Residents with life safety issues need to leave prior to the storm's arrival. All other affected residents should shelter themselves in a safer location at Shishmaref, such as the school or church, as designated by Shishmaref Emergency Services (n.d.:10).

In Shishmaref, evacuation off of the island is necessary in a major storm to prevent loss of life – but evacuation of all community members is also not feasible. These factors co-exist with a relatively high likelihood of a major storm. These three circumstances put Shishmaref residents at high risk of fatalities during a major flooding event. Evacuation by boat or aircraft are the only realistic ways off of the island. Both modes of transport are highly compromised during storms by high seas, high winds, and inclement weather. “During a storm, evacuation by boat may not be possible because of turbulent waters in the lagoon, and the inability to forecast how severe a storm may become” (Shishmaref emergency Evacuation Plan:10). Yet evacuation by boat is the first off-island evacuation option should the island be inundated and the population need to leave.

Landing by plane in Shishmaref can be difficult under many conditions. During my last fieldwork trip, I was held up in Nome for two days because inclement weather prohibited landing in Shishmaref, and on one trip was turned around after circling the island because clouds were low and making safe landing impossible. This is a common experience. People in the village are always aware of whether the planes are coming or have successfully landed on any given day – of whether or not it's possible to get out. It

becomes second nature in Shishmaref to listen for the hum of the plane engine – a barometer for whether planes can land or whether they’ve been held because the clouds are too low or the wind too gusty. Helicopter pilots can fly in under severe weather conditions, and do, to lift critical medical patients out of Shishmaref – but otherwise, air travel is not completely reliable, and patience for the weather is a required personal characteristic for anyone coming in and out of Shishmaref by plane.

This is important background information because large-scale air evacuation in the event of a storm just *seems* unfeasible given local experience with air travel – even though it is the only way off of the island during a storm if the lagoon is beginning to freeze or wave action is too high. The Shishmaref Emergency Evacuation Plan reads, “evacuation by air will be a last resort. Normally aircraft operations will be hampered or be impossible during the height of a storm. This condition will not, however, preclude the Mayor from requesting evacuation, if in his opinion, he believes it is necessary to save a life” (n.d.:10). Air evacuation out of Shishmaref is planned to come from helicopters, grounded at Anchorage Elmendorf Airforce Base, and the Evacuation Plan states explicitly that there would likely be a lapse of several hours between the mayor’s request and the arrival of the first evacuation aircraft. Community members would be evacuated 25 people at a time, commensurate with how many passengers could fit into the emergency aircraft.

Any individuals who cannot evacuate off of the island – or if conditions during a storm deteriorate so that air and boat travel become unfeasible – are to evacuate to emergency shelters at the church and the school. Both of these buildings sit on relatively

high ground, but could also become inundated with water if the island is completely submerged. The principal and the Lutheran minister become the emergency shelter coordinators under these conditions.

All the planning and research that happens at the community, state, and federal level is predicated, in part, on this basic threat – that a large storm could create conditions that cause fatalities by drowning, hypothermia, and exposure along with lack of resources as conditions deteriorate. In sum, while large storms could cause fatalities anywhere, Shishmaref is an isolated island that is extremely difficult to evacuate. Shishmaref is a village with only the most basic medical response options available to sick or injured community members. Shishmaref is two and one half miles wide and could be inundated with near freezing ocean water in the event of a flood. Thus, it is very possible that a large storm would cause fatalities in Shishmaref.

3.4.1 The elephant in the room

Yet, in all the interviews I have ever conducted in Shishmaref, we never talked about death. The interview script I have used includes the questions: “Do you get nervous/worried during fall storms?” “Does your family get nervous?” “Do family members who live outside of Shishmaref worry about you?” Most interviewees discuss feeling worried, and discuss family worry and phone calls or emails exchanged before and during bad weather. This is expressed in what I’ve come to think of as a uniquely Iñupiaq way of understatement and precision.

Interview with Richard Kuzuguk May 12, 2010

EM: Do they [your family who live in Kotzebue and Nome] ever worry or stress [about the storms]?

RK: They do, but they don't express it often. They just make comments like, it would be a good idea to think about relocating. But they do, in essence, pray for our community.

I never ask: "what do you worry about?" It seems inappropriate to force people to contemplate their own mortality. I made the statement earlier that disasters were sensitive issues, and this is the crux of that comment – that the problem with disasters and potential disasters is that they almost always imply the risk of death. The Bradford Disaster Scale, a scale used to quantify and compare disasters across hazard types, geographical space, and time, is fatality-based: 32 deaths, 1.5 magnitude disaster – 25,000 deaths, 4.3 magnitude disaster, with an upper limit of 10 – indicating annihilation of the planet (Keller 1990). The United Nations International Strategy for Disaster Reduction (UNISDR) officially defines a disaster not as fatality-based, but as the point at which normal social functioning ceases and community resources are insufficient to cope.

Disaster is: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (United Nations International Strategy for Disaster Reduction (Guzman 2002:2).

But in practice, for the UNISDR to register an event in their database, more quantitative measures are used.

For a disaster to be entered into the database of the UN's International Strategy for Disaster Reduction (ISDR), at least one of the following criteria must be met:

A report of 10 or more people killed

A report of 100 people affected

A declaration of a state of emergency by the relevant government

A request by the national government for international assistance

(Guzman 2002:23).

The first of these disaster qualifications is 10 or more fatalities. Disaster is nearly always predicated on the risk of fatalities – and this is true in Shishmaref as well, though it is almost never made explicit in meetings or in conversation. The quantification of deaths in hard numbers and not population percentages is also a disadvantage for rural communities.

Even though I use the word disaster in every talk I give and paper I write about Shishmaref, I failed to recognize my own latent fear that a major storm could cause fatalities in Shishmaref until a large storm in 2011 was heading towards the Bering Strait. That night I was logged onto Facebook all night checking my friends' pages for updates. Because the electricity never went out, I read updates in real time throughout the flooding event. The storm caused relatively minor damage in Shishmaref because of favorable wind direction. Northeast winds cause the most damage during a large storm, pushing

storm surges into the island most directly. During the 2011 Bering Strait “super storm,” the winds came in from the south, which dramatically reduced risk to the village. I remember clearly the moment I heard about the “super storm” heading towards the Seward Peninsula – my breath caught in my throat and I started to make plans to fly into Anchorage, Nome, or Fairbanks in case there was an evacuation. During this storm I realized two things: (1) that I had become the friend I had interviewed about, calling to make sure everyone was okay, and (2) that I was nervous because I feared that people would die.

3.5 Vulnerable to Evacuation, Relocation and Diaspora – Why Researchers Fear Environmental Migration

In 2004, a USGAO report presented information by the Army Corps of Engineers stating that Shishmaref had 10 to 15 years before permanent habitation of the island would be impossible because of severe erosion and flooding. In the interim, there has been sea wall construction, but as stated earlier the sea wall has a lifespan of between 15 and 25 years. Predicting “how long communities have” is difficult, but in Shishmaref, relocation will likely occur sometime in the relatively near future. If planned relocation does not occur before a major disaster makes the island uninhabitable and forces relocation, then Shishmaref residents will – at least temporarily, and perhaps permanently – be relocated outside of land owned by the tribe following the Alaska Native Claims Settlement Act (ANCSA), and off of land and territory that has been inhabited by ancestors of the *Kigiqtaamiut* for millennia.

Resident Richard Kuzuguk fears that, under these circumstances, Shishmaref residents will lose their individuality: “My biggest fear is that we’re going to end up in Fairbanks or Anchorage. My best bet would probably be at the army base within those areas that could hold part of the community depending on the season and it would be more like refugees” (Richard Kuzuguk interviewed by Elizabeth Marino May 12, 2010). Many other people, when asked about what they feared or what made them feel scared referenced moving or being evacuated from the island. “We feel kind of scared (in the fall) – especially scared for our elders if they evacuate us to a different town” (anonymous 2.c interviewed by Elizabeth Marino September 25, 2009). Many people consider diaspora a “worst case scenario.” “Worst case is if we have to choose our own spots to live where the people in the village would move to different cities” (John Sinnok interviewed by Elizabeth Marino July 18, 2008). Other interviewees, when I asked about whether or not they get nervous or feel worried during the fall storms, responded immediately that they did not want to move to Nome or Kotzebue. “We don’t want to move to Nome or Kotzebue” was a first response to questions of worry and fear.

Forced displacement out of traditional homelands is of paramount concern for residents. However, if the island is inundated with water and residents must be evacuated during a storm, what happens next is a mystery. It is an even bigger mystery what will happen if the island becomes permanently uninhabitable following a storm. There is no local, state, or federal plan in place should this occur. The likelihood of Sarichef Island becoming uninhabitable is high, according to local stakeholders and agency reports. Planning an organized relocation is slow and there has not been significant progress on

building a new village, in spite of continued local, state, and federal efforts. There is no ground broken for construction of any kind on the mainland for a new village. At present, the most likely long-term ecological scenario (island inundation) has no corresponding long-term social or governmental plan in place. Where will people go?

Residents are very explicit that they do not want to merge with another village or move to Nome or Kotzebue, the closest, larger, hub and service towns in the region. *Kigiqtaamiut* people overwhelmingly feel that to do so would compromise the health, wellbeing, and cultural integrity of community members (Schweitzer and Marino 2006). My colleagues and friends in Shishmaref predict a number of negative consequences linked to moving into Nome or any larger city, including lack of subsistence opportunities, loss of cultural traditions and language, and exposure to drugs and alcohol.

There is also a sense that the landscape itself in and around Shishmaref is “safer.” In the following excerpt, two interviewees discuss keeping their grandkids in the village, where it is “safe.”

Interview with Kim and Stella Ningealook May 13, 2010

EM: Do you get worried during fall time?

KN: Every year. Yep. That’s why I get gray hairs.

S: And I think about our grandchildren, because they’re all growing real quick and we want them in a safer land and a safer environment.

EM: It’s important to you to keep them in this area?

S: Yes, at the same time.

EM: Can you talk about why?

S: Because in urban lifestyle, like in Nome and bigger cities, some of our grandchildren we don't want them to grow up with all these bars and all these drugs happening. And here in the village, we're banned from bringing in alcohol in our village and now we feel safe and everyone is doing real good.

This excerpt is, I think, complicated. When I asked "It's important to you to keep them in this area?" S responds: 'Yes, at the same time.' She is parsing out for me, two different conversations. The first is a conversation about what is dangerous in relocating to Nome or a larger urban area. The second is a conversation about why it is dangerous to be exposed to flooding, but still important to stay in and around traditional territory. These are distinct. We deal with the first conversation in this section. It is important to note that the interviewees clearly state their fears of Nome as a place where their grandchildren wouldn't be "safe" or "good." In Shishmaref, her grandkids are not safe because of the risk of flooding – but S. indicates relocating outside of the Shishmaref area is also unsafe.

Relocation has not happened yet. Shishmaref residents have not been forced to migrate due to a large storm. Because it has not happened yet, the question remains, would migration off of the island cause the negative consequences Shishmaref residents predict? These kinds of disaster analyses are complicated in cross-cultural situations. If subjective well-being and happiness is a culturally constructed experience (Lu and Gilmour 2006:36), then people must be taken seriously when they tell you what makes them unhappy or what will compromise well-being. Post-traumatic stress disorder related to disasters have been shown to be highly variable in cross-cultural circumstances (Norris

et al. 2001). I am sensitive to the fact that if Shishmaref residents report that relocating to Nome or another urban area would be detrimental to their well-being, then I assume this to be the truth. However, it is still helpful to compare the Shishmaref case study with other cases of forced migration to establish some analytic predictive power surrounding outcomes of migration in the event of a storm, and the likely outcomes of forced environmental migration linked to climate change.

3.5.1 Environmental and forced migration outcomes

The climate change literature demonstrates that migration, particularly temporary migration, as a response to economic or environmental stress is not uncommon today among vulnerable populations (Raleigh and Jordan 2010:112). It is conceivable that environmental migration, therefore, may be a strategic adaptation option for vulnerable populations, including Shishmaref residents (Mayer 2011), which would not necessarily produce negative outcomes. Labor migration, for example, can make life sustainable in drought-prone areas both for the labor migrant and for families and social networks left at home (Raleigh and Jordan 2010:113; Henry et al. 2004). The Army Corps of Engineers' initial investigation into three possible scenarios to deal with flooding and erosion in Shishmaref included (1) doing nothing, (2) relocation to a site chosen by the community, or (3) *co-location*, involving permanent habitation in Nome or Kotzebue with seasonal trips back to traditional *Kigiqtaamiut* subsistence territory (though the mechanisms for this travel, who would pay for travel, how it could occur in the absence of village infrastructure, are all undefined). Co-location would best mimic temporary migration

(though loosely), which is considered by the scholars listed above as being a successful adaptation strategy to environmental change.

These scholars rightly critique the incorrect assumption that migration is always maladaptive, as early climate change literature suggested (Myers 1993). Raleigh and Jordan's (2010) analysis of the intersections between climate change and migration found that researchers needed to be cautious when identifying migration as a negative and catastrophic adaptation decision. They also note, however, that the literature has not adequately dealt with circumstances under which cumulative disaster becomes so frequent and pervasive that landscapes become uninhabitable. "By extending the time frame into future generations, issues surrounding climatic thresholds, coping strategies, and cumulative disasters become critical factors not yet fully considered in migration literature" (2010:105).

In Shishmaref, relocation of the entire community is an outcome of cumulative disasters leading to breached climatic thresholds – not a response to progressive ecosystem shifts that demand adaptation in place (e.g. planting different crops), but of a habitable area becoming uninhabitable for humans. Climate change specialists who study migration, as Raleigh and Jordan note, know less about conditions under which migration is an immediate and forced coping mechanism, not one strategy among a suite of adaptation strategies.

If forced migration, linked to climate change, mimics development-induced resettlement that is also often involuntary and swift, then there is a vast literature that predicts negative consequences for migrants. Michael Cernea and others have

demonstrated that forced migration and resettlement which occurs in the wake of infrastructure development, land conservation, energy development, and for other political, social, and economic reasons, increases landlessness, homelessness, poverty, and social disarticulation among migrating populations (Cernea 2000; De Wet 2006; Oliver-Smith 2006a; for additional examples of development-induced displacement see McCutcheon 1991; Shami and McCann 1993; Appa and Patel 1996; Lassailly-Jacob 1996; McCully 1996; Tamondong-Helin 1996).

This literature overwhelmingly identifies enormous social costs associated with forced displacement and resettlement. Research indicates that resettled populations fail to own land in resettled areas and frequently remain homeless. Poverty is also exacerbated after relocation and social structures and social networks break down. These negative consequences are exacerbated among the most poor and vulnerable populations as a whole, and within social subgroups (the elderly, the young). Hugo argues that as researchers study environmental migration, “it is especially important that the lessons drawn from this experience [development-induced displacement] are heeded because so few resettlement schemes in the past have been successful” (Hugo 2011:284).

Hugo’s analysis is sobering for stakeholders who live in and work on relocation in Alaska Native villages. While 20th and 21st century environmental migration, and environmental migration linked to climate change lack detailed case study analyses, there is a robust research literature on forced migration linked to development. This literature predicts overwhelmingly that populations forced into migration experience negative outcomes.

In Shishmaref, residents are vulnerable to flooding and erosion because flooding and erosion may force relocation. Researchers can tentatively predict that forced relocation of Shishmaref residents in the absence of a well-funded, well organized relocation plan may mimic development-induced forced migration and could lead to increased poverty, increased homelessness and landlessness, and social disarticulation. Residents continually reiterate that catastrophe will occur if residents are relocated off of traditional territory and are unable to maintain a discrete village – including decreased well-being, increased substance abuse, language and cultural loss, and loss of subsistence traditions. When we talk about vulnerability to flooding in Shishmaref, this is more precisely what vulnerability to flooding may entail for residents.

3.5.2 Contingency planning

In the absence of a clear plan following an evacuation, or in the event that permanent migration becomes necessary because the island is uninhabitable, I found there is widespread speculation among residents about what authorities would do, and about what local responses to evacuation and inundation would be. These observations were often in casual conversation, but also occurred in some more formal interviews. Two trends emerged out of a group of comments about what individuals or families would do if they were forced off of the island before a new village was constructed. The first is that people would move their houses to the mainland before, during, or following a flood, and start a new village themselves, without help from the state or the federal government.

Interview with anonymous, May 12, 2010

I feel that I would be willing to do this, with one of my friends, is to actually move our physical house and actually move it off the island onto the mainland. I know [we] would be willing to do that, get it started. If we do get evacuated off the island ... at least we would have one village intact with our environment.

This is an extreme statement because living on the mainland would more or less mean an abandonment of modern conveniences. There is no public infrastructure on the *Kigiqtaamiut*-owned mainland. There would be no way to fly or barge in food or building supplies. There is no school, church, post office, medical clinic, road, electric service, trash service or any other civil infrastructure. It would be very difficult for this to be a sustainable solution in the long term, but the willingness of residents to move themselves is indicative of the tenacity people have to stay on their land.

Another option that some discuss is “moving back to the island anyway.” In one discussion, a resident commented that he would go to “Nome or wherever,” get a house, and then come back to the island. When pressed about what he meant he said he assumed the government would build houses for Shishmaref residents in Nome in the event of a major storm and then close down the village of Shishmaref. This man said he would stay in Nome just long enough to receive the government benefits and then go back and live however he was able again on the island. Again, this lifestyle would be very difficult with no transportation, no store, no gas – no access to the conveniences that have become commonplace in Shishmaref.

These options of moving to the mainland or remaining on the island are impossible for any elderly person and would be very difficult for young children who are required to go to school. These contingency plans imply community fracture and hint at what would, in practice, be a form of social disarticulation.

Vulnerability to evacuation, relocation, and diaspora incorporate many different outcomes. Both literature reviews and local perception is that relocation off of traditional territory would create negative outcomes. Lacking a clear plan for what would happen to community members in the event of a flood (a flood with a very high likelihood of occurring), leads to an assortment of assumptions and contingency planning among individuals. Shishmaref residents are highly organized in response to state and federal plans to relocate the village in traditional subsistence territory, but contingency plans made about what to do if an organized relocation does not occur before are more individualized and haphazard.

3.6 Vulnerable to Loss of Property

In the event of a flood, Shishmaref residents are also vulnerable to loss of property. Particularly, Shishmaref residents lose traditional subsistence hunting and fishing equipment every year to storms. The sea wall on the island acts as shoreline protection from flooding for buildings and other infrastructure projects, but does not extend to areas on the southwest side of the island where people have racks for drying black meat and fish, and where *ugruk* preparation occurs.

For people with large investments in residential houses and businesses, relocation and flooding present the problem of eliminating their livelihoods or the investment they've made in housing. Loss of houses that are paid for is particularly problematic for the elderly and retired. Business owners and entrepreneurs in Shishmaref are key citizens in small communities and redistribute funds. Rachel Stasenko's son Dennis is a restaurant owner in Shishmaref. Investing in better equipment and building materials is a risk in Shishmaref because infrastructure and property are vulnerable to flooding. At present there is no housing compensation plan in the event of relocation.

3.7 Vulnerability to Flooding

We end this chapter where we began. What does vulnerability to flooding mean in Shishmaref? Shishmaref residents are not vulnerable to high water itself. They are vulnerable to fatalities, evacuation, relocation, and diaspora, increased landlessness and homelessness, increased poverty and social disarticulation (Cernea 2002), loss of cultural integrity and language, increased alcoholism and decreased well-being associated with cultural loss (Schweitzer and Marino 2006), and loss of property and livelihood – scenarios that are likely to follow significant flooding in Shishmaref. This shift in terminology is important. If we ask: “*How can we prevent flooding?*,” then the technocratic answer of sea walls, seems reasonable. If we ask: “*How do we prevent death, loss of land, infrastructure and property, and social and cultural disarticulation?*” – then the answers are broader and more complex.

This is not to say that Shishmaref is perfect as it stands, or that poverty, cultural disarticulation and language loss are not happening in the village. In Shishmaref, modern life, educational and work opportunities, and continued marginalization, continue to fracture the village. Old social networks dissolve and new ones are created. It is fair to say, however, that Shishmaref residents overwhelmingly insist on remaining in their territory – maintaining a discrete village in order to protect themselves from “unsafe” outcomes of relocation. From the perspective of the development-induced displacement literature, residents are right to worry. Yet, regardless of whether planning and organizing the creation of a discrete village for relocation is possible or not, any state and federal organization and planning effort should focus on preventing the negative outcomes commonly experienced by forced migrants, and should aim to alleviate negative outcomes that residents and researchers alike predict will happen. Shishmaref residents are not vulnerable to water. They are vulnerable to the loss of life and well-being. In the following chapters we examine the causes of this vulnerability.

Chapter Four: Social-Ecological Systems, the Nexus of Climate and History

People aren't talking about the past, about why villages were here in the first place. And they're not talking about the future – what it's going to be like for our kids.

Tony Weyiouanna, interview July 2008

4.1 Social-Ecological Systems

In all theoretical models of vulnerability, vulnerable communities are a product of social circumstances and ecological features in the landscape, as well as the interactions between those systems. In the case of Shishmaref, Alaska, the village has been identified as a case of environmental migration linked to climate change. If ecological features and social circumstances are interlinked in disaster scenarios, then in order to understand the construction of vulnerability in Shishmaref, it is imperative to investigate the linkages between cultural, social and ecological systems – particularly those systems that are in flux.

This chapter investigates exposure to risk as a function of social and ecological change – asking what is changing and how are those changes through time linked to contemporary vulnerability? First, I draw upon the pressure and release model of vulnerability, asking what climatic changes are occurring in Shishmaref and how they add additional pressures to the community. Following, I draw upon Cutter's political ecological model of vulnerability and ask: why are Shishmaref residents living in an area of high risk in the first place? Finally, I use historical information collected through the literature and through interviews to understand processes of development in the area. In

summary, the chapter discusses patterns of development and infrastructure and how these interact with environmental features and climatic change.

4.2 Climate Change in Shishmaref, Alaska

Climate change scientists have been particularly interested in the Arctic, leading to a robust literature on how atmospheric, terrestrial, and hydrological systems have changed over time, linked to both greenhouse gas emissions and natural processes (Moritz et al. 2002; Hinzman et al. 2005; ACIA 2005). Indeed, “Alaska has been called a “climate canary” because it is already seeing the early effects of global climate change” (Larsen et al. in press). In spite of this robust literature, climate change modeling and research remains difficult to downscale to any specific locale because of modeling limitations and because research projects are typically fanned out over the Arctic, not focused on one location.

General circulation models (GCMs) are an important tool in the assessment of climate change. These numerical coupled models represent various earth systems including the atmosphere, oceans, land surface and sea-ice and offer considerable potential for the study of climate change and variability. However, they remain relatively coarse in resolution and are unable to resolve significant subgrid scale features (Fowler et al. 2007:1547). While there have been advances in climate model downscaling (Fowler et al. 2007), it remains difficult to predict and link large-scale environmental change and climate change research across the Arctic to a particular coast, lagoon, river bank, or community due in part to

resolution issues. In this case, understanding how Arctic climate change trends affect Sarichef Island is not straightforward.

Linking climate changes themselves to disaster and migration is also difficult because, as the social science literature demonstrates, changes in the environment itself are never the only causes of a disaster. In Shishmaref, for example, erosion on the island has been linked to development, which insulates and warms the ground under structures (Mason et al. 1997), increasing temperatures, which move the permafrost boundary north (Yoshikawa and Hinzman 2003; Chambers et al. 2007:2), and inadequate and ineffective sea walls (Mason et al. 1997:106-110; Mason et al. in press). It is difficult to determine where the outcomes of atmospheric temperature increases end and where the effects of development begin.

What is certain is that climate scientists have documented substantial changes in the Arctic climate regime over the last 100 years, with increasing changes recorded since the 1970s. My research demonstrates that Shishmaref residents have also observed and documented in the oral record significant ecological changes over time, and particularly within the last 30 to 40 years. Figures 4.1, 4.2, 4.3, 4.4 and 4.5 present ecological changes observed by Shishmaref residents at a local scale and contrast/compare these observations to scientific findings on climatic changes in the Arctic.

The observations made by Shishmaref residents are not necessarily of a comprehensive set of changes observed on the landscape, but are those changes that were discussed through the interviewing process. The following Figures catalog changes in the climate (e.g. stronger currents on the ocean side of the island) that were identified by two

or more individuals during interviews. In cases where an observation of change was mentioned by only one interviewee, I have given the individual's name and the date of the interview. To compare Shishmaref residents' observations with scientific data on climate change in the Arctic, I use the framework adopted by Hinzman et al.'s (2005) article, which summarizes Arctic climate change research with a particular focus on Alaska, and is meant as a literature survey, which incorporates research from a variety of disciplines.

Overlaps between Shishmaref observations of climate change and scientific data on Arctic climate change fit into five broad categories of change: weather, permafrost thaw, thermokarst ponds, freeze-up, and coastal erosion. These categories are interrelated, particularly in interview data from Shishmaref, so that permafrost thaw and erosion, for example, are co-occurring, mutually constituting phenomena. They are separated out here for comparative purposes.

4.2.1 Weather

Weather throughout the Arctic has been observed to be increasingly unpredictable. In my interview data, unpredictability was tied specifically to ice and wind conditions. Ice unpredictability and a decrease in ice thickness in the Shishmaref data, like weather unpredictability in the Arctic climate change literature, are recognized as creating hazardous travel conditions. Shishmaref residents particularly identified increased windiness, warmer winter temperatures, longer fall seasons, and fluctuations in

winter wind direction as changes that have occurred within one lifetime. Figure 4.1 summarizes overall weather changes observed in Shishmaref and in the Arctic.

Climate change observation comparison	Shishmaref interviews	Hinzman et al. 2005
Theme: Weather	Changes in weather and ice	Weather changes
Evidence	Stronger winds, changes in winter wind direction (consistently north winds in winter now – used to be more variable); spring and fall longer, winter shorter	Greater variability, less predictable weather
Effects	Erosion along the island, sea ice changes	Increased mortality to plants and animals; greater hazards in traveling; Krupnik and Jolly 2002; Simpson et al., 2002; L’Heureaux et al., 2004
Location		North America
Climate driver (in Shishmaref, this is expressed as co-occurring features)		Changed synoptic patterns
Discrepancies	Wind and temperature were specifically referenced in my interviews – weather variability may be implied, but I did not specifically ask about variability and interviewees did not specifically identify increased variability	Stronger winds and changes in wind direction were not mentioned in Hinzman et al. 2005
Time Frame	Recent decades – within one lifetime	Recent decades

Figure 4.1: Changes in weather patterns

4.2.2 Permafrost thaw

Thawing permafrost has been consistently observed by Shishmaref residents and in research on climate changes in the Arctic. In Shishmaref and throughout *Kigiqtaamiut* and *Tapqagmiut* territory, residents constantly engage and observe the landscape. Permafrost thawing is experienced, not just observed, and changes in time are marked by personal histories. For example, Clifford Weyiouanna remembers building his reindeer corral 30 years ago, hitting ice at one foot below ground level. Today he can dig much further without hitting ice. Fred Eningowuk had to move a cabin on Serpentine River because shifting permafrost caused infrastructure damage. Changes in permafrost have also been swift. Residents report that when permafrost and ground ice is exposed to the ocean, erosion processes speed up exponentially. Permafrost thaw is also linked to draining tundra lakes. Figure 4.2 outlines these observations.

Climate change observation comparison	Shishmaref interviews	Hinzman et al. 2005
Theme: Permafrost	Permafrost thawing	Permafrost thawing
Evidence	Easy to dig into the ground, which used to be frozen; visual changes in landscape, cabins sinking	2-4 degrees C warming; thawing; Osterkamp and Romanovsky, 1999; Clow and Urban 2002; Romanovsky et al. 2002
Effects	Exposed permafrost “ice” at the coastal shoreline which, following exposure, rapidly erodes; have had to move cabins and camps	Thermokarst, infrastructure damage
Location	Erosion noticed particularly at Cape Espenberg hills, at Serpentine, and on the ocean side of the island – but many people point out erosion happens on both sides of the island – linked to erosion by interviewees.	Alaska
Climate driver		Warmer air temperature, changes in snow
Discrepancies	Snow fall has not changed significantly (Clifford Weyiouanna)	
Time frame	No longer than two generations	Since the late 1800s, especially last decade

Figure 4.2: Changes in permafrost

4.2.3 Thermokarst ponds

Figure 4.3 identifies an effect of permafrost erosion and anthropogenic warming that is of particular importance to the Arctic and sub-Arctic, and may have important effects on hydrological regimes on the Seward Peninsula – such as the availability of fresh water.

The important processes involved in thermokarst include thaw, ponding, surface and subsurface drainage, surface subsidence and related erosion. These processes are capable of rapid and extensive modification of the landscape and predicting, preventing or controlling thermokarst in a major challenge for northern development (Yoshikawa and Hinzman 2003:152)

Thermokarst is not a commonly used word in Shishmaref but residents have observed large ponds that have completely disappeared and new channels draining into the ocean where these ponds may be draining through. This kind of extreme topographical change that is quick enough for residents to observe in a single lifetime, or even within the span of a single year, corresponds with hydrological data suggesting rapid changes to the water regime on the Seward Peninsula.

Climate change observation comparison	Shishmaref interviews	Hinzman et al. 2005
Theme: Thermokarst ponds		
Evidence	3 big lakes that emptied out – “there was a little creek attached to them. I think the permafrost melted and drained them out.”	Decrease in area
Effects	New channels, landscape changes	Landscape and vegetation changes; Yoshikawa and Hinzman, 2003
Location	Approx. 5 miles west of Sarichef Island	Seward Peninsula, Alaska
Climate driver (In Shishmaref, this is expressed as co-occurring features)	Permafrost thawing	Degradation of permafrost
Discrepancies		
Time Frame	Last few years	1951-2000

Figure 4.3: Changes to thermokarst ponds

4.2.4 Freeze up

Shishmaref residents repeatedly indicate that the ocean and lagoon freeze later than they used to. Freeze up and spring break up are momentous occasions on the island, as the in-between states of water “trap” people on the island and prevent easy travel to and from the mainland or out into the ocean to look for sea mammals. This means that freeze up and break up dates are clearly recorded. Clifford Weyiouanna remembers his father consistently traveling across the lagoon with a dog team on his birthday. This sets the freeze up date of the lagoon to October 22nd. This date can be measured against freeze

up dates today. In my interview set, Shishmaref residents did not discuss the freeze up and break up of river systems – though this does not suggest that the freeze up and break up of rivers had not changed. Hinzman et al.’s summary of the literature discusses river freeze up and break up exclusively – not sea ice or lagoon ice. I have combined and compared these observations in Figure 4.4 because they are related to similar climate drivers, but they are observations of different hydrological systems.

Climate change observation comparison	Shishmaref interviews	Hinzman et al. 2005
Theme: Freeze up/break up	Later freeze up	Later freeze up, earlier break up
Evidence	Later freeze up of lagoon and ocean ice; "It freezes in December, when I was young it started to freeze in October." (Clifford Weyiouanna).	Earlier breakup, delayed freeze-up; Magnunson et al., 2000; Rühland et al., 2003
Effects	Thinner ocean ice; thin ice can mean dangerous conditions for hunters; difficult to travel by snow machine on the ocean or across the lagoon	Longer open water season; changes in aquatic ecology; riverine transportation
Location	Chuckchi Sea and Shishmaref Inlet	Lake/River: northern hemisphere
Climate driver (in Shishmaref, this is expressed as co-occurring features)	Warmer temperatures in winter, longer falls and springs	Warmer air temperatures
Discrepancies	In Shishmaref my interviewees discussed the ocean and lagoon freeze up and break up more than the rivers –	The Hinzman et al. 2005 paper does not list ocean or lagoon ice as having later freeze-up
Time Frame	In two generations – when the lagoon was consistently frozen by the end of October.	1900s to present

Figure 4.4: Changes to freeze up and break up

4.2.5 Coastal erosion

Finally, Shishmaref residents are experiencing coastal erosion – the rapid loss of land and shoreline as bluffs on the island, and hills and bluffs along the mainland coast disappear. Coastal erosion on Sarichef Island is linked directly to migration outcomes –

as Sarichef Island diminishes, the chances of flooding increase and permanent inundation of the island with floodwaters becomes more likely. It is important to point out that coastal erosion is not confined to Sarichef Island – though erosion on the island causes the greatest risk to residents. Large-scale erosion of cliffs along the mainland coast, especially at Cape Espenberg, is also reported. Coastal erosion in the climate change literature has been reported and associated with warming temperatures in the Arctic. Government reports also predict that anthropogenic climate change will intensify the need for relocation options for communities experiencing coastal erosion. “Since 2003, state officials have identified the growing impacts of climate change, increasing the urgency of federal and state efforts to identify imminently threatened villages and assess their relocation options” (USGAO 2009:1). Figure 4.5 compares climate change research with local observations.

Climate change observation comparison	Shishmaref interviews	Hinzman et al. 2005
Theme: Coastal Erosion	Heavy erosion rates throughout the coast	Coastal Erosion
Evidence:	Increasing rates of erosion throughout Kigiqtaamiut and Tapqagmiut territory	Increased erosion rates, Osterkamp et al., 2000
Effects:	Sea Walls become necessary; Relocation	Increased sediment and carbon flux to ocean, infrastructure damage
Location:	Sarichef island, Serpentine River, Cape Espenberg	Barrow Alaska
Climate driver (in Shishmaref, this is expressed as co-occurring features)	Stronger current, permafrost thawing, increasingly violent winds	Shift of storm winds, active submarine erosion
Discrepancies	Stronger currents were mentioned in multiple interviews – this does not come up in Hinzman et al. 2005.	
Time Frame	Increasing since 1974	1949-2000

Figure 4.5: Changes in coastal erosion patterns

4.2.6 Climate change in Shishmaref: A conclusion

There is widespread ecological change occurring in the Arctic, and Arctic residents observe and respond to these changes. When I spoke with Shishmaref residents, one of the more overwhelming experiences for me was the level of detail and specificity with which most people spoke of the landscape and of changes in the landscape. Very rarely were statements generalized, cataclysmic, or propagandistic. More often statements were qualified by personal experience, exact location, and precise detail. The situated nature of observation and experience in Shishmaref with ecological shift, consistent with that of other Iñupiaq groups, compels anthropologists to take the oral record very

seriously, particularly when interpreting the “grounded truths” of scientific statements (Callison 2010:55). These frameworks for interpreting changes in the landscape are locally specific discourses that do not always conform to the “climate change” discourse directed by science-media-policy norms, and the label “climate change” can diminish complex, grounded, local knowledge (Marino and Schweitzer 2009). It is illuminating to consider these discourses as parallel narratives assessing the same contours of landscape, which identify similar but slightly divergent experiences and phenomena as appropriate “data” for interpretation. The similarities in these discourses are apparent in the tables above. When the discourses diverge – there is tension.

The next section investigates the extent to which anthropogenic climate change can be directly “blamed” for coastal erosion on Sarichef Island. For the purposes of understanding disaster and vulnerability, this might ordinarily be considered a moot point. Coastal erosion and flooding (a natural hazard) meet a population in a condition of vulnerability (the *Kigiqtaamiut*) and produce a disaster – the climate drivers for hazards are not part of the investigative model. However, there is increasing speculation from a long-time Arctic archeologist that the “narrative” of and from Shishmaref concerning climate change and erosion is divergent from “geological reality” (Mason et al. in press). This dichotomy between the Shishmaref “narrative” and “geological reality” obscures complicated cultural processes both among media representations and among the lives of the *Kigiqtaamiut* themselves, who observe and interpret landscape both differently from and similarly to scientists searching out “geological reality.”

The previous discussion on anthropogenic climate changes in Shishmaref and in the Arctic is meant to present changes on the landscape, seascape, and weather in as accurate detail as possible – demonstrating a changing Arctic environment that is observed and experienced by climate change scientists and Arctic residents alike. That the landscape is changing, and that this is linked in part to greenhouse gas emissions and anthropogenic warming, is beyond doubt or reproach.

This next section examines *the extent* to which anthropogenic climate change is creating risk through coastal erosion. Framing a conversation about erosion in terms of the percentage of erosion created by anthropogenic climate change (instead of development or natural processes) is problematic, in part because there is no research that separates the drivers of coastal erosion on the ground, and in part because the outcomes and experiences for residents are not different whether erosion is a natural process, an outcome of development, one linked to greenhouse gas emissions, or (as is most likely the case) a combination of these three factors. Nevertheless, the following section engages this conversation as a gateway for understanding other factors precipitating erosion, as well as the reasons why Shishmaref residents came to inhabit Sarichef Island in the first place.

4.3 What if Anthropogenic Climate Change is Not Causing Erosion in Shishmaref?

In a provocative new chapter on Shishmaref erosion, dissenting (and highly experienced) archeologist Owen Mason makes the following claims,

The prevailing narrative from Shishmaref represents it as “the front line” of climate change. (...) Shishmaref *does* [original emphasis] face a dual threat, both from coastal erosion and from the thinning and disappearance of sea ice that may cripple its subsistence economy (...) Missing from the media and community conversation is that the 1 km-long bluff on which the modern village is concentrated is a developed coastal reach that has been subject to nearly 75 years of erosion control efforts and that its erosion history differs significantly from that of adjacent undeveloped coasts on the Seward Peninsula. In terms of historic erosion processes, Shishmaref more resembles some areas of the New Jersey shore and is better understood as a battle in the ongoing “war” between the U.S. Army Corps of Engineers (ACE) and the shore (Mason et al. in press).

Understanding anthropogenic-induced climate change effects on erosion at a particular bluff, on an extremely small island, with little recorded (not including the oral record) data from the last 100 years is very difficult – if not impossible. Add to this difficulty consistent development and human intervention (nearly 75 years of erosion control) and parsing out natural processes, anthropogenic climate change processes, and the effects of development on erosion rates is difficult and, if possible, has not been done. Mason’s article documents that even the extent of erosion itself is unknown. In Shishmaref, scientists are not even sure how much land exactly has eroded over the last 100 years – much less which isolated climate (or development) mechanisms were at play. For

example, an Army Corps of Engineers report “produced an erosion total for the last 31 years that is 57% higher than CU (Colorado University) rate” (Mason et al. in press).

Mason also points out that erosion rates are highly variable across decades, and that erosion rates prior to 1950 were higher than contemporary erosion rates (lower erosion rates coincide with shoreline stabilization and protection projects in Shishmaref, though these projects may have actually increased erosion rates compared to undeveloped coastline). He shows that erosion rates were highest in the 1970s (when relocation was first being discussed [Percy Nayokpuk]) and in the early 2000s (when interest in relocation began again in earnest and the community relocation vote occurred).

Mason’s assessment is that 75 years of development has increased erosion rates on the island compared to undeveloped coasts, particularly before 2003 when revetment and other sea wall projects may have increased erosion rates on unprotected parts of the island by intensifying and redirecting wave action and wave energy to unprotected coastal areas of the island. A second claim from Mason is that popularly quoted erosion rates, most often attributed in the media to local estimates (Mason calls them “anecdotes”), do not reflect actual scientific data (though scientific data is also highly variable).

Mason’s article arguably presents the best scientific data on erosion, storm action, and erosion protection for Sarichef Island and Shishmaref to date. What his article implies is that the automatic link between anthropogenic climate change, erosion on Sarichef Island, and migration linked to erosion lacks sufficient substantiation within the scientific literature. Mason’s review of the scientific data, including his own field notes,

implies that climate change is not the sole driver (or even a substantial driver) of coastal erosion on Sarichef Island, nor has erosion on Sarichef Island substantially increased over the last 30 years. How much of the decrease in erosion on the island is linked to shoreline stabilization is unclear – particularly since the sea wall projects beginning in 2003. The Army Corps of Engineers disagrees with Mason’s assessment in a government report, writing, “Climatic conditions have led to icepack development occurring later and later each year. Without the icepack in place, the island is more susceptible to fall and early winter storms that have *increased* erosion and littoral drift [my emphasis]” (USACE 2006:32). The Corps also estimates that erosion rates in Shishmaref will increase to the point of island inundation and/or increasing flood – risks that essentially destroy a large percentage of critical infrastructure. The following map in Figure 4.6 was developed by the Corps to show projected coastline erosion under current conditions. These discrepancies may be due to a scarcity of information, different analytic methods, and the inability to parse out anthropogenic climate effects from development and other effects. What is important in Mason’s article, however, is compelling data demonstrating that erosion rates have increased due to development, and the significant statement that coast erosion is a natural process of barrier islands. My interview data corroborates this second claim.



Red line: year 2053
Yellow line: year 2028

Purple line: year 2013
Green line: year 2004

Figure 4.6: Map of predicted and historical shorelines of Shishmaref, Alaska

4.3.1 We knew the island would disappear; so why do we live here?

In multiple interviews, Shishmaref residents repeated a common local dictum that says the Shishmaref barrier island chain is going to disappear into the ocean, and that elders of the *Kigiqtaamiut* people always knew this would be the case. In an interview with one Shishmaref resident, she reported:

My grandparents used to talk about it. Even their parents used to say, when you guys get older you're going to see big storms; you're going to

see our land get smaller. And when our grandparents lived long enough to see that happening they say, ‘our parents told us about this.’ Some of them didn’t even want to be buried here even on the island. [They said] When I die, will you please bury me somewhere else, not here. My great uncle is buried in Deering because he knew Shishmaref was going to be relocated some day and he didn’t want to be disturbed. He died in 1998.

Fred Eningowuk told me that “the elders always knew the ocean would take back this island, take back what it created.” Multiple individuals made similar statements in other interviews. While residents observe climatic and terrestrial changes in Shishmaref, and while coastal erosion *in general*, throughout *Kigiqtaamiut* territory, has been widely observed and reported as increasing by Shishmaref residents (likely due to permafrost thaw and the effects of a warming climate), they also recognize that the Chukchi Sea Coast and specifically the Shishmaref barrier islands are a fluctuating and impermanent landscape.

If the *Kigiqtaamiut* knew that the barrier island was impermanent, and would subsequently be at risk of flooding and erosion as the ocean “took back what it created,” then why do people live there? In July 2008, at the beginning of this dissertation research, Tony Weyiouanna relayed the statement with which I opened this chapter: “People aren’t talking about the past, about why villages were here in the first place. And they’re not talking about the future – what it’s going to be like for our kids.” Trusting his expertise in this early interview, I added a series of questions to my subsequent interview scripts regarding where interviewees and their ancestors were born and what made them relocate

to Sarichef Island and the village of Shishmaref permanently. Tony told me this before I read Susan Cutter's work on the political ecological model of vulnerability and before I knew that social scientists studying disasters had been increasingly investigating why certain, politically marginalized people, tend to live in "risky" areas. So while my research did not begin with this theoretical lens, deciding to ask these questions was consistent with the analytic approach adopted by other work on the anthropology of disaster.

Overwhelmingly, residents answered the question, "Why did you, your parents, or your grandparents move permanently to Shishmaref?" in one of three ways: (1) this is a good place to hunt sea mammals and have access to the mainland; (2) the BIA built a school here; or (3) this is a good place to hunt and the BIA built a school here. Most often, my interviewees answered (3). The following excerpts give examples of responses.

Interview with John Sinnok July 18, 2008

EM: Were you born here?

JS: Born and raised.

EM: Were your parents born here?

JS: My mom was born here, in this area. I'm not sure if it was here in this village – but according to my grandparents they lived inland a lot. My dad's family came from Wales. They were reindeer herders. He brought his family and reindeer this way. So my mom got married to William.

EM: Do you know why they moved from inland and settled in Shishmaref?

JS: Well, it's always been a traditional village (...) this has always been a good central place to hunt. Our community is mainly built for seal hunting. This has always been a very good place to access the ocean during the spring, during the fall. And then from here we can travel to the river and then up and down the coast. So, people originally moved here because it's a good location. Plus, at the same time, the school was built here.

Interview with Fred Eningowuk September 25, 2009

EM: Where were you born?

FE: Shishmaref

EM: Do you know where your parents were born?

FE: Shishmaref, I believe.

EM: Where did they grow up?

FE: Here.

EM: Do you know where your grandparents were born?

FE: I'm not exactly sure, but my grandparents they grew up all along the coast, so it doesn't mean that they were born here, it just means this general area.

EM: Do you know why they moved to Shishmaref permanently?

FE: They moved here permanently because of the school, BIA school, required everybody to go to school and so this became a permanent settlement, otherwise there were other settlements up and down the coast.

EM: Did people want to come here?

FE: (...) To my knowledge the Ikpik people were the last ones to move into the settlement.

EM: How was the island used before the school?

FE: Shishmaref was used as a seasonal site. Where they used to, come springtime, they would come camp out on the coast depending on ice conditions – to put away dry meat, seal oil, and what not.

Interview with Tommy Obruk May 17, 2010

EM: Where were your parents born?

TO: Right here too, but Shishmaref was kind of spread out, long ago, before the school and the church. From Cape Espenburg to Ikpik. After the school and the church came they decide to have Shishmaref [in the] central part.

Like I said, it was the elders that decided for their families, you know, where it was easier for them to hunt. North sea for springtime hunt and for fishing a seal hunting in the lagoon, and moose and salmon berries and fish nets, berry picking or mostly up in Serpentine flats and I think that's why they choose island of Shishmaref.

Interview with Brice Eningowuk September 24, 2009

EM: Where were your grandparents born?

BE: Down the coast I think. Most of them down the coast, some of them at Tin Creek.

EM: Where did they grow up?

BE: Mostly in Shishmaref.

EM: What do you know about when people decided to live on the island fulltime?

BE: I know that when [they came] fulltime was probably when the BIA school and the post office were set up here, early 1900s. From there everything kind of coalesced around the school.

It is no surprise to anyone who has spent time in rural Alaska that school development was a U.S. strategy to promote the sedentarization of native peoples (Berardi 1999). Considering that today 200 Alaska Native villages are subject to flooding and erosion (USGAO 2009:1), and that the literature suggests ecologically “risky” conditions are social constructions of political ecology, the facts of colonial history necessitate careful examination. In the following section, we trace the historical use of Sarichef Island through the literature, through contemporary hunting practices, and through oral histories, examining changes in mobility patterns and laying out as specifically as possible if and how historical development and colonial processes have contributed to vulnerability and risk.

4.4 The Island is a Center of Subsistence

Nearly everyone I have interviewed, including people who were relocation activists and community organizers, were saddened by the idea of leaving Sarichef Island and the village of Shishmaref. At some point during interview sessions, without prompting, many interviewees made note that Shishmaref was a perfect access point for sea mammals, especially seals – the subsistence foods through which, by hunting, storing, and eating, Shishmaref people express their cultural vitality most publicly. During many interviews people claimed that even if they moved to the mainland, they would have to return to Shishmaref and pitch tents in the springtime to conduct the seal hunt (e.g. Minnie Sinnok July 18, 2008). Moving further away from the sea is a tremendous concern to some residents who think life will be harder – and this is true even of people who promote relocation.

Interview with Fred Eningowuk September 25, 2009

If we were to move to the mainland it's going to be a lot harder to live the way we are living right now because we subsist off the ocean, the land, the lagoon. Come the springtime if we move to the mainland we're going to have a lot harder access to the ocean to do our spring hunt. Usually that time is when the ice is, the lagoon ice is not very safe to travel on to get to the ocean. (...) I think we would have a lot of accidents with these younger generations trying to get to the ocean.

Sarichef Island is located five miles away from a fresh water source and allows travel up and down the coast for seals and other sea mammals (such as walrus, though

some people claim walrus hunting is relatively recent – which differs from Burch 2006) and access to river drainages and caribou hunting locations. Traveling inland, residents can access land mammals, river fish, greens and berries, which are important, but there is no doubt that Shishmaref residents are and have been oriented towards the sea. The ancestors of the *Kigiqtaamiut* – the greater political and geographical nation, the *Tapqagmiut* – were coastal people and marine mammal hunters. The following summarizes a history of that cultural legacy.

4.4.1 A history of the island people

The Seward Peninsula coast has been inhabited by a rich, complex diversity of cultures, technologies, economies and ideas for thousands of years prior to the whaling traditions that brought Russian Cossacks and European whalers to the Northwest coast of Alaska. The Arctic Small Tool Tradition – which lasted for over 3000 years (approximately 2900 BCE to 1000 AD) and is associated with diverse economic strategies and technological expertise (Lutz 1982:143, Giddings 1960:122) – is an example of that rich history.

The Seward Peninsula and the Bering Strait region in general is known as being the most significant migratory access point into North America. Instead of viewing the Seward Peninsula as a permanent migratory route, Giddings stresses that “the emphasis can be, for a time, on the cultural stability of a Bering Strait which is a center, rather than a way-station, of circumpolar ideas” (Giddings 1960:121). The Bering Strait as a region has the character of being consistently inhabited, and archeological records demonstrate

continuous technological advances and extensive trade routes. This allows for both cultural stability and dynamic change. Patterns of mobility also exhibit the characteristics of stability and dynamism in consort. Changes in the landscape, including unstable sea levels, fluid coastlines, and the destruction of village sites have been reoccurring conditions (Wisniewski 2011:46), and communities have adapted by making selective change and selective maintenance to social and cultural habits, technologies, and customs. Traditional mobility patterns throughout the Northwest Coastal region of Alaska demonstrate the fluidity of change and tradition.

By the 19th century on the Seward Peninsula, Iñupiaq people along the Bering Strait were sedentary seasonal. Movement was governed by seasonal employment (Burch 1975; Koutsky 1981). Seasonal rounds and human migration were determined by animal movements and availability (Burch 2006:31-52), by ice conditions, and by the weather. Shishmaref residents today are mostly descended from the *Tapqagmiut*. The *Tapqagmiut* people were a loosely joined “nation”³ of family groups (Burch 1998), who shared dialects, lands, and punctuated feasting periods and festivals throughout the year. Figure 4.7 shows the “nations” of the Seward Peninsula in the 19th century with the island and Shishmaref identified in the northwest corner of the peninsula.

Nations in the Seward Peninsula stayed within their respective territories for most subsistence activities –and seasonal rounds differed between nations. Some Seward Peninsula Iñupiaq nations moved inland for fall and winter. For the *Tapqagmiut*, fall and

³ Alternately identified as a “society” (Burch 2006: 1) or a “tribe”, the Iñupiat word for these family groups is *nunaqatigiitch* “people related to each other through possession of the land” (Burch 1998: 14, 2006: 29).

winter settlements were located along the coast. At freeze-up (or possibly earlier) smaller family groups would gather at a larger, more permanent village site, and remain there through break-up (Burch 2006:45). People were not immobile during the winter, and would travel inland for caribou hunting, but over-winter villages were more stable places to gather. Housing structures in these villages, which we will discuss later in this chapter, reflected greater permanence.

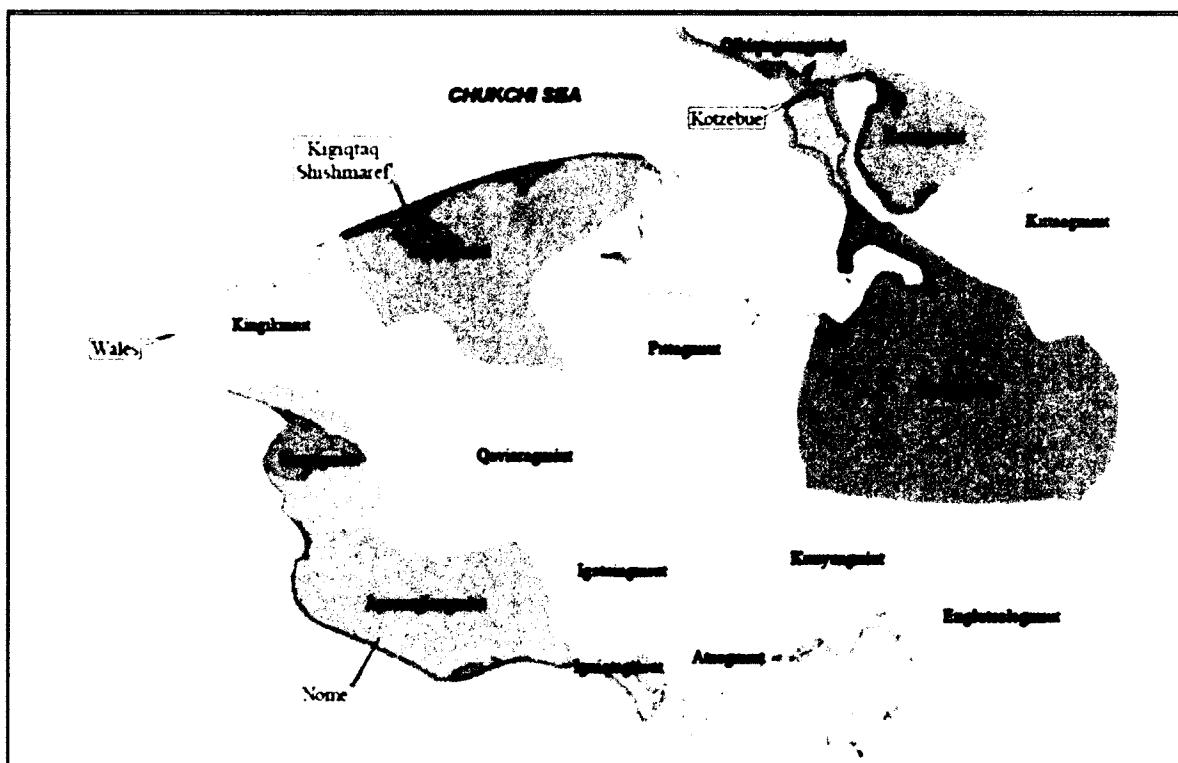


Figure 4.7: Map by Josh Wisniewski (2011) based on work by Burch (2006).

During break-up, at the height of the *ugruk* hunt, *Tapqagmiut* would move out along the coast – including moving onto the shore ice itself to hunt for seals. “So all the

camp sites that we had along the coast were based on what the ice conditions were going to be. But those days (...) just by looking at the ocean ice you could pretty much predict what the ice was going to do” (Clifford Weyiouanna July 21, 2008). During the spring and summer, *Tapqagmiut* families spread out over their land for inland hunting and fishing. Burch estimates that the population of the Shishmaref region in 1800 was about 510 (Burch 2006:7).

Mobility throughout the year, while patterned, was also dynamic. As the quote above by Clifford Weyiouanna indicates, decisions about movements, camps, and mobility were made following an analysis of weather and ice conditions. The particularities of any given minute, day, season, or year could significantly influence where a small family group or larger family unit would move to and whether or not they would gather or disperse. High mobility therefore allowed for flexibility to weather conditions.

Kigitaq, or “Old Shishmaref,” was the largest winter settlement in the *Tapqagmiut* region and was located on Sarichef Island. While archeological excavation has not been carried out on the island itself, items found on the island by residents have been dated to 1400-1500 AD (Mason et al. in press). The following map in Figure 4.8 identifies development from the 20th and 21st century and the site of “Old Shishmaref.”

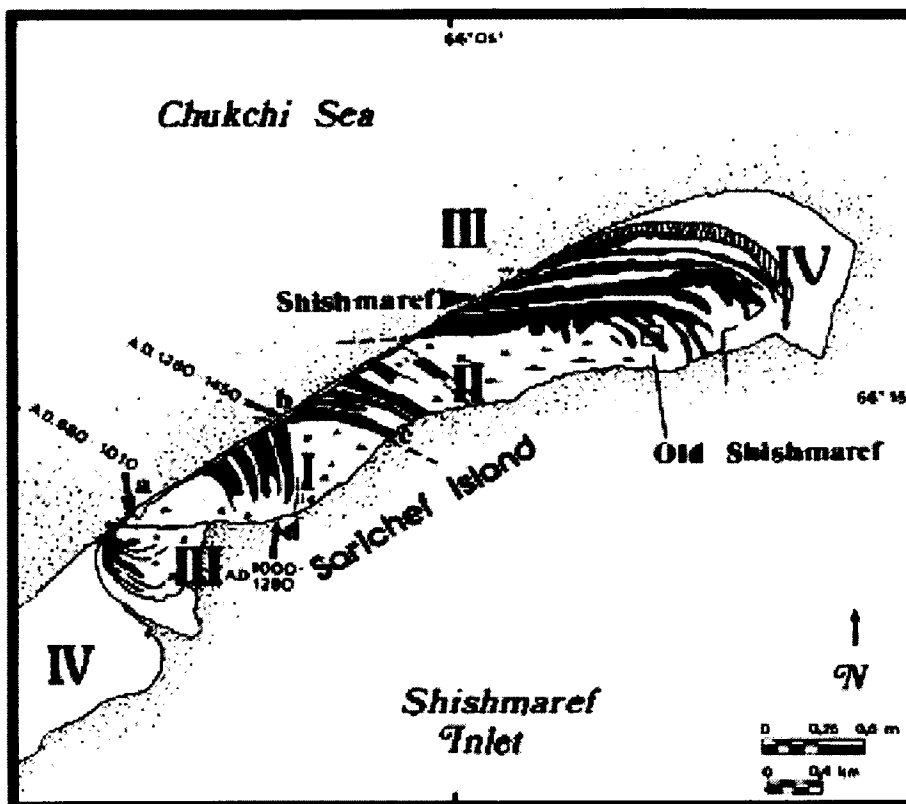


Figure 4.8: (Map of island taken from Mason et al. in press, radiocarbon dates from Mason 1996)

“Old Shishmaref” sits on a low sand bluff on the east side of the island that, while at a low elevation and close to the water, is on an area of the island that has not experienced significant erosion (Mason et al. in press).

According to Susan Fair, the Ifupiaq designation *Kigiqtaamiut* traditionally referred to families who were identified with this over-winter village (Fair 1997:472). The *Kigiqtaamiut*, or “people of the island,” were *Tapqagmiut* who used the island as a sea mammal staging ground. Other over-winter villages include *Ikpik* and areas around Cape Espenberg.

Families in Shishmaref today are still associated with the traditional village sites most utilized by their ancestors. Localized knowledge – including knowledge of place names and landscape – is linked to specific family groups and where they spent the winter prior to settling on the island. Today, traditional land tenure is loosely maintained in the village and informal rights to hunting and gathering locations are dependent on family histories.⁴ For example, families originally from the *Ikpik* area down the coast or families from up the coast at and near the Cape Espenberg area return to these places to hunt, fish and gather. In the following excerpt Clifford Weyiouanna identifies specific people and families who have locally recognized access to and knowledge of traditionally inhabited areas.

Interview with Clifford Weyiouanna July 21, 2008

“D- – he knows all the names from Serpentine east, every little hill, every little creek. He’ll admit, he don’t know nothing on the west side, because that’s (east of Serpentine) where his parents did most of their subsistence hunting. And you take the O- – and they’re all on the west side – *Ikpik*.

They know that area real well. I grew up in Arctic River – our families had special areas that they went to.”

⁴ Maintenance of traditional subsistence land tenure makes the relocation of Shishmaref residents into a neighboring village problematic. A primary finding from the Army Corps of Engineer’s cultural impact assessment regarding relocating Shishmaref (Schweitzer and Marino 2006) was that relocating to a nearby village was not a tenable solution for permanent relocation. Shishmaref residents reported instances of historical violence between the *Kigiqtaamiut* people and some villages to the North. Residents also commented that they would not have access to berry patches and hunting areas, as these areas were delineated for people from the area.

In spite of continuing to identify specific families with early, pre-colonial (and post-colonial, as some *Ikpik* families didn't move into the village until the 1950s) settlements, the Shishmaref Relocation Coalition website identifies all Shishmaref residents today as *Kigiqtaamiut* – people of the island. This is another example of selective social adaptation through a combination of selective change and dynamism. While land tenure to some degree is maintained through continuous family use of traditional hunting and fishing grounds, Shishmaref people today recognize themselves under a single Iñupiaq place-name based designation – the *Kigiqtaamiut*.

This economic history of the 19th century tells us that prior to colonization and sedentarization, the *Tapqagmiut* were scattered in smaller family groups throughout the region and would gather in smaller villages to over-winter. High mobility was an economic strategy, as *Tapqagmiut* people followed their resource base inland during the summer and onto the sea during seal mammal hunts. High mobility also allowed for flexibility. Seasonal migration was deeply connected to reading the weather, the animals and the ice, and knowing where one should be in relation to environmental, terrestrial, and oceanic conditions. One's family group had patterned migration practices, but at any moment these patterns could change because of the weather. As such, this high mobility would constitute an extremely successful adaptation strategy to flooding and erosion.

4.4.2 Mobility and adaptation

If Shishmaref has been inhabited for at least 500 years and if the coast has always been dynamic and impermanent, then why was it not a risky location in the past? There are two probable answers to this question that are suggested from the literature and from my interviews. First, that as long as the island has been in use – approximately 500 years – it has never been inundated by water. And second, that high mobility was a successful adaptation strategy to protect against flooding and erosion⁵ because movement off island could be quick and efficient and infrastructure losses were minimal.

In interviews and in casual conversation I routinely asked whether or not there were old stories of flooding – before the school or post office was built. I did not find an oral history of a flooding disaster before people were permanently settled on the island. This suggests (but does not prove) that the island has not been inundated with water for the last 500 years.

This is not to say that *Tapqamiut* people did not experience flooding events. When unusual flooding hazards or high water events occurred prior to sedentarization, it appears that people simply moved “to higher ground,” as demonstrated by the following interview with a Shishmaref elder, Tommy Obruk.

⁵ Mobility into another nation’s territory was also an important social insurance during times of scarcity and food insecurity (Burch and Correll, 1972: 32), though one that could be lethal without appropriate social alliances. Schweitzer and Golovko write, “contacts among individuals from different communities were always potentially problematic and hostile, as long as no kinship or partnership relations had been established. Individuals who had such relationships in other communities could travel freely and thus extend their existing social networks” (1997: 175).

Interview with Tommy Obruk, May 17, 2010

EM: Did you ever hear of any old stories about flooding?

T: Twice, I think, I witnessed a tidal wave. One at fall time, when they were in skin boats and we flooded up the river. We had to move to higher ground, up in the hills.

Mobility and retreat to higher ground or away from the coast seems commonplace in the Seward Peninsula. In a letter written by Sister Anna Huseeth, a missionary from Minnesota who was stationed in Teller from 1919-1928 she writes,

Our little village, when the spring break-up comes, is flooded so that we must move out. We pack provisions and tents and go inland to camp where we fish and hunt so as to get our winter supply of food ready (Huseeth n.d.).

The ability to “move to higher ground” corresponds to flexibility and is adaptive in the sense that flooding events did not lead to flooding disasters. Sister Anna Huseeth referenced flooding as habitual, but not problematic, linked to the sheer ability to move. Flexibility through mobility in this context is not only the movement of people, but also the mobility of equipment, housing, cultural meaning, and social practice.

High mobility is tied most explicitly in the literature to infrastructure. Binford, in a summary of hunter-gatherer housing structures introduces a meta-analysis of dwelling structures this way, “I think it is fair to say that all else being equal, there is a very general inverse relationship between mobility and investment in housing” (Binford 1990:120).

Housing and infrastructure in the Bering Strait region were qualitatively different from other indigenous regions in Northern Asia, and different from infrastructure throughout the southwestern region of Alaska, along the coast, and all the way into California. “The recent authorities on the western Eskimo report structures that refuse to conform to expectancy” (Waterman 1924:290). Housing structures in the Bering Strait region were instead comparable to those on Baffin Island and Greenland. Housing structures during the 19th century were mostly made of timber, buried underground, and covered with sod. These dwellings would have a tunnel on the side that served as an entrance, and a hole in the top, which served as a flue where smoke could escape (Waterman 1924). These more permanent structures were built in winter settlements – those settlements that maintained larger and more permanent populations such as in “Old Shishmaref” or *Kigitaq*.

Ekblaw identifies three distinct types of structures for Thule Eskimo peoples, whose dwelling structures resemble those of the Bering Strait Inupiaq populations. These are: (1) the tent, made of wooden poles, seal or other skins; (2) the icehouse, constructed while hunting on or off sea ice; and (3) and the more permanent sod house (Ekblaw 1927). The first was/is used during the summer when smaller family groups are highly mobile, following land mammals and fish and gathering plant food. The second is likewise used as housing when hunters are following sea mammals, and is productive because of the ease with which the icehouse can be constructed – conducive again to high mobility and used most frequently during seal mammal hunts in springtime for *Tapqagmiut* people.

Using, in part, Murdoch's work on Eskimo housing, Binford summarizes that in the case of seminomadic peoples (Murdoch identifies Eskimo peoples as seminomadic) more time and effort would be invested in winter settlements than in summer and spring hunting settlements. Infrastructure used in the summer and spring would not require a significant investment of time or resources, but even winter settlements could be reconstructed with relative ease and using materials found in the immediate territory or "nation."

We can say, then, that dwelling structures on the Bering Strait, up until the 20th century, were conducive to mobility. The construction materials needed to build critical infrastructure on the Seward Peninsula through the 19th century were largely available: timber, skin, and sod. The skill sets needed to construct dwellings were part of a local repertoire of knowledge. According to Binford, local materials and in-group knowledge are the "investments" in infrastructure, and this infrastructure was transferable among residents, to different hunting grounds, and in deference to changing weather conditions, social conditions, and dynamic coastal conditions. Flexible infrastructure and high mobility even allowed hunters to exploit changing social conditions as non-Native whalers came into the region. Wisniewski notes that as commercial whaling ships began to over-winter in the Bering Strait region towards the end of the 19th century, "it was common practice for hired native hunters to set up satellite hunting camps away from the ships and further inland for caribou hunting in order to supply whaling crews with fresh meat throughout the winter" (Wisniewski 2011:56). Social habits and seasonal rounds were thus incorporated into patterns of high mobility. Eskimo life prior to the turn of the

20th century was on the move – and being on the move was a cultural and social relationship with the immediate environment that would have significantly reduced vulnerability to flooding.

4.5 Schools, Houses and Sea Walls: The Critical Development of Colonialism

“The old heathen home, from its very character, was a hot-bed of vice.” (Northern Canadian Methodist Missionary Thomas Crosby, 1907, quoted in Perry 2003: 587).

4.5.1 Civilizing and educating

The first written account of *Tapqagmiut* people engaging with non-Native explorers was July 4th, 1816, when Otto von Kotzebue landed on Sarichef Island and observed semi-subterranean houses (presumably *Kigitak*) and named both the island and Shishmaref Inlet (Grauman 1977:13-14). As the sailors came ashore, the *Kigiqtaamiut* present in the village retreated, though some members of the expedition later met with hostile Iñupiat in the same area (Ray 1975:57; Ellana and Sherrod 2004) who launched projectiles towards the Russian sailors (Wisniewski 2011:52).

For the next 200 years, and particularly in the last 100 years, *Kigiqtaamiut* and *Tapqagmiut* social life would change profoundly due to the colonization of the Seward Peninsula. It is important to note that the *Kigiqtaamiut* have never been “locked in a historical vacuum” (Ellana and Sherrod 2004:23). Similarly to adaptation strategies employed by *Tapqagmiut* prior to Kotzebue’s landing, *Kigiqtaamiut* people made and continue to make selective changes in cultural traditions, social habits, and technological use as history unfolds and new situations arise. It is also clear that for Alaska Natives, the

last 100 years have been characterized by a history of outsiders imposing belief structures through powerful incentive programs, forced schooling, infrastructure development, economic giving and taking, and other mechanisms. This is the history of ideological and material imposition that we have come to understand as colonialism.

Federal development began in Shishmaref with the construction of a post office in 1901, a government school in 1906, and a Lutheran Mission in 1930 (Koutsky 1981). The convergence of education and missionization became an explicit goal of the U.S. government following the end of the Indian wars and as the reservation systems became the standard bearer of indigenous affairs. “The use of missionaries in dealing with American Indians involved the objectives of wholesale cultural change and assimilation into American society – principally through formal education commencing in 1871” (Ellanna and Sherrod 2004: 6). Alaska became a U.S. civil and judicial district in 1884, making way for education policies to be carried out under the jurisdiction of the Secretary of the Interior (Berardi 1999:333-335) shortly after a formal push to handle the “American Indian problem” through policies of education and civilization instead of removal. This project of civilization was often carried out pragmatically with infrastructure development.

On the Seward Peninsula, Sheldon Jackson promoted education and missionization (and industrialization through reindeer herding) most fervently. Jackson was appointed General Agent for Education in Alaska in 1885, and in spite of having very little experience in rural Alaska, was fundamental in its infrastructure and colonial development. Federal funding at the end of the 19th century was insufficient to build and

staff extensive school and church facilities throughout rural Alaska, and so Jackson relied heavily on donations from Christian women's groups (Steward 1908:263 in Ellanna and Sherrod 2005:73). Whether because of the need to raise funds or due explicitly to character and personal conviction, Jackson was prone to exaggeration and often described rural Alaska in over-stated conditions of squalor, poverty, and oppression. For the women's church groups, he repeatedly spread the idea that Alaska Native women were considered exploitable property of their husbands. Significantly, as an excuse to bring in domestic reindeer herds (a third wheel of civilization: industry), he declared widespread famine throughout the Seward Peninsula at the end of the 20th century. The extent of this starvation period is controversial in the literature (for support see Burch 1998:47-50; Wisniewski 2011:60; for detractors see Ellanna and Sherrod 2004:76). Notably, he made the argument that the population at *Kigitak* had fallen from a height of 2000 people to a measly 80 – this was a misinterpretation of the explorer Beechy's estimated population of the entire Seward Peninsula coast. This exaggeration by Jackson lays an interesting foundation of hyperbolized threat for the purposes of aid and infrastructure development in Shishmaref.

Infrastructure development through schools and missions, and policies that required children to participate in school programs, resulted in consolidation of smaller over-winter villages to the centralized location of Sarichef Island, and population of the old settlement of *Kigiqtak* grew steadily over the next 100 years (Ellanna and Sherrod 2004:11). The following list shows an increase in residents who lived permanently or

semi-permanently on the island, particularly between 1912 and 1940, which correspond with a decline in year round habitation of smaller villages along the coast.

Year	Population
1912	131
1920	223
1940	257
1950	194
1957	175
1960	217
1970	267
1975	306
1980	394
1990	456

In my interviews, there are a variety of reactions to the development of the school and the church and their influence on Shishmaref today. Some people attribute forced policies requiring school attendance to be the catalyst for consolidation of family groups into the larger village. Others say that their elders knew the school was going to be important and so they chose to settle on the island. Most people fault the schools for forbidding kids to speak Iñupiaq – resulting in the loss of the language for most people under the age of 40. There are similarly mixed reactions from people I spoke with regarding missionaries. In one of my last days on the island I was caught off guard by a

young woman who fervently believed that God had sent the missionaries to save Shishmaref people. She felt lucky to have the opportunity to be Christian, unlike her ancestors. Other conversations I had on the island were more critical of the Christian influence, regretting the loss of Iñupiaq dancing and other traditions. Christianity in Alaska Native communities is a complex spiritual system that incorporates new and old beliefs in varying ways (for a discussion see Ellana and Sherrod 2004:153-183). One thing remains true in reports of the BIA school – which is that the school came before sedentarization and consolidation of family groups, and that these development decisions were outside of local planning. Even when interviewees discuss sedentarization as a result of the wisdom of elders – it is always wisdom that came *after* the school was built. The original school infrastructure has never been, in all of my interviews, seen as a product of internal decision-making.

4.5.2 Modern infrastructure

The church and the school are still the largest buildings in Shishmaref today, and are accordingly where people gather for major events, from celebration and mourning to Christmas and athletic events. They are also evacuation centers for a major flooding event. It is difficult to trace the history of infrastructure on Sarichef Island outside of federally and church funded institutions such as the church, the mission, and the post office, but the transition from sod-house to framed house seems to have been gradual. In 1919, a schoolteacher responding to the influenza epidemic of 1918 explains that in the village there were daily inspections of people and “igloos” (J.P. Jones 1919 in

Wisniewski 2011:70). Presumably, the igloos he is referring to are subterranean houses. He makes no mention of framed houses being checked by the nurse during the epidemic.

A 1920 transitional house made of driftwood – something between traditional sod-houses in *Kigiqtak* and framed houses already used at the way-station in Deering – is described in Ellanna and Sherrod (2004), from oral histories taken with Gideon Kahlook Barr Sr. in 1991. These houses were located at *Ublasaun*, a village used by reindeer herders near Shishmaref following the importation of the reindeer herds to the area by Jackson.

In 1920, from the exterior, the village resembled several small hills with protruding smokestacks. A small skylight made of the translucent stomachs of walrus or of glass was set in the apex of each of these sod-covered mounds – this skylight being large enough to emit light but small enough, hopefully, to deter the raiding paws of a polar bear.

Gideon remembers that the family's 10-by-18 foot house at *Ublasaun* was constructed of driftwood. The small amount of scrap lumber available at Cape Espenberg was used to build the single bed for Thomas and Emily. Gideon and his siblings slept on the floor (41).

Gideon also remembers the conversion from a seal oil lamp to a cast iron stove as coinciding with the transition to this type of housing structure. These intermediate housing structures stood more upright than traditional sod houses and were more dependent on outside materials such as glass, stove fixtures, and eventually lumber if

sufficient driftwood was inaccessible – but were not framed, were rounded at the top and the outside construction was made with mostly locally available materials.

Today most houses in Shishmaref are framed houses. The house I lived in was a rambling product of Richard Stasenko's imagination and fortuity, a big house for Shishmaref. As he and Rachel had more kids, he added on – room by room. Most houses in Shishmaref today are not self-designed projects (though some are), but are products of the federal government's housing and urban development agency (HUD). The HUD agency was formally authorized by the United States Housing Act of 1937. In the 1960s HUD prioritized American Indians as recipients of federal funds to promote home ownership. It was significant for rural Alaska when, in 1970, "President Nixon announced a new Indian housing initiative under which the federal government committed to the construction of 30,000 new Indian housing units over five years. Alaska Senator Ted Stevens was influential in having HUD assign 6,000 of the units to meet the housing needs of Alaska Natives" (Botelho 1996:3). This political funding for homes followed the American Indian occupation of Alcatraz and increasing attention to the poor conditions of reservations across the United States. Many older houses in Shishmaref date to this era and at least two of my friends in Shishmaref live in homes that were previously their grandparents'.

In 1996, the HUD programs that were particularly aimed at providing low income housing to Alaska Native and American Indian populations were consolidated and reorganized into the Native American Housing Assistance and Self-Determination Act (NAHASDA). This new legislation provides community block grants that are distributed

through 14 regional housing authorities including the Bering Strait regional housing authority – which serves Shishmaref.

4.5.3 Over-crowding and deteriorating infrastructure

Housing infrastructure and other service infrastructure, including piped water and sewer, are contentious issues in Shishmaref and many people I interviewed consider a housing shortage, overcrowded housing, and the lack of piped water and sewage a health issue. Shishmaref, unlike an increasing number of rural Alaska Native villages, does not have critical infrastructure development including a new health clinic, piped water, and new housing. This lack of modern infrastructure is related to the community vote to relocate, organized by Kawerak, the Bering Strait regional native corporation. In most cases, infrastructure development projects in rural villages are the result of a competitive grant system filed through the Denali Commission or other state and federal agencies. Because Shishmaref has expressed the intent (through a vote) to relocate – it is an undesirable location for investment and, following, community infrastructure development has been minimal since 2002.

New houses are rare. Finding land on the island that is on sufficiently high ground for new houses is a challenge. Small lakes on the island that were used as water sources have been filled in to make space – yet the population continues to grow without adequate housing facilities. Multi-generational families with up to 12 people living in a single 3-bedroom dwelling are common in Shishmaref.

Interview with Anonymous, September 25, 2009

A: If we're to remain here on the island, a lot of our grants that we apply for to expand our community public buildings like multi-purpose building or elders/youth facility, like a rec center, a bigger school, a bigger clinic – that's not possible because our island's too small and it's going to get smaller.

EM: If you think about what you would want in a new village, what do you see?

A: At least some sort of road that everybody could walk on. Running water, and just the fact that, you know, our community would finally be granted new buildings that we apply for so we don't have to live in these third world conditions. Be civilized like everybody else. To be provided services like any other community.

I believe the lack of modern conveniences and housing is leading to brain drain – though admittedly this is difficult to measure. This is an issue that is likely to increase if educated men and women who are poised to become local leaders are forced to live in overcrowded conditions. This is especially true for returning students with bachelor's degrees, with jobs, and with money to pay for apartments or houses – but without the infrastructure available on which to spend their money. I saw two exceptional young leaders move out of the village while I was there and at least one expressed that this was directly tied to the lack of conveniences and overcrowding.

4.5.4 Sea walls and revetment development

Shoreline stabilization was needed to protect framed infrastructure almost as soon as permanent settlement of the island became standard for *Tapqagmiut* people. Sea walls and other revetment projects began in Shishmaref in the late 1940s and have included gabions – concrete block and rock revetments – as well as sea walls (Mason et al. in press). They constitute the “battle in the ongoing “war” between the U.S. Army Corps of Engineers (ACE) and the shore” (Mason et al. in press). These projects have had different levels of success and local residents have different opinions about the success, failure, and the relative safety provided by sea wall and revetment projects.

Sea walls are controversial within the environmental migration community. Twice after I’ve presented conference papers on Shishmaref, audience members began to argue amongst themselves about the relative benefits for and against sea walls in Shishmaref and as a general ideological position. Like almost everything connected to Shishmaref, for outsiders sea walls become a metaphor representing a larger issue, in this case technocratic versus flexible lifestyle solutions to for sustainable relationships between humans and the environment. Sea walls and revetment projects are expensive and have a short life span. They also protect critical infrastructure. Multiple times while in Shishmaref, I’ve heard that the official community strategic plan is to “first protect what we have, and then plan to relocate.” Protection means island shoreline stabilization. The following is a history of shoreline stabilization projects in Shishmaref based on Owen Mason’s work and the most recent erosion report by the Army Corps of Engineers.

Though I am not qualified to offer expert analysis on the content of these reports, the history of sea walls and revetments are an important piece of the Shishmaref story.

According to the Army Corps of Engineers, the cost of erosion control in Shishmaref to date is estimated to top \$9.5 million (USACE 2006:6). The lifetime costs of some revetment projects are estimated by Mason to be up to \$260,000,000. “By contrast, the ACE “preferred alternative,” a 1,000 m revetment, has an estimated cost of \$13 million and would involve considerably less up-keep costs” (Mason et al. in press).

The first shoreline protection placed a series of 55 gallon drums at the north side of a landing strip. The 1973 storms eradicated this effort. During the 1973 storm more than 50,000 sand bags were used to stabilize the bluffs located on the northwestern side of the island (Mason et al. in press). These may have successfully prevented erosion during a following large storm of 1974 – but were broken by ice in subsequent years. In 1982, a cement block revetment was constructed for 100 m along the bluffs, but failed during the first big storm, within a year of its construction (Mason et al. in press; Mason et al. 1997). In order to prevent continued erosion residents also pushed trucks, other vehicles, and old equipment over the shoreline. The following is a summary of sea wall construction since 2004.

In 2004, the BIA installed 200 feet of shoreline protection along the shoreline near the Native store. In 2005, the Corps installed 230 feet of protection connecting to the BIA project, extending to the east to protect the Shishmaref School. Also in 2005, the community of Shishmaref

installed about 250 feet of protection extending to the east from the Corps project (USACE 2006:32).

In summary of these projects, the ACE states, “All efforts to arrest the erosion have been unsuccessful for other than short periods of time” (USACE 2006: 32). The Shishmaref barrier island chain is a series of dunes built up in the sea. Today boulders and rocks are barged in to prevent this sand from washing away. Everyone I speak to understands this as a temporary solution, including residents of Shishmaref.

Interview with Jennifer Demuir, September 23, 2009

EM: Do you think the island can be protected enough that people will not need to move?

JD: The sea wall is just buying us a few more years. It won't last forever, we've got fine sand out there. Those rocks are going to sink eventually. Those are pretty big boulders.

All sea wall and revetment efforts to date have been put in place to protect critical infrastructure. There are no efforts to protect the southwest side of the island, where most residents have racks and equipment that are used to butcher, dry, and put away subsistence harvests, especially black *ugruk* meat. This leads to the loss every year of traditional technology and equipment – this is a fine example of what the state ideologically feels is necessary to protect. Below is a summary of the history of sea walls given by resident John Sinnok.

Interview with John Sinnok, July 18, 2008

EM: Do you want to relocate?

JS: Yep. I can't see any other reason why we shouldn't. Like I just told you, the way that the village has been eroding, they've put rocks right in front of the village, but on the west side, is where we have our racks to dry our meat and my wife and I for the last three years, our racks are about maybe 20 feet. Every year for three years in a row we've had to replace them all. We've been three years in a row. We've lost at least 60 feet right there, our racks. If they don't save that part all of that is going to erode and there's just going to be this tiny village. And how much longer will those rocks stay. They've tried. In the 70s or sometime around there, they've tried to put a whole bunch of 55 gallon drums welded together right along that beach, right along that land. Those stayed for a while, but they all sunk. Few years later they tried the sand gabions. I think those are below my mom's house. Used to be right by the Native store. Right there is used to be a long gentle slope and long flat land right there when we were kids. All that eroded. Then they put those gabions. I think that lasted for 25 years. But then they didn't do maintenance and it started eroding behind it. Couldn't keep the erosion away anymore. Gabions were bags of sand inside of wire. After those they tried cement blocks, going quite a ways under the sand. Those cement blocks – they started to topple right away. People have been putting their old trucks and stuff and they sink right away. Anything that's not sand sinks.

Shoreline stabilization is a hazard-centric response to increasing erosion and is commonplace (the standard US Army Corps of Engineers response to flooding). It is also expensive – though it offers very good short-term protection for critical infrastructure. What shoreline stabilization promotes is protection, what it discourages is flexibility. The history of infrastructure in Shishmaref reveals an increase in inflexibility to weather and climate conditions, which corresponds to an increase of exposure and risk. This is directly tied to development decisions, often in the absence of local input or even that of authorities who are experienced in rural Alaska.

An illuminating passage by Owen Mason published in a 2006 conference proceeding states,

About ten years ago, the State of Alaska sent me to Shishmaref to examine various alternative relocation sites, all on the mainland. In addition to this task, I considered the means available to remain on the barrier island chain. With some flexible engineering such as moveable structures and dune trapping devices (plants, fences, matting, etc.), I suggested that Shishmaref residents could remain in sync with the barrier or groom a nearby island for future settlement. The approach favored in the last 10 years has been the opposite: increasing hard stabilization, with the rocks larger and the lateral distance subject to seawalls longer. Further, the height of the wall is still far below the maximum storm surge limit, for reasons that I do not understand (Mason 2006: 11).

The focus on building *flexibility* is striking in this passage. Moveable structures were essential in Binford's analysis of hunting and gathering culture's key infrastructure requirements. Flexibility was also recommended by the state's leading archeologist in Shishmaref. In spite of these recommendations, the Corps' main objective appears to have been to keep the shore from moving and thereby to protect framed houses purchased through federal grant and loan programs, as well as other critical infrastructure.

4.6 Cultural Values and Infrastructure Traps: "We live here because Shishmaref is a good place to hunt and because they built a BIA school."

The last section of this chapter summarizes the risks and vulnerabilities in Shishmaref associated with flooding, erosion, and infrastructure. Here I attempt to sort out climate change from colonization, and infrastructure from ideology. Addressing the issue of why people live in any given location is a crux in understanding social-ecological relationships. When that place is exposed to risk and hazard, the question becomes especially critical.

Climate change is affecting the Arctic. Residents of Shishmaref recognize these changes and are affected by these changes in multiple, complex ways. In government reports, climate changes have been directly attributed to causing increased erosion in Shishmaref, leading to a need for shoreline stabilization and relocation. Climate change scholars also point out that coastal erosion, continued permafrost thaw, and increased storm and wind activity will be a consequence of climate change that is expected to increase and increase risk to Shishmaref residents. These climatic changes are not

insignificant in the Shishmaref case study or in the need to relocate. However, the simple equation that anthropogenic climate change = erosion = relocation is not an accurate analysis of this complex social-ecological system.

As discussed above, like most hunter-gatherer societies, the *Tapqagmiut* were highly mobile before the increased presence of colonial institutions such as the mission and the school. This high mobility was linked to the ease with which infrastructure and other aspects of material life could be moved quickly. Patterns of migration were important for the seasonal round, and the year was constituted through location in and engagement with specific areas of the *Tapqagmiut* land base, but climate conditions and weather also determined movements. Before sedentarization, *Tapqagmiut* people were therefore able to make split decisions in response to changing weather conditions. High mobility and flexibility around weather events – including flooding hazards – was a successful adaptation strategy against flooding.

Building infrastructure was a key component to bringing education and Christianity into the Bering Strait region. The ideology of education and worship are fully embedded in and expressed by infrastructure projects. Sheldon Jackson, the General Agent for Education in 1885, saw infrastructure and ideology as interlinked so much so that he raised money from outside federal streams to build schools and churches on the Seward Peninsula. This infrastructure project continued and expanded to include installing prefabricated houses, filling in island lakes to make room for new houses, and building a new modern school in the late 1970s. This development is why people live on the island permanently, and the inflexibility of this development is also why it is so

difficult for residents to move today. Residents are aware of this irrefutable link between the first school that was built, moving to the island permanently, and the subsequent loss of flexibility to relocate easily. This is why Tony Weyiouanna made the statement “no one’s talking about why we’re here in the first place” in response to a question about contemporary relocation. Creating fixed, sedentary indigenous residents has been a strategy of the United States since the American Indian reservation project began and has been a goal of States all over the world (Scott 1998).

When “Old Shishmaref” or the old village at *Kigitak* had been seasonally inhabited for 500 years, high mobility and flexibility to storms provided an adaptation strategy for residents. Decisions regarding infrastructure development in the past remain somewhat cloudy – however, it is clear that Shishmaref residents and their ancestors, going back at least four generations according to my interviews, and presumably further, knew that the island would eventually deteriorate, change, and erode. Unlike this localized, particular knowledge, Sheldon Jackson’s knowledge of the island was non-existent. In fact, some scholars claim Jackson knew very little about rural Alaska at all, as the following passage suggests.

Dr. Jackson had been credited with a profound knowledge of Alaska. This is a great exaggeration, for at best his knowledge was very superficial. In fact, it was his ignorance of the physical conditions in the Northland and of its people which led him to make many egregious blunders of administration. Another factor coupled with this was Jackson’s fondness for sensational statements, no doubt in part developed as necessary to the

propaganda to which he devoted most of his life. ([Brooks 1973: 494-495] in Ellana and Sherrod 2004).

There is strong indication that local knowledge was passed over in favor of outsider knowledge when development decisions were being made in the past. This might be a stale fact of colonialism if it didn't seem to be repeating itself today.

The following chapters demonstrate how this pattern play out in multiple ways. Residents feel misunderstood, local knowledge is passed over in favor of outsider authority, and flexibility is exchanged for sedentary (short-term) stability. The historical depth of this type of decision-making suggests it is more than just circumstantial. I propose instead that these are points of ideological disagreement that are deeply rooted in cultural understandings of people in the environment, and are also institutional cultures themselves that frequently (but certainly not always) demean indigenous knowledge in favor of expert knowledge that is often blind to locally known hazards and risks.

Measuring risk and exposure to hazards can test the validity of this claim. If circumstantial, then indigenous communities should be no more exposed to hazards than other communities. If, on the other hand, indigenous communities are more prone to live in "risky" locations – those locations that are exposed to repetitive hazards – then an historical understanding of development is imperative. In Alaska, 184 out of 213 (86%) Alaska Native villages experience problems with erosion and flooding (USGAO 2003).

From work in Shishmaref, I suggest that colonial development can "trap" indigenous communities into previously 'safe' places because of undermining and negating traditional adaptation strategies without providing sufficient new adaptation

strategies. In this case, high mobility acted as an adaptation strategy to flooding and other hazardous weather conditions. Development in Shishmaref, did not take into account local knowledge. Ancestors, parents, and grandparents of the *Kigiqtaamiut* today likely moved to the island and were happy to stay on the island because it was a “good place to hunt.” Early infrastructure was probably not their domain or responsibility. So, as two different ideologies for what constitutes a good place – for *Tapqagmiut* it was a good hunting staging ground, for missionaries and educators there were people there to educate and missionize – Shishmaref became the “village” that it is today, and the village that needs to relocate to avoid social and cultural disintegration.

This tension between outsider influence and local control over why people live on this barrier sand island in the middle of the Chukchi Sea, is present in the answers I received to the question: Why do people live here? The island was acknowledged by almost everyone I spoke with in Shishmaref, whether I interviewed them or not, as an excellent place from which to hunt. Old Shishmaref, or *Kigiktak* was the largest seal mammal hunting staging ground of the *Tapqagmiut* prior to colonization. This well-used site is a location of subsistence, of deep-rootedness, and of value defined entirely by Inuipat sense of worth – the value of *ugruk* hunting and preparing. This has significant cultural currency for a people who are wholly oriented towards the sea. Shishmaref people are a people who exist on the edge of two mediums, between the landscape and the seascape, on a dynamic and shifting coastline.

The ubiquity with which conversations in Shishmaref include references to the island as a good place to hunt, makes it clear that a cultural value is present when people

state and restate the significance of the island – particularly now that the island is a “risky” place to live. To reiterate that Shishmaref people are hunting people (“our community was mainly built for seal hunting”) and that the *Kigiqtaamiut* live, therefore, in a good hunting location is, I believe, an assertion of local power to define “good location” apart from colonial definitions or outsider value systems. To say, “we live here because it is a good place to hunt,” is highly culturally significant, and stands in stark contrast to the assertion, “we live here because they built a BIA school.”

Most people, however, also give the latter response: “we live here because they built a BIA school.” The tension between these two explanations for why Shishmaref residents reside on the island, in this increasingly risky location, is a microcosm of a complicated history of independence and colonialism that plays out in embodied ways. Shishmaref people – the people who are able to exist between the two mediums of earth and ocean – are in constant negotiation with new infrastructure, bureaucratic channels of funding, government apathy for rural communities, and the resolution to protect the old ways of life.

In chapter three, we isolated the negative outcomes that Shishmaref residents are vulnerable to. In this chapter, we identified the clash between climate and history – and between ideology, perspective, and knowledge – that has led Shishmaref residents to live in this highly exposed location in the first place. With this historical background in mind, the next chapter engages the interactions between government agencies and residents today, as they seek to reduce vulnerability and pursue a viable relocation strategy.

Chapter Five: Finding A Way Forward: Trust, Distrust and Alaska Native Relocation

Planning in the 21st Century

5.1 The Pragmatics of Planning

This chapter presents interview, survey, ethnographic, and government report data in order to demonstrate how relocation is being planned today as a final strategy of adaptation to erosion and flooding, which are causing an increasing threat of negative outcomes to Shishmaref residents. The millions of dollars of infrastructure that has been built in Shishmaref since 1901 now requires millions of dollars to be reconstructed or relocated. This is essential in order to mitigate risk for Shishmaref residents and avoid the negative outcomes associated with a flooding event and forced relocation, such as fatalities, loss of property, evacuation, diaspora, social disarticulation, increased landlessness and increased poverty.

The U.S. Army Corps of Engineers' map presented in Chapter Four indicates that increasing erosion in Shishmaref will continue to remove land on the northwest side of the island until houses and critical infrastructure lose the ground they stand on. At present there is not sufficient land on Sarichef Island to which to move these houses, or upon which to build new houses. Relocation is acknowledged by nearly everyone as the only long-term solution for Shishmaref residents who are adamant that they remain as a discrete village in traditional subsistence territory, the "nation" of the *Tapqagmiut*. The U.S. Army Corps of Engineers has estimated that relocation of the village to a site

selected on the mainland coast will cost between 100 and 200 million dollars (USACE 2006:2).

The previous chapter identified climate risks to Shishmaref residents and identified how climate and landscape changes linked to anthropogenic warming are only part of a complex array of factors that create risk, including interactions among *Kigiqtaamiut* ancestors with one another and with outsiders, ideologies and infrastructure associated with educators and missionaries, and a number of historical circumstances, such as President Nixon's vow for new housing in American Indian and Alaska Native communities following the taking of Alcatraz, as well as HUD's increased presence in rural Alaska.

This chapter examines the mechanics and experiences of relocation planning today. I suggested in the last chapter that indigenous communities may be more susceptible to risk from climate and ecological change because cultural differences and colonial ideologies in the early 20th century translated into development decision-making that ignored local knowledge of the environment. Over the last 100 years, Alaska Native communities have become excellent advocates for themselves in governmental and non-governmental arenas. Local communities create and foster social networks at the regional, state, national and international levels in order to advance Iñupiaq needs in the 21st century. There are, however, still dramatic inequities when very small, very remote village and tribal governments, coalitions, and institutions engage very large state and federal institutions – as we will see in this chapter.

Other social science work on relocation in rural Alaska focuses on the political positioning of the villages with regards to state, national, and international funding streams for relocation (Shearer 2011; Bronen 2009, 2011). This is important work, and I dedicate a section of this chapter to government relocation planning strategies. However, what these studies leave out is the ethnographic, pragmatic, and personal experiences of ecological shift and relocation planning, and how these experiences may be tied to longer histories of inequity and development. In this chapter, I give primacy to ethnographic data, survey data of attitudes in Shishmaref, and interview data that expresses local concerns and fears. This is a conscious decision that aims to frame all relocation planning through grounded experiences.

This chapter begins with an ethnographic account of a planning meeting between agency workers and Shishmaref residents. Following, I discuss interview and survey data that suggests there are still significant sentiments of fear and concern among Shishmaref residents regarding agency planning and government capability of planning a successful relocation before a major disaster. Next, I present a history of local relocation planning, followed by an account of state and federal agency responses to relocation planning, and identify some particular points of misunderstanding between local and state approaches to planning. Included in this analysis are comparisons with the village of Newtok's relocation effort and subsequent success. Finally, the chapter closes by examining media representation as a method of adaptation to government apathy in Shishmaref.

5.1.1 The participatory structure

The following account provides an ethnographic portrayal of the pragmatics of relocation planning. I was located in Shishmaref during the meeting described below. Descriptions of what the participants in Anchorage looked like and of the Anchorage meeting site itself were constructed from previous Immediate Action Working Group meetings I had attended.

May 17th 2010 (reconstructed from field notes, the Immediate Action Working Group meeting agenda, interviews, and memory)

On May 17, 2010, the Immediate Action Work Group (IAWG), a sub-division of the Alaska Governor's sub-committee on climate change meets to further discuss progress that has been made among villages that need to relocate, to develop criteria for adding "at risk" communities to the high priority list, and to plan the next 12-18 months of work at previously identified "at risk" communities.

Agency members meet in Anchorage in person to exchange information about ongoing planning of hazard mitigation and the possible relocation of endangered communities.

The board members meet in a large meeting room. Men and women are dressed in suits and are sitting around a long table with stapled agendas, brief cases, and computers. Someone is taking notes. Most, if not all of them, are white.

The language is highly bureaucratic as soon as the meeting begins, but before the meeting officially starts, Anchorage participants use

familiar language with one another. The participants in Anchorage know one another. At the center of the table is a conference telephone. No Native participants from affected rural communities are physically present at the meeting, but at least eight participate by phone.

Six hundred and four miles away, in Shishmaref, sit five community members in the basement of the local church. The IAWG has put up information in real time on the web concerning the agenda, but the internet connection in Shishmaref is too slow to pull agenda slides up as the Anchorage participants move through them. It is difficult to hear what the board members are talking about from a small speakerphone in Shishmaref.

Fred Eningowuk, a city council representative from the village gets a karaoke machine. He sets up the microphone against the phone speaker in order to broadcast the meeting through the karaoke speaker. This is marginally successful, but the sound wavers between static mumbling, and way too loud, depending on who is talking in Anchorage and where they are seated with respect to the telephone.

This meeting lasts for four hours; and is so impossible to follow that it is both extraordinarily disheartening and hilarious. I am pained and exhausted by the end – so uncomfortable in my chair that I shift positions constantly and essentially unable to actually understand more than two words at a time. The other Shishmaref residents participating in the

meeting are much more still in their chairs than I am. There are two elders present for whom English is a second language.

Finally, after waiting for hours while the board discusses criteria for adding new communities to the “imminent risk” list, it is time for Shishmaref residents to give their update on local concerns and progress to the board in Anchorage.

Eningowuk tells the group in Anchorage that Shishmaref needs help getting old, abandoned bulk fuel containers from a nearby village into Shishmaref. The fuel containers in Shishmaref are eroding, but Shishmaref isn't eligible for new fuel containers, as with any infrastructure upgrade, because the village has voted to relocate.

Instead residents have used social networks to locate some abandoned tanks from the nearby village, but they do not have the transportation capacity to move them from one village to another so they are asking for help from these people in Anchorage who are the working government body charged with helping villages who need to relocate.

There is silence from the board in Anchorage.

Fuel containers and fuel container transportation do not fall under the mandate of the working group, so the group in Anchorage moves on without comment. They literally ignore Eningowuk's comment. Say “thank-you” and move on.

For some reason I feel extraordinarily embarrassed at this moment.

My face turns red.

This is the participatory, bureaucratic mechanism through which a long-standing, indigenous community is supposed to plan their relocation. Sitting in Shishmaref, the connection is clear between climate change, environmental migration, and bulk fuel containers. Also clear are the links between funding streams, immediate risk, long-term risk, local poverty, poor internet connections, and the increasing reliance on outside decision makers for aid and risk mitigation.

I estimate that 98% of the 4-hour meeting is government agency workers discussing amongst themselves disaster mitigation planning, interspersed with seemingly disconnected comments by Native leaders from rural Alaska via phone.

“Waste of time,” says someone after the phone call is finished. “Waste of time.”

My experiences living and working on the Seward Peninsula have allowed me to witness the bureaucratic capabilities of Iñupiaq people today. I am not surprised by the highly formalized ways in which tribal council meetings or meetings with the Shishmaref Erosion and Relocation Coordination are held. These are highly bureaucratized events that are predicated on a quorum and agenda driven. Unlike the Indigenous People’s Summit on Climate Change – which sought explicitly to create discourse scenarios that did not mimic standard government agency exchanges – Shishmaref meetings often

follow the same format as any city council or other agency meeting. While there may be slight differences in speech speed, recognition of elders, and other linguistic and performative differences, government and tribal government officials in Shishmaref understand the mechanics of agency meetings.

Considering this, I have been continuously shocked by what I perceive is lack of understanding and real communication between Alaska Native participants and agency workers in these meetings. The ethnography above serves simply as a prototypical example. When meetings are held on the phone, this lack of understanding is exaggerated because of slow technology, insufficient consideration for the difficulties of following a meeting via the telephone, insufficient in-person participation of Native leaders, and formats (especially on the phone) that do not allow for thoughtful commentary by Shishmaref elders and other Native leaders. Survey data corroborates that Shishmaref residents do not feel adequately or accurately represented.

5.1.2 Linking climate change, distrust and participation in Shishmaref

As a supplementary methodology, I conducted a survey in Shishmaref regarding attitudes about relocation and government planning. The most interesting results from the survey demonstrated clearly that Shishmaref residents were highly concerned about climate change and were distrustful of government relocation strategies. Being able to measure these concerns quells suggestions that climate change and inequity are mostly concerns of researchers and journalists.

In the survey, respondents were asked to indicate the extent to which they agreed with the following 3 attitude statements on a scale ranging from 1 (strongly disagree) to 5 (strongly agree): (1) “I feel confident that Shishmaref will be relocated in a timely manner before a major disaster occurs”; (2) “It is clear to me which government agencies would fund relocation”; (3) “Global warming, or climate change, is the greatest threat to Shishmaref’s future.”

Results: On average, survey respondents *strongly agreed* that “climate change is the greatest threat to Shishmaref’s future” ($M = 4.60$, $SD = .88$).

Despite high unemployment, inadequate housing, and other economic difficulties (IAWG 2009), climate change was forefront in people’s minds as a pervasive and ever-present danger that will affect the future. While climate change is not the only driver of vulnerability – it is locally perceived as a major threat. This suggests that Shishmaref residents are witnessing coastal erosion and other climatic changes either on the island or on the mainland to such an extent that it is causing dramatic concern.

Results: On average, Survey respondents tended to disagree that “Shishmaref will be relocated in a timely manner before a major disaster occurs” ($M = 2.05$, $SD = .94$).

While there was variation among residents, overall, those surveyed did not believe that Shishmaref would be relocated in an organized way before a major disaster occurred. In Chapter Three I discussed how, in interviews and during conversations with friends, Shishmaref residents expressed fears about diaspora and discussed individual, seemingly haphazard, planning strategies regarding what would happen in the event of a

storm, and how people could possibly keep themselves or their families in *Tapqagmiut* traditional territory if *Kigiqtaamiut* people were relocated to Anchorage or Fairbanks. These informal planning strategies included moving to the mainland without critical infrastructure, such as a barge landing, an airport, or electricity and water facilities, and returning to a mostly abandoned island to live in old houses following a storm. These discussions stem from this measurable sentiment: Shishmaref residents do not have high confidence in government relocation planning.

There was a substantial correlation among survey respondents regarding perceptions of global warming and beliefs about the likelihood that organized relocation would be carried out before a major storm.

Results: Survey respondents who were not confident that Shishmaref would be relocated in a timely manner were *more likely to agree* that global warming was the greatest threat to the village, $r(28) = -.42, p = .03$.

Perhaps most interestingly, results from the survey also revealed a correlation between belief that an organized relocation would occur and clear knowledge about which government agencies would fund relocation.

Results: Survey respondents who *agreed* with the statement, “I am clear about which government agencies would hypothetically fund relocation,” were likely to *disagree* with the statement, “I believe that Shishmaref residents will be relocated in a timely manner before a major disaster.” $r(28) = -.47, p = .02$.

In other words, awareness of bureaucratic processes predicted low confidence in bureaucratic processes.

These survey results augment data collected in interviews and during the ethnographic project, and help to isolate and assess general feelings from the community. The next section examines more descriptive interview data. For now, we can proceed with a basic acceptance that Shishmaref residents feel a lack of confidence in relocation planning, are concerned about climate changes, and that when residents have experience and clarity about larger governing entities, these concerns increase.

5.1.3 Personal experience as a prerequisite for understanding

During an interview with Kim Ningealook, I asked if relocation caused him any stress or frustration. “It’s what’s giving me gray hairs!” he said. Stella, Kim’s wife, and I laughed – but there is a tension in Shishmaref between the stress of storms and relocation on the one hand, and on the other hand, daily life that goes on without being predicated on relocation and disaster. In an interview with Steve Samuels, the principal of the Shishmaref school in 2010, he said, “[Relocation] doesn’t ever seem to have a positive spin. It’s almost always a negative thing. Not that people obsess about it or anything, but it does come up from time to time. (...) It seems to be a sad thing, in my experience.”

There are full lives being led in Shishmaref that have nothing to do with relocation, but these persistent risks are also constantly under the surface of daily life. Researching disaster was a sad business and lent itself to difficult discussions – my experience in Shishmaref included asking people to discuss some things that they would

rather not. I found that as an interview went into 25 or 30 minutes, sometimes to an hour or more, greater fears and concerns emerged and people expressed greater emotions.

There are three most common concerns in Shishmaref regarding risk and relocation. The first is that the island is experiencing increases in risk – both to flooding and erosion and because the ice conditions are changing so rapidly that hunting patterns are changing. Table 5.1 lists representative responses from interview data and ethnographic conversations regarding how changes on the landscape are experienced. There is widespread concern about climate change and changes in ice patterns influencing hunting practices. Residents also experience a sense of helplessness. In Chapter Six I discuss the resiliency and tenacity of Shishmaref residents in the face of dramatic changes – but present in interview data is also the feeling of helplessness, which is demonstrated in the first two of the responses in Table 5.1.

In the literature, flooding in Shishmaref is linked to coastal erosion, but sea level rises may also be problematic. Sea levels are predicted to rise due to two primary drivers, an increase in existing water volume due to ocean thermal expansion and glacial melt adding to ocean water levels from Greenland and Antarctica (Hemming et al., 2007). A conservative estimate predicts sea levels will rise 280 – 340 mm by the end of the century (Church and White 2006), while other models predict much higher estimates (Pfeffer et al. 2008:342). Shishmaref residents' concern for increased risk seems realistic.

Table 5.1: Interviews on risk

<p>Risk is increasing in Shishmaref linked to climate change</p>	<p>“It’s [the island is] going to go away until there’s nothing. It is global warming and it is mother nature that we can’t help. (B.E.2009).</p> <p>“It feels like we’re sitting on a big tub, like it’s going to fill up with water. That’s how it feels being on this island” (K.N.2010).</p> <p>“Biggest change is that climate change is playing such a big effect in our community, not only that the ice is thinner. The water’s too close for hunting with snow machines” (R.K. 2010)</p>
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The second area of concern is the fear of diaspora following a major flooding event, before an organized relocation occurs (see Table 5.2). Chapter Three discussed negative outcomes that may occur in Shishmaref following a major disaster – and many of these negative outcomes are linked to forced relocation and diaspora. On the ground, emergency relocation that causes the dissemination of the Shishmaref community into different villages, towns, and cities is a palpable fear. It is also a fear that spans generations. During one interview I sat down with three young men each in their late teens and early twenties. They spoke of the scattering of the population as their biggest fear – similarly to the elders I spoke with on the island. There is not a plan in place for what will happen after a major storm if the island becomes uninhabitable and residents are evacuated – but this scenario is most people’s biggest concern regarding storms. I also found widespread concern that relocation planning was going to fail, that it was too slow, and that the result was going to lead to a diaspora. The Shishmaref Erosion and

Relocation Committee understands dissemination of the population to be an annihilation of the community and an annihilation of the cultural integrity of residents.

Table 5.2: Interviews on disaster and diaspora

<p>Disaster will occur (and lead to diaspora) before relocation can be organized</p>	<p>I don't believe the political structure/process can do it (fund relocation). It is too slow. It's always in the planning stages, but there's no funding for it. One day we are going to be evacuated. (R.K. 2009).</p> <p>"To not act represents the annihilation of our community through dissemination" (Shishmaref Erosion and Relocation Committee).</p> <p>"Nothing's being done. Look, we're still here" (J.D. 2010).</p> <p>"Just scared if we relocate we're going to have to move to different towns" (Y.M. 2010)</p> <p>"We'll be scattered like refugees" (R.K. 2009).</p> <p>"Most of the conversation that I hear around relocation, the people don't have a real positive feeling about it, not that they don't want to relocate, but that they don't think that there's a site that's viable" (S.S 2010).</p>
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The third component of concerns in Shishmaref is that agency workers and other decision-makers do not really understand what Shishmaref residents go through, that these outsiders are uneducated about the history of Shishmaref relocation planning, and that there is miscommunication and misunderstanding between agency workers and local residents. There is a sense in Shishmaref that if government workers could just

experience a storm for themselves, then this experience would translate into forthcoming state and federal aid. Table 5.3 lists interview excerpts that describe this frustration.

Table 5.3: Interviews on communication

<p>Alienation and communication difficulties with bureaucratic agencies</p>	<p>“People say: we don’t need to go to those meetings, they just go around and around. We won’t move; we won’t ever move” (A.K. 2010).</p> <p>“They’ve got to see it to believe it” (anonymous 2010)</p> <p>“It’s been, same every time. It’s like: how come you guys are here again, saying the same stuff. We already heard this last time, you know?” (J.D. 2009).</p> <p>“Let the federal agencies come here and experience a whole storm, not come for the day and leave. Let them be here two weeks, so they could see it for themselves, cause it always seems like they don’t believe us.” (J.S. 2009).</p>
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These concerns also point to the redundancy of community meetings hosted by agency workers. I found many residents who reported that, since 2002, there have been multiple meetings a year to discuss an aspect of relocation with the community and with state and federal agencies. For residents, these meetings are redundant. High turnover rates among agency workers also lead to black holes of information regarding relocation, with each successive generation of outsiders tasked with analyzing some aspect of relocation. As a new agency worker or engineer or researcher comes in, residents must

tell and retell the story of relocation from the beginning. As this educating process became frustrating, community members participated less and less. Annie Kokeok, the Kawerak transportation coordinator in 2010, talked about how motivating residents to participate in the process again was a challenge – that morale about the likelihood of moving was low.

Lack of participation by community members can be misunderstood as inherent apathy. Agency workers today are devoted individuals with a stake in Shishmaref relocation and who are dedicated to culturally appropriate solutions; but personal concern is obscured by short-term participation and a lack of historical awareness. In an early 2008 meeting with the Immediate Action Work Group, someone suggested moving the school and thereby forcing residents to relocate. This is a strategy very similar to the early 20th century planning by Sheldon Jackson – and a very sensitive issue to most people in rural Alaska whom I know.

Local participation is also cyclical. A new generation of leaders is taking over in Shishmaref – in some cases sons are literally taking over positions held by their mothers. As younger members of the community enter into office there is renewed energy. However, any outsider working in Shishmaref (researcher, engineer, journalist, bureaucrat) should be vigilantly aware of the repetitiveness with which Shishmaref residents have told and retold, educated and reeducated outsiders about the history of relocation – and how often they have heard of new strategies and surveys being done before construction can begin. As Jennifer Demir said on September 23, 2009, “It’s like:

how come you guys are here again, saying the same stuff. We already heard this last time, you know?”

Residents are most satisfied with the attention and aid given by the late Senator Ted Stevens. This satisfaction is linked to Senator Stevens' tenure as an Alaskan government servant and as a result of his visit to Shishmaref.

Interview with Anonymous 1.a., September 23, 2009

The biggest help that ever came in and we had stuff done after the visit was Senator Ted Stevens. He saw the erosion for himself.

In 2002, I witnessed Senator Stevens engaging with a local community on the Bering Strait during a trip to Little Diomed. My overwhelming impression of this event was how well Senator Stevens related to and took seriously the concerns of Little Diomed residents. As the interview above suggests, the fact that Senator Stevens *saw the erosion for himself*, was significant to the satisfaction some Shishmaref residents experienced following his visit.

In the past, outside decision makers made development decisions that ignored local knowledge and subsequently developed the village site on an unstable sand island. Today, Shishmaref residents are keen to focus on local experience as a key component to expertise in relocation issues. When outside planners, researchers, and stakeholders lack local experience and long tenure in the region, this can lead to misunderstandings between themselves and local residents. The data presented above indicates that residents fear that flooding risks will increase and doubt that planning will ultimately protect the

island from a disaster, which may lead to diaspora. This misunderstanding is a backdrop to the relocation planning that occurs among local, state, and federal relocation planners.

5.2 Relocation Responses: A Local/Governmental Perspective

5.2.1 A history of local relocation planning

Local efforts to relocate the village have been on-going since the 1970s. In 1974, the Department of Community and Regional Affairs released a report on the Shishmaref relocation effort after a severe fall storm led to extensive damage on the island (DCRA 1974). At that time there was extensive planning by local residents and meetings between government representatives and local leaders. These plans did not come to fruition. The estimated cost of relocation in 1974 was placed at 1 million USD (Mason et al. 1997), compared to today's 100-200 million USD.

Local residents say that the decision to relocate was voted down by a majority of residents in the same year. Percy Nayokpuk was in charge of these discussions in 1974 – he still has copies of letters exchanged between the DCRA and himself discussing possible relocation. Nayokpuk says that the decision to remain on the island was significantly influenced by the belief that shore stabilization would control erosion. Even more influencing to the vote was that Shishmaref had been put first in line to receive a new school. As community members are experiencing now: voting to relocate typically removes the village from competitive infrastructure investment grants from state or federal agencies. Local residents voted for the new development. The school remains the

largest building in the community, a center of community events, and an emergency shelter in the event of a major storm or flooding event.

Today, the Shishmaref Erosion and Relocation Coalition is the locally established cooperative committee who meets to plan and organize Shishmaref's relocation efforts. The Coalition was established in April 2001 and is comprised of members from the three official government organizations, the Native Village of Shishmaref, the City of Shishmaref, and the Shishmaref Native Corporation. The Relocation Coalition has depended on a handful of community advocates who are or were employed in government positions to take the lead on developing strategic planning agendas and suggesting paths forward. In the last 10 years, The Kawerak Transportation Coordinator position, funded through the regional non-profit, has acted as a relocation coordinator and provided the Shishmaref Relocation Coalition with information and updates about state and federal agencies. Important leaders who have occupied this position are Bryce Eningowuk, Annie Kokeok, and Tony Weyiouanna. Weyiouanna in particular has been a central and influential voice in the relocation process for the last 10 years, as well as a significant figure in the media coverage that Shishmaref has received.

The make-up of the Shishmaref Relocation Coalition is very important. We discussed in the last chapter how different family groups are identified with particular subsistence territory. Extended participation in the Shishmaref Relocation Coalition is one way to incorporate as many of these different family group representatives as possible. There continue to be locally contentious and sensitive issues regarding relocation, including site selection for the new village. Including all elected positions in

the Relocation Coalition allows many voices to be represented. Like all democracies, extended participation can be cumbersome, but is highly valued.

Many people I spoke with commented that it was critically important to local residents that any decision regarding relocation came from Shishmaref people themselves and not from outsiders.

Interview with Richard Kuzuguk September 24, 3009

We wanted to make it, as much as we could, a local priority, from our local perspective with our cultural values – we want our village and our residents to be the actual people to be in charge of the relocation.

The late Daniel Iyatunguk, former co-chair of the Shishmaref Relocation Coalition also expressed an imperative for local control.

Interview with Daniel Iyatunguk July 17, 2008

They come here and said pretty, nice things about what they would do to help our village, but I read it and it makes it where it's only their decision and I don't think that's right.

Local strategies for relocation have varied over time, but as has been noted, revolve specifically around lobbying for government funding to relocate or reconstruct critical infrastructure in a new site on the mainland. For most of the decade between 2000 and 2010, Tony Weyiouanna promoted relocation efforts aimed particularly at the federal government – and lobbied that Shishmaref could be used as a federal case study for climate-induced relocation. In 2004 the Shishmaref Erosion and Relocation Committee's office to Senator Stevens. The letter requests “using Shishmaref as a template for

relocation by directing one single State or federal agency to relocate to a site on the mainland selected by our community.” While the Shishmaref Relocation Coalition asked for aid from a state or federal agency, the letter is addressed to Senator Stevens.

Shishmaref’s pursuit of federal money is tied to the close relationship Shishmaref people had with Senator Stevens and, I believe, a more general trust in the federal government over the state government. Subsistence rights in Alaska are highly controversial. The federal government has been an advocate for a Native priority for subsistence foods while the state does not recognize this authority. This and other moves by the state to limit Alaska Native rights to land and resources lead to a general feeling in rural Alaska that the federal government is more sympathetic to Alaska Native needs. In the last six years, responsibility for relocating communities that are immanently threatened by flooding and erosion has shifted towards state responsibility through the Division of Community and Regional Affairs (DCRA). The DCRA is especially active in planning Newtok’s relocation. Shishmaref’s efforts towards relocation began earlier than the DCRA’s involvement and at the time Tony Weyiouanna believed the federal government would be more likely to provide funding for relocation. This is circumstantial – but may have significant impacts on relocation. I discuss Newtok’s relative relocation success at the end of this chapter.

Shishmaref has hired lobbyists in Juneau and Washington D.C. to push their relocation agenda. Studies continue to be funded and carried out regarding relocation. This includes a Department of Transportation sponsored reconnaissance study for a road that leads from Ear Mountain to the Coast and provides an analysis of the contents of Ear

Mountain – which has been mined for uranium (IAWG 2009). Ear Mountain is a potential gravel source for reconstructing the village of Shishmaref and offers the possibility of an economic resource for the village. Despite these studies, actual relocation of residents seems further away now than it did in 2002.

Interview with Jennifer Demir September 23, 2009

We were like, cool, everybody want to go, people are going to get funding. We had all these high hopes, you know? We thought it was just going to happen, but in reality that does not happen at all. You know, we're still here.”

Interview with Richard Kuzuguk September 24, 2009

At that time [2002] we were led to believe, we had a chance at that time [to relocate], but not understanding what the total process was at the legislative end was hard to picture.

To this day the Shishmaref Relocation Coalition's time line of important events still has the entry: 2009, April 30: Move to new site is complete.

Today, Shishmaref residents are waiting for new site selection studies to be completed. A community planning grant was obtained with the purpose of identifying culturally and structurally feasible sites. On October 22, 2012 I emailed the Vice Mayor of Shishmaref, Esther Iyatunguk, and asked about the most up-to-date state of relocation activity. She emailed back that the community was waiting for the URS Corporation to finish their site studies – a privately contracted engineering and construction corporation. Continued studies are necessary for government investment in a new relocation site. Yet

these studies feel redundant for residents who remember a 2004 Natural Resources Conservation Service report entitled *Shishmaref Site Analysis for Potential Emergency Evacuation and Permanent Relocation Sites*, and which analyzed six sites: East Nunatuq, Arctic (Arctic River), Igloot, Tin Creek, West Tin Creek Hills, and West Tin Creek Flats for feasibility.

If an organized relocation is not carried out prior to a major disaster – as is expected by the community – community members and local relocation activists talk about the relocation “card in [their] back pocket.” In 1972, Molly Hooch along with 26 students and 126 rural villages sued the state for not providing equitable educational opportunities to Alaska Native schoolchildren – by making them choose between family and/or a boarding school outside of rural Alaska. In 1975, an agreement was made that stated Alaska Native students have a constitutional right to be educated through high school in their home communities – and that any rural village with 8 or more high school students had the right to school infrastructure (Associated Press 1980).

Tony Weyiouanna says that there are *Kigiqtaamiut* people, including families with children who make the requisite 8 high school students, ready to move to a new site and withstand harsh conditions until the makeshift community is recognized as a village and the government is forced to build a school. Building a school requires a barge landing or an airstrip (or both) to allow for materials and machinery needed to construct the building. Weyiouanna assumes a road of some sort would also have to be cleared. Thus, a school would literally pave the way for other infrastructure projects and the resurrection of a *Kigiqtaamiut* village. This is a particularly interesting inversion of an original

colonial project of education – which may ultimately protect Shishmaref residents’ ability to live in their ancestors’ traditional subsistence territory.

The following describes the primary relocation strategies from the perspective of state and federal agencies during the course of this research project.

5.2.2 Government relocation planning

Following a storm in 2001, then governor of Alaska Tony Knowles issued an administrative order declaring “Not doing anything [in Shishmaref] would pose an imminent and continuing threat that justified the State taking action to provide some kind of protective measure along the shoreline of Shishmaref” (Shishmaref Erosion and Relocation Coalition 2002:2). In 2006, the Army Corps of Engineers published a research inquiry into possible solutions for Shishmaref relocation. Three possible scenarios were described: relocate to the mainland and reconstruct village infrastructure from scratch, relocate residents to the regional centers of either Nome or Kotzebue, or take no action. The result of this report seemed to be increased focus on relocation as the only feasible long-term solution for Shishmaref residents. However, a 2009 report from the Immediate Action Working Group (described below) includes the “do nothing” and co-location possibilities in their report for Shishmaref.

In 2007, a coalition of state and federal agencies were identified to address immediate risks to rural communities affected by climate change. The Governor’s Sub-Cabinet on Climate Change was established in September 2007 by Governor Sarah Palin. The Sub-Cabinet was then sub-divided into working groups. The Immediate Action

Working Group was charged with recommending strategies to avoid disasters in places and areas that were in imminent risk of disaster (<http://www.climatechange.alaska.gov/>), and was made up of high level representatives from the U.S. Army Corps of Engineers, the Department of Commerce, Community and Economic Development, the Department of Natural Resources, the Department of Transportation and Public Facilities, the Denali Commission, the Alaska Municipal League, the Alaska State Legislative and Budget Committee, the Alaska Division of Homeland Security, National Oceanic and Atmospheric Administration, Alaska Tribal Health Consortium, Environmental Protection Agency, and the U.S. Economic Development Administration. The IAWG originally identified six communities which were the most significantly affected by climate change and which needed immediate attention. These were: Kivalina, Newtok, Shaktoolik, Shishmaref, Unalakleet, and Koyukuk.

When I first began my research in Shishmaref, a preliminary finding was that high turnover rates among state and federal bureaucrats, as well as short-term budgets for relocation and risk mitigation intervention, created a situation in which Shishmaref residents were constantly dealing with agency workers who had no background knowledge and no historical awareness of local protocol, previous relocation studies, or previous government efforts – as I discussed above. Shishmaref residents and local, low-level bureaucrats are more stable and institutional memory is long because turnover is often among relatives or friends. Comparatively, state and federal agency workers who work on relocation are revolving. From 2007 to 2009, however, I began to reconsider the revolving-door theory of bureaucratic workers in Shishmaref who worked on risk and

relocation. The IAWG seemed committed and stable. The group had significant funding and was actively seeking to add new villages to the list of communities they worked with and served. It seemed reasonable to believe that the IAWG would become a clearing-house committee to handle relocation issues. To date, these reports are the first attempt at collecting information for relocating communities and developing protocol for at-risk communities who need to relocate.

However, 2009 was the last time the IAWG produced a report, and the committee has since disbanded. The disbandment of the IAWG demonstrates what Shishmaref residents have often pointed out, that there is no cohesive planning and that, as new iterations of help and strategizing committees arrive, the community and planning phases have to start all over again. This is often discussed in Shishmaref as “another study being done.” Tommy Obruk commented, “you know that kind of slows them down, the studies. Government always works real slow to do the studies” (May 2010).

A new organization run through the Department of Commerce, Community, and Economic Affairs, and the Division of Community and Regional Affairs, called the Alaska Climate Change Impact Mitigation Program (ACCIMP) has followed in the footsteps of the Immediate Action Working Group. The ACCIMP is attempting to set protocol for villages and village leaders to follow. This is an important step in the relocation process. Without clear steps in the relocation process, local and state leaders are inefficient at streamlining funding. This is a new development, and I feel a surge of hope – similar to when the IAWG was at their most active. The two contact personnel listed on the ACCIMP website, Sally Cox and Erik O’Brien are both individuals who

have worked on relocation issues since the beginning of this research, though mostly in Newtok. Even so, this is a change from the IAWG who mostly had high level bureaucrats as board members.

The ACCIMP is a state agency. In 2009, the Alaska Federation of Natives suggested that the Denali Commission act as a clearing-house for erosion and flooding issues (AFN 2009:27). The Denali Commission is a unique government institution formed by a federal-state partnership that “provides cost-shared infrastructure projects across the state, particularly for Alaska Native communities” (denali.gov). The Kivalina evacuation road reconnaissance study was funded through the Denali Commission. The Denali Commission could possibly allow more Alaska Native Control over relocation – but the DCRA under the direction of Sally Cox was the most obvious reiteration of the IAWG from a governmental perspective.

5.2.3 Village relocation as an example of inefficient disaster governance in the face of climate change

Relocation as a step towards mitigating risk or as an adaptation strategy is a particularly interesting climate change problem. Rural Alaska Native villages serve as case studies for environmental relocation in the United States because they demonstrate they ways in which disaster governance is response-oriented in the United States and is inflexible when ecologies and landscapes themselves are shifting. After a disaster, the U.S. Federal Emergency Management Agency (FEMA) acts as an umbrella organization and has the power to coordinate disparate agencies and infrastructure projects

simultaneously. FEMA is governed by the Stafford Act of 1988, which, among other procedural amendments, outlines the goals of disaster recovery as promoting “recovery through rebuilding” (Sec. 504 [a] 9D). The Stafford Act sets rebuilding in place as an explicit goal of disaster response (Robert T. Stafford Disaster Relief and Emergency Assistance Act 2000 amended 2007; Bronen 2011), which is illogical in places like Shishmaref that are becoming increasingly uninhabitable due to increased exposure to flooding.

There is no corresponding agency for preemptive disaster planning or risk reduction in cases where erosion increases exposure to flooding hazards. Relocation planners, researchers, and *Kigiqtaamiut* advocates all recognize the organizational nightmare of attempting to coordinate multiple governmental agencies and their annual budgets to plan an organized, timely relocation (IAWG 2008; Bronen 2009, 2011; AFN 2009; Atkinson et al. 2009). The effect is that every step must be funded and undertaken individually. Whatever protocol is established and whichever institution eventually coordinates these relocations will set a precedent for possible larger-scale relocations linked to climate change, increased erosion, and preventative flooding disasters in the future. It already has. At the Indigenous People’s Summit on Climate Change a member of the United Houma Nation of Louisiana participated in the event specifically because he wanted to network with relocating tribes in Alaska and understand procedures to mitigate increasing risks of flooding through relocation – an adaptive strategy his tribe increasingly embraced.

5.2.4 The success of the Newtok Planning Group

One example of the lack of protocol in village relocation is the fact that of all the villages that need to relocate one village, Newtok, seems to be proceeding rapidly where the others are not. To date a barge landing and access road has been built and an evacuation shelter is being constructed at a new relocation site. This progress is often attributed to the coordination among the Newtok Traditional Council, led by Newtok resident Stanley Tom, and state and federal agencies – together this group constitutes the Newtok Planning Group (Bronen 2011). The Newtok Planning Group was considered by the IAWG a “model for local, community, state and federal partnerships to address complex issues – the community planning efforts have enabled the community to advance its already innovative successes” (Bronen 2009:6). In at least one phone meeting I was present at, an IAWG board member suggested that progress in Shishmaref was stalled because of the lack of local organization. In the 2009 report, the IAWG stated that Shishmaref had “community planning needs to coordinate with the various organizations to effectively plan for the needs of an entire community” (Bronen 2009:6).

The Shishmaref Erosion and Relocation Coalition was convened in 2001 (before the Newtok Planning Group), meets regularly, and is representative of all the local political affiliations. My research cannot directly account for the discrepancy in what appears to be the IAWG’s belief that local Shishmaref relocation planning is unorganized and the actual existence and functionality of this overarching body of local government representatives – but I suggest that this has to do with institutional knowledge and agency organization.

As stated above, the success of the Newtok Planning Group is often attributed to Stanley Tom (Bronen 2009, personal observations). Success is less often attributed to Sally Cox. Cox, an agency worker from the Division of Community and Regional Affairs has been working with Newtok on relocation issues for at least 7 years and has been instrumental in their success – at least in part due to her long tenure working on this issue and her personal relationship with the Newtok community.

Certainly local organization and leadership is preeminently important in order to successfully plan relocation. Stanley Tom and the Newtok Traditional Council seem to exemplify this type of organization. I would argue that Shishmaref has a similarly stable organization in the Shishmaref Relocation Coalition. Earlier in this chapter I identified turnover within state and federal agencies as being a significant obstacle to relocation, and that turnover causes a lack of institutional memory and long-term organizational strategy. If Shishmaref leaders had personal and professional relationships with key agency workers, and if key agency workers were invested for extended periods of time – a relationship similar to the relationship between Cox and the Newtok Planning Group – then perhaps relocation would be progressing more rapidly.

Because multiple villages need to be relocated and because these relocations are very expensive, the progress of one village over other villages could be highly sensitive and rendered competitive. I have witnessed and recorded Shishmaref residents defusing this potentially sensitive and competitive situation among “at risk” communities by identifying erosion and flooding as a collective struggle, and characterizing the success of one village as also a success for Shishmaref.

Interview with Brice Eningowuk September 24, 2009

EM: When you've worked with the IAWG, what do you see being accomplished?

BE: Yeah, not necessarily for Shishmaref but for other communities.

They're helping Shishmaref in a way too. If they're helping one community we get a little better edge on we need to ask for it.

In a different interview, Tommy Obruk said the following:

Interview with Tommy Obruk May 17, 2010

TO: On that teleconference yesterday I noticed that some lady spoke that they were trying to get a relocation planner for Kivalina and Shishmaref.

That was great, to help both villages, you know.

In a 2007 testimony to a Homeland Security and Governmental Affairs sub-committee on disaster recovery of the United States Senate, Tony Weyiouanna said,

In conclusion, we understand that other communities are faced with the similar problems as we are here in Shishmaref and also are working to relocate their communities. Shishmaref has tasked the Shishmaref Erosion and Relocation Coalition to advocate for funding and coordination of the erosion and relocation project by forming the Coalition in 2001 and to move forward by consensus of the community.

In this last paragraph, Weyiouanna gives three important pieces of information. First, he acknowledges other communities facing erosion and flooding issues. Second, he points out that Shishmaref has been working on erosion and relocation issues locally since 2001

– as early as any village. Third, that the Shishmaref Erosion and Relocation Coalition is moving forward only by consensus of the community – through the participation of many voices, not the voice of one person speaking *for* the community.

I worry that the success of Newtok and the identification of Stanley Tom as a good leader promotes a narrative that puts the onus of failed relocation attempts or inefficient relocation planning on local leadership. If Newtok is successful, a failure to relocate other villages before a major disaster may more easily be attributable to inadequacies within villages themselves and not inadequacies of state and federal government interventions and organization. This research suggests that the local Shishmaref Coalition is more highly organized and has a longer institutional memory than state or federal organizations.

5.2.5 Site selection

In Newtok, selecting a site has been a key decision that facilitates progress (Bronen 2011:382-383). Bronen identifies criteria the Newtok Traditional Council prioritized when choosing a relocation site: good soil, lack of erosion, subsistence accessibility, barge accessibility, space for an airport, and not infringing on other villages subsistence practices (Bronen 2011:382). These criteria would be similar for Shishmaref residents – but may be problematic if one or more criteria need to be compromised.

In Shishmaref, possible relocation sites include and have included: East Nunatuq, Arctic (Arctic River), Igloot, Tin Creek, West Tin Creek Hills, and West Tin Creek Flats. During the 2002 vote, Kawerak employee Julie Baltar pushed for quick site selection

believing it would facilitate funding. At that time the community nominated Tin Creek as the relocation site. Some people in the community did not feel that nomination was legal or binding and disagreed with the site selection (interviews, personal communication). In 2010, Kate Kokeok reported that Tin Creek, West Tin Creek, and Nunatuq were the most community-supported sites. All of the sites have resurfaced as possibly implausible because of ice and permafrost rich soil, which challenges potential relocation and is a poor foundation for infrastructure.

Shishmaref residents have supported the planning of a road that would connect a barge landing, new village site, and a gravel source at Ear Mountain. The road footprint (from potential barge landing to Ear Mountain, village site has not been selected) also sits on permafrost rich land (AKDOT 2009:17-21). Because hydrologists predict continuous thawing of permafrost throughout the Seward Peninsula throughout the 21st century (Busey et al. 2008), this complicates planning. Because warming is predicted to continue, and because buildings and other infrastructure insulate the ground and could cause increased thaw, choosing a site is difficult. Site selection is also sensitive because of allotments of land given to Native families in the traditional family camp areas throughout the mainland.

Residents of Shishmaref are also worried about leaving the island at all to go inland. First, they worry about not having access to the sea for spring seal hunting. On the mainland, residents would have to cross lagoon ice that could be rotten in order to get to the sea and the important spring seal hunt. Shishmaref residents say that they would need

to return to the old tradition of camping during springtime – going to the island or some other point along the coast or camp on the ice to wait for the seals.

The famous seal oil and dry meat from Shishmaref also requires coastal conditions to properly dry and render, according to sources. Preparing dry meat requires cooler temperatures and ocean breezes that protect the meat from insects and flies. As one woman told me: “even 10 miles makes a big difference.” If sites along the coast are considered unfeasible because of permafrost and Shishmaref residents are pushed inland, then this all-important cultural tradition would be much more difficult, maybe impossible to carry out.

As in 1901, choosing what is a viable site for an Inupiaq sea mammal hunting community, and what is a good site for state-sponsored infrastructure development, may be two different objectives. Again we see practical considerations and ideologies clashing and we might ask, what happens if all these criteria cannot be met? What makes a place “viable” for habitation depends on the value system one uses to assess a site.

5.3 Media Attention as a Counterforce to Apathy

When Tony Weyiouanna began to lobby state and federal lawmakers for erosion protection and relocation funding he had a difficult time. In the early 2000s, the relocation of rural Alaskan villages linked to climate change was an invisible issue. Early in his planning Weyiouanna decided to use the media to draw attention to the problems in Shishmaref. In 2002, a People Magazine reporter phoned Weyiouanna in his office in

Shishmaref. The reporter had an ultimatum: convince him to come to Shishmaref or he was going to Tuvalu for a climate change story.

“I looked up Tuvalu on the internet,” says Weyiouanna, “and saw that he could be sitting in shorts drinking a margarita.” Or, he could come to Shishmaref, the relatively desolate island in the middle of the Chukchi Sea. Weyiouanna says, “what I knew we had was culture.”

Since then media interest in Shishmaref has been significant. A Shishmaref Relocation Coalition Newsletter from 2006 reports that 64 news organizations had visited the community since 2002. A partial list of news and documentary organizations that have visited Shishmaref for climate change pieces includes, but is not limited to: The New York Times, The National Film Board of Canada, The Associated Press, Reuters, People Magazine, Earthwatch Radio, Global Create (Japan), National Geographic Magazine, Maison Radio (Canada), Viverra Films (Holland), The New Yorker, The Weather Channel, BBC, Time Magazine, TV Asahi (Japan), ABC News, French Daily Liberation, HBO, the Norwegian Broadcasting Corporation, Thalassa (French television), HD Net TV, National Public Radio, the German TV network, ZDF, Svenska Dagbladet (Sweden), and CBS news.

Interest in Shishmaref spills over into the public, and as a researcher in Shishmaref I have witnessed the intense interest climate change researchers, journalists, and sympathizers have ascribed to rural Alaska villages. In February 2009, in Oxford England, I met a researcher with the Environmental Change Institute who was interested in my work. We decided to go out for coffee. Once we sat down she asked me to read a

theatre drama she'd written that takes place in Shishmaref. She had never been to the Alaska or to the Arctic, but she was inspired by the tragedy unfolding there.

On Friday, November 5, 2010, I gave a talk at Boise State University about my research in Shishmaref. After the talk a student approached me and asked how she could go to Shishmaref in the summer to help. I told her there was probably not anything that she could do to help. She corrected me: "I am going to Shishmaref."

Rachel Aronson, a Masters student at the University of Washington's School of Marine and Environmental Affairs raised money through a crowd funding website (petridish.org) to fund a research project in Shishmaref. In this case the Shishmaref narrative inspired donors. A documentary (Mason et al. in press call it a "docudrama", in press) has been released to critical acclaim entitled "the Last Days of Shishmaref."

Reading through Shishmaref Erosion and Relocation Coalition meeting minutes is to peruse through the lists of visitors interested in a climate change story. The following is just an example from *one month of visitors*, June 2004:

June 2004 (Shishmaref Relocation Coalition Meeting Minutes)

Elizabeth Kolbert – the New Yorker Magazine Reporter came to Shishmaref to interview various people for a story on Shishmaref's erosion problems. The news is likely to be printed sometime this summer. Another trip is being planned by Elizabeth to gather more information on Shishmaref for the article. We are expecting more television documentary crews to come later this spring and summer documenting our situation.

Sidney Moore of the Weather Channel was here recently to get some footage of Shishmaref for a half hour story on Global Warming to be shown on the Weather Channel, the story is to be broadcasted on July 25, 2004, for those of you wishing to view the footage. Also, APRN will be here October 2004 to work on a story on Shishmaref and the effects of Global Warming on our community.

This constant barrage of media attention begets important questions: What is it about the Shishmaref case study that appeals to outsiders? What is it about the media that benefits Shishmaref residents? And is media attention lowering vulnerability in Shishmaref?

For the media, the Shishmaref case study creates a distant, but visible, victim of climate change. For Shishmaref, local leaders have told me they engage the media specifically to “get their story out,” and to combat apathy from state and federal lawmakers to the increasing erosion problems in the community – this was particularly true in the early half of this decade. The extent to which political attention followed media attention is difficult to measure, but certainly Weyiouanna’s awareness campaign for the recognition of flooding and erosion problems in Shishmaref was successful. A 2008 report from the IAWG states, “These problems [flooding and erosion leading to relocation], which primarily affect small, isolated communities, are difficult to address and due to this are easily ignored” (IAWG 2008:4). Media attention makes it increasingly difficult for political entities to “ignore” small, isolated communities.

The experiences and high emotions that emerge when the Shishmaref case study is discussed are sometimes overwrought with empathy, as with the student at Boise State,

and at other times are surprisingly disdainful. Discussing Shishmaref with a broader set of scholars, I've been struck by the sweeping statements made concerning climate change and Arctic residents, particularly Shishmaref residents. In a meeting in Finland, a prominent Arctic anthropologist told me, "Climate change is strangling Arctic anthropology." I've been told by a fellow Shishmaref anthropologist, "I'm not interested in climate change at all, unless you're talking about discourse." These negative statements also seem disproportionately impassioned. Disdain for the Shishmaref case study seems to have the cache in some social networks to imply a certain knowingness, a demonstrative performance that one is above the "hype" of the media. I've been asked more than once some variety of the strikingly insensitive question, "have they fallen in yet?"

As Shishmaref becomes a metaphor for outsiders through media, the specific details of development, history, climate, and geography recede. This is not the narrative Shishmaref residents tell. In the following news pieces about Shishmaref, local narratives are measured and grounded while the description of Shishmaref given by journalists are more catastrophic and emotional.

Thousands of years ago, hungry nomads chased caribou here across a now-lost land bridge from Siberia, just 100 miles away. Many scientists believe those nomads became the first Americans. Now their descendants are about to become global warming **refugees**. Their village is about to be swallowed up by the sea.

"We have no room left here," said 43-year-old Tony Weyiouanna. "I have to think about my grandchildren. We need to move." (original emphasis, Verrengia 2002.)

As another example:

When the arctic winds howl and angry waves pummel the shore of this Iñupiat Eskimo village, Shelton and Clara Kokeok fear that their house, already at the edge of the Earth, finally may plunge into the gray sea below.

"The land is going away," said Shelton Kokeok, 65, whose home is on the tip of a bluff that's been melting in part because of climate change. "I think it's going to vanish one of these days." (Sutter 2009).

In the next example, the author comments explicitly that Weyiouanna is unemotional about his statements, that Weyiouanna speaks with "the indifference of an engineer."

"I don't think we have much choice now," he tells me on the eve of the new ballot. "Some might vote no—people so tied to the island they don't want to leave. We'll just have to make adjustments." Like a wholesale migration to the mainland, an adjustment he discusses with the indifference of an engineer, not someone who's lived here all his life (Wallach nd).

In these examples, the quotations from residents are: “I don’t think we have much of a choice now,” “The land is going away,” “I think it’s going to vanish one of these days,” “There’s no room left” and “we need to move.” These are all experiential statements of erosion that are grounded in physical realities. The authors insert the catastrophic language of “wholesale migration, angry waves, edge of the earth, and swallowed by the sea.”

Media attention in Shishmaref may have brought needed political attention – not just to Shishmaref, but to all villages in rural Alaska who have experienced problems with erosion and flooding. This attention is controversial within the village and the narrative told by intermediary journalists uses more catastrophic language than local advocates and residents use – changing the narrative that is exported from Shishmaref into a fable about an anthropomorphized environment. Catastrophic narratives about climate change refugees and environmental refugees in Tuvalu have been analyzed as an exploitation of Tuvaluan citizens – using Tuvaluans as “ventriloquists for climate change narratives” by Farbotko and Lazrus (2012). Similarly to discourses by Shishmaref residents, Tuvaluan narratives are often less catastrophic and are framed by ideas of global citizenry and human rights (Farbotko and Lazrus 2012) instead of being framed by helplessness and victimization.

5.4 A Discussion on Relocation

The history of infrastructure development in Shishmaref is a history of negotiation between action, inaction, and reaction by state and federal agencies and

action, inaction, and reaction by local communities. Relocation discussions are a new chapter in these negotiations. The tools and strategies needed to adapt to erosion and flooding risks today are embedded in complex social networks, bureaucratic mandates and funding, how outsiders imagine and respond to ecological circumstances on an island in the middle of the Chuckchi Sea, and how Shishmaref residents respond to the sites deemed feasible by engineering firms. “We, as American people, deserve the attention and help of our fellow Americans,” Weyiouanna testified to the U.S. Senate.

This dissertation has created an ethnographic account of vulnerability. The components of history, culture, infrastructure changes over time, local knowledge and colonial projects, and finally relocation planning since 1974 all work in concert to reduce vulnerability in some cases and increase vulnerability in others. Why Shishmaref residents live on an island exposed to flooding and erosion risks, and why they cannot easily relocate off of the island to mitigate the risks of these floods and prevent loss of life and property and diaspora is a function of history, climate, colonialism, and cultural mandates. Like all disasters, vulnerability is a function of social systems interacting with ecologies – of risk entering into stratified social, political and economic systems.

Shishmaref vulnerability can be traced in part to being a marginalized, minority, and colonized community. During early development, local knowledge was ignored because of racist and paternalistic ideologies.⁶ In meetings today, slow technology in the village, power differentiation in local vs. bureaucratic vernaculars, and meeting sites in

⁶ Sheldon Jackson attended the same college as, and appears to have been influenced by, Lewis Henry Morgan, an architect of “social evolutionary theory” (Ellana and Sherrod 2004:71).

Anchorage privilege non-rural, non-Alaska Native decision-makers. Decision making that is explicitly outside of Shishmaref control and under jurisdiction of a rotating cast of agency workers also disadvantages Shishmaref residents. Early reports from the IAWG explicitly state that these rural villages are easy to ignore (IAWG 2008:4). In the future, if Shishmaref cultural values are “ignored” in favor of engineering feasibility studies of site selections, then the cultural viability of Shishmaref as a sea-based people may be at risk.

The history of development and infrastructure in Shishmaref has created circumstances in which an ideal location for highly mobile hunters translated into a poor location for permanent infrastructure and development. Vulnerability to erosion was created almost immediately on Sarichef Island, as residents settled permanently onto the island and immobile infrastructure was developed and integrated into daily lives. Today, risks that stem from erosion, flooding, and the infrastructure trap are exacerbated by anthropogenic climate change. These circumstances push the need to relocate as an adaptive strategy to changing social and ecological conditions. In order to relocate the millions of dollars of infrastructure developed in Shishmaref over the last 100 years, residents are required to petition state and federal agencies for aid. Alaska Native residents have particular histories with these agencies leading people in Shishmaref to trust and distrust certain agencies and to demonstrate significant distrust in government intervention to provide a successful solution before a major disaster. Adaptation to flooding and erosion in Shishmaref today, therefore, rests on the ability to create a convincing narrative of risk for outsiders and funders. Since at least 2001, Shishmaref

relocation advocates have petitioned state and federal representatives for aid and have launched a media campaign to “get the story of Shishmaref out.”

The narratives that surface around Shishmaref relocation and climate change are only partially controlled by Shishmaref residents. In some cases media attention may very well have worked to counteract government apathy for small, rural communities. In other cases narratives about Shishmaref in the media recapitulate stereotypes about Iñupiaq victims and seem eerily similar to the exaggerated stories Sheldon Jackson told about starvation on the Seward Peninsula at the turn of the last century – narratives no doubt justified once again by a desire to “help.” Other narratives about relocating communities– such as comparisons drawn between Newtok and Shishmaref – can misinterpret local power-sharing in organizations (The Shishmaref Erosion and Relocation Coalition) as a lack of organization.

The data presented at the very beginning of this chapter elucidates what this experience feels like. It is tedious and redundant to residents who feel misunderstood and must constantly explain and translate their experiences to new state and federal agency workers. This is sometimes explicitly the result of high turnover among agency workers or the lack of grounded experience by decision-makers. Sometimes frustration and misunderstanding is a result of cultural and ideological differences.

The burden of constantly explaining oneself is a mark of structural racism and a marker of the lack of true biculturalism (Johnsrud and Sadao 1998:321). The burden of explanation and cultural translation often falls on Shishmaref residents – for example, defending the need to located on or near traditional subsistence territory. Also at play is

an urban/rural divide and unorthodox community planning structures. In Shishmaref, the participatory structure of the Erosion and Relocation Coalition – which largely represents multiple family groups – can be less successful in agency meetings than a single, clear village representative. In Newtok, Stanley Tom is a singular clear voice of relocation. Shishmaref residents seem very dedicated to keeping their own power-sharing decision-making structure, but adherence to this cultural mandate may disadvantage them.

The newest iteration of government organization for relocating communities has two significant advantages. First, the ACCIMP is working on developing a protocol for villages considered in imminent danger. Second, the two agency workers in charge of the ACCIMP have a longer tenure than anyone working on relocation issues in Alaska outside of village residents themselves. This is a significant step forward. Still, there are steps that can be taken to acknowledge the inequities that created risk in the first place and to reduce inequities still present in decision-making processes.

Chapter Six: The Tenacity of Home

Collocating or merging with other villages may be cheaper than relocation, but the risk is high that the village's lifestyle and culture will be lost. With these estimates, the Shishmaref Erosion and Relocation Coalition decided to continue with their relocation efforts.

(Climate Adaptation and Knowledge Exchange 2010:2)

Shishmaref residents voted to relocate to the mainland Seward Peninsula in 2002. In interview data collected by Schweitzer and Marino (2006:67) from 2004 to 2006, Shishmaref residents described their intention to maintain a discrete village, not to merge with a pre-existing village, not to merge with the larger regional hubs of Nome and Kotzebue, and not to move – as a community or as individual households – to Anchorage or Fairbanks. One hundred percent of 54 individuals interviewed between 2004 and 2006 responded that they would prefer not to relocate to a larger urban area. As the quote above reiterates, a consensus of Shishmaref residents agree that to abandon traditional *Tapqagmiut* territory would mean losing the village's lifestyle and culture. Despite the varied opinions that men and women in Shishmaref have about relocation – which relocation site on the mainland is preferable, how and when relocation should be carried out, who should lead the relocation effort, how government representatives have handled relocation planning so far – there is the collective belief that Shishmaref should remain as a discrete community within the traditional *Tapqagmiut* area.

Original government infrastructure investment in Shishmaref as a sedentary community on Sarichef Island was justified by the ideological belief that modernization, Christianization, and civilization would benefit Alaska Native tribes. This effort was consistent with a global colonizing project ideologically grounded in ethnocentric visions

fostered during the Enlightenment, and predicated on the exportation of infrastructure and institutions throughout the world (Spybey 1992:100-118). While worthwhile debates may rage about the merits of modernity, technology, and human “progress,” it is undeniable that in the wake of widespread attempts at assimilation, Alaska Native and American Indian communities have suffered tremendous upheaval. Indeed, one of the leading social scientific explanations for the extensive physical, mental, and behavioral health disparities suffered by indigenous peoples (in North America and elsewhere) is the overwhelming stress of cultural change, including cultural disruption and lifestyle changes due to forced acculturation (Condon 1987; Dinges and Joos 1988; Dinges and Duong-Tran 1993; Duran and Duran 1995; Quintero 2002; Walters and Simoni 2002). Shishmaref residents currently make the argument that to remove them from traditional subsistence territory or to refuse to create a safe village on traditional *Tapqagmiut* territory is to promote cultural disintegration. Figure 6.1 (below) is the banner from the Shishmaref Erosion and Relocation website. In the banner, Shishmaref residents present the argument that they are “worth saving.”

This tenacity of home is not result of a cost/benefit analysis, but neither is it irrational or solely ritualistic. “Attempts by Alaska Natives to protect and prevent the loss of their lands have taken place since the 19th century” (Anders 1989:286). The strength of this commitment to subsistence territories and subsistence practices can surprise non-Native peoples. This chapter investigates the tenacious relationships that Shishmaref residents have to place and practice. I begin with information about subsistence practices in Shishmaref and an ethnographic account of putting away black meat – the experience

of subsistence practices. Following, the chapter discusses land tenure as a risk management strategy. Next, we consider habitation as a choice or an obligation and introduce the concept of land and landscape within a interpersonal conceptualization of the self. Finally, we discuss whether or not Shishmaref residents have a “right” to traditional subsistence territory.



Figure 6.1: Erosion and Relocation Coalition banner

6.1 Subsistence Practices in Shishmaref

In 1985, Sobelman reported that Shishmaref residents obtained 75 to 80% of their total caloric intake through subsistence proteins, fats and vegetables – defined as locally procured resources (Sobelman 1985:4). In 1990, Conger and Magdanz reported that the average Shishmaref household took in 2,637 pounds of edible weight in subsistence foods during the year, or 663 pounds per person (1990: 29).

Marine mammals accounted for 69.4 percent of the total harvest, three times as much as any other resource category. The next largest component of the harvest was land mammals (15.6 percent), followed by fish (6.4 percent), plants (3.4 percent, salmon (2.6 percent), birds (2.0 percent), and shellfish (.07 percent) (Conger and Magdanz 1990:27).

Subsistence practices in Shishmaref are integrated into all aspects of life. The annual cycle and daily activities of a household revolve around subsistence practices and the school day. To residents, the word *subsistence* refers to more than just the products derived from labor, but signifies a way of life and an orientation to and relationship with the landscape. Different expectations for sharing revolve around subsistence activities, relative to cash exchanges or other market activities. John Sinnok of Shishmaref says that subsistence constitutes a “we” world, and is fundamentally integral to an Iñupiaq way of life. As Thomas Thorton writes,

Every year tens of thousands of Alaska Natives harvest, process, distribute, and consume millions of pounds of wild animals, fish, and plants through an economy and way of life that has come to be termed “subsistence.” Collectively, these varied subsistence activities constitute a way of being and relating to the world, and thus comprise an essential component of Alaska Native identities and cultures (1998:22.3)

The following is an excerpt from my field notes and reflections on days spent working with women to put away the *ugruk* from the spring hunt.

July 2008

July 2008 has been a rainy season.

Rachel postpones putting away the black meat that Dennis and other family members got from hunts in the spring. Her racks made of driftwood are covered. Stink hams (shoulder meat from bearded seals) are drying under tarps. Trashcans at the family's racks on the southwest, unprotected side of the island are full of seal blubber rendering into oil, butchered strips of thin, dried *ugruk* meat, and tightly wound intestines and stomachs. All the different parts of the *ugruk* are separated and each has their own trashcan.

Finally, there is a break in the rain, Minnie (Rachel's sister in-law), Rachel and I go to the racks on Rachel's four-wheeler to put away the meat and to make buckets to be distributed to friends and family who live in Shishmaref and in other parts of Alaska.

Rachel sits the radio up on an old oilcan and flips a white, five-gallon bucket over as a seat. She pulls the trashcans of blubber, dried black meat, stomachs and intestines, and the rendered oil out from where they were stored. Minnie sits next to Rachel. The two women divide the meat into smaller, white, five-gallon buckets that are cleaned and prepared each year for this purpose.

The men have already hunted and begun to butcher. The women have finished butchering and divided the meat into these cans, so that the

only thing left to do is to further divide the animal into 5-gallon buckets and submerge the dried meat with seal oil. A handful of stomachs and intestines go into a bucket, along with some thin strips of black meat, *panaaluk*, thicker cuts of black meat, and then the bucket is filled with seal oil, opaque and yellow.

While we do this, the radio plays Casey Kasem's weekly top 40 and we all drink orange crush from cans. Rachel and Minnie don't talk much, but this is still a social event and there's an ease about the work. The rain has finally let up and we can see the ocean and the mainland.

Like many times before, I'm at a loss to explain the nuances of distinction that mark experiences with Iñupiaq women as different from experiences with other women in my life. There is, of course, the work itself: we are putting away *ugruk* meat, meat from the large bearded seal. There is the setting, this amazing, windswept sliver of an island.

There is the repetition of the work itself – put in stomachs, intestines, *panaaluk*, seal oil, close bucket, repeat – and how obvious it is that Rachel and Minnie have done this work before; that their ancestors have been doing something like it for thousands of years.

And there's the orange crush, the plastic five-gallon buckets, and radio pop music that show how nonresistant to change people in Shish actually are. Putting away black meat is ritual. It is a practice in cultural expression; but it is not a reified Iñupiaq activity. It is not part of a living

museum. Putting away black meat is what women do. It is both ritual and pragmatism.

This is the ugruk that Rachel's daughter Kate ate when she was pregnant and had morning sickness. This was the ugruk that Rachel's other daughter brought with her to Shaktoolik where she lives now with her husband and two sons. This is the ugruk that I would eat for the next week. This is the ugruk that Minnie would take home to her husband who does not hunt as much since his snow machine accident. It's the ugruk that would be distributed to family and friends and would be used for special occasions and eaten when people didn't have the money to buy store food.

6.2 Subsistence as Risk Management

Subsistence is integral to cultural existence in Shishmaref, tied explicitly to the interdependence of land, people, and animals. This interdependence is understood as essential not just for cultural existence and ritual, but also for the physical survival of both animals and the Iñupiat. Shishmaref residents understand their lives to be predicated on the 2600 pounds of subsistence food that households eat every year, but the act of hunting and eating is also important to the animals themselves. John Sinnok explains how since Shishmaref people have stopped hunting squirrels the population has gotten smaller.

Interview with John Sinnok, July 18, 2008

When we were kids my grandmother used to have me do a lot of squirrel hunting for her and she said, if you guys quit hunting squirrels they'll

disappear and now that we don't eat as much squirrels as we used to, we don't hunt them, and now there's very little squirrels where there used to be a lot of squirrels when we were growing up because we hunted them for the skin and we ate the meat back then. Now we don't do that and you hardly see any. I'm not sure if they over graze or what's going on.

In other interviews people reported that the land needed people there or that the animals would go away. The ecological niche held by *Kigiqtaamiut* people within the territory is understood to be necessary for the survival and health of the land and animals.

Dependence on subsistence food is necessary for both cultural survival as well risk reduction among *Kigiqtaamiut* people. In the following excerpt, Raymond Weyiouanna ties subsistence to cultural survival; but then quickly talks about the ocean as the place to get food, a material necessity. His use of the word "survive" at the end of this excerpt reflects this convergence of physical and cultural survival through subsistence. The sea and land are literally food security for Shishmaref residents.

Interview with Raymond Weyiouanna, July 16, 2008

R.W.: Without subsistence, our lifestyle, our culture wouldn't be held together, I suppose. Because we depend on the sea for a lot of our food. The sea is like our supermarket – when the ocean is nice we gather what we can. When the ice is broken up whether it be the bearded seal, the walrus, and then after the ice goes we try to gather as much fish as we can from the sea, you know because it's calm, it's like the store is open when

it's calm and like the supermarket is closed. Without that I don't think we'd be able to survive.

Giddings noted that the Seward Peninsula has historically been a place of both continuity and change for millennia (1960). Likewise, anthropologists write about flexibility to changing conditions as an important Inupiat and Yupiit individual and cultural trait for dealing with fluctuating environmental and social conditions in the Arctic (Morrow 1990:154, Kingston 2008:158). The ease with which snow machines and other technology were incorporated into subsistence activities is emblematic of this flexibility (Pelto 1973). I found, however, that hunting and subsistence were also understood as a backdrop to change. When research participants spoke about dynamic change in the Arctic, about adapting to changing scenarios, changing ecological conditions, and even moving to new locations, hunting and subsistence practices were expected to be flexible, but abandoning subsistence territory and not having access to the ocean *at all* was characterized as the breaking point of this flexibility. Fred Eningowuk outlines this belief explicitly in the following interview passage.

Interview with Fred Eningowuk, September 25, 2009

FE: And then, you know Eskimos have always adapted to their location and their way of life. Eventually we would have to adapt to a new relocation site. Whether it be changing our subsistence way of life. The majority of us, you know like me, would still need access to the ocean.

Subsistence practices also carry a strong cyclical quality. Again, Raymond Weyiouanna says,

The *most important* thing is to teach them [his children] is the value of the food that we provide them and the livelihood of having to teach them to learn how to get the animals and basically pass down what has been passed down to me from my parents and that's what I'm looking forward to doing to my children [my emphasis].

The importance of passing on subsistence practices to the next generation – and the burden of responsibility to learn subsistence skills – were present in many exchanges I had in Shishmaref. In another interview, Esther Iyatunguk said the following.

And my aunt, she would always give my mom and dad a little bucket. She shared. I don't know if you met her, Sharon Nayokpuk, she was like an older sister. I noticed last year she was getting tired a lot when we started cutting and I helped her. You know I helped her cut last year and I'm going to help her this year because she helped our family a lot. You know it's my time to help take care. It's just our time to step up, you know?

Esther used this phrase, “time to step up,” frequently in reference to subsistence activities. Esther has a job with the school, has 5 children, and takes online classes through UAF's Northwest campus. She never said she was “stepping up” when she talked about her work or education. Instead she used this idea of “stepping up” to talk about her brother learning how to seal hunt, to talk about her learning to making *kuspuks* after her ‘gram’ passed away.

Through passing these traditions on, subsistence hunting becomes the constant in a dynamic world, even if the form of that hunting changes. The strong generational component of subsistence hunting is present in Shishmaref – and invades new social media and new social spaces. On October 20th, 2012, Kate Kokeok posted a photograph of her son’s first seal catch on Facebook. One hundred and forty-nine people “liked” it. Even as Iñupiaq people prize flexibility and incorporate modern technology, infrastructure, and ideologies for their own use and expression, the constancy of subsistence can be seen as a rational strategy for mitigating the fluctuations in economy, politics, and social life that have marked a century of radical change.

Throughout the Seward Peninsula people, discuss the day when villages will have to be completely self-sustaining. This narrative never surfaced in interviews, but came up in personal and intimate settings. There is a strong belief that the white settler population will one day leave, as well as the airplanes, Department of Transportation money, subsidized electricity, etc. This day, residents understand, will be catastrophic – as the dismantling of public infrastructure would be for any American community. Acknowledging and being mentally prepared for this is part of being prepared for a dynamic and changing world in which social and ecological circumstances are not entirely predictable. Being at home – or at least having *someone* at home, in a place where subsistence can be carried out – is a measure of food security, and a measure of security for the future of the family group.

Considering that subsistence practices have been a reliable (and preferred) food source for thousands of years, and that supermarkets have a much shorter history, this is a

rational strategy of risk management and economic diversification. In Shishmaref, starvation times still exist in living memory, and supermarkets are still not a primary food supplier to most Shishmaref residents. Given these circumstances, being divorced from the ability to provide food for your family through subsistence is dangerous; being away from the ocean, as Eningowuk claims, is not an option.

6.3 Interdependence and Place in Shishmaref, Alaska

6.3.1 Where I live is not a choice

Nusugruk Rainey Hopson is an Iñupiaq freelance writer, a blogger and an artist from Anaktuvuk Pass. Recently she engaged in a public discussion and debate with someone “from the outside” about living in rural Alaska, and about whether or not the expense of heating a house was “worth” living in the rural Arctic where heating oil is expensive.

L.R: I'm a "people of the lower 48" Rainey has told me quite a bit over the past few years about the harsh weather and the high cost of items. **It's a personal choice to stay living there** as it is a personal choice for anyone to live in whatever state they live in. I hear Alaska has some pretty scenery, but I can hardly afford to heat my house through 10 to 20 degree winters. Though I imagine surely in -50 weather a fireplace doesn't cut it.

N.R.H.: It's not a personal choice actually, which is hard to define to people because it's such a culturally defined decision. In our culture, how we are raised, what we see every day, ties us to this land. It's the opposite

of the “independence and separation” type of culture found in most places in the lower 48. Here it's central, the connection with land and animal and family. I think when your family lives in the same spot for over 10,000 years the culture surrounding that heritage makes your “personal choice” to live here or not null and void.

In the above passage, Hopson is frustrated. This tone is also present from interviews in Shishmaref surrounding issues of relocation and subsistence. Shishmaref residents expressed similar frustration when asked about *why* they needed to stay on traditional land and conduct subsistence practices. Annie Kokeok said, “it’s just our way of life, the subsistence way of life.” The frustration comes from, as Hopson says, being “hard to define to people because it’s such a culturally defined decision.” The value of a subsistence lifestyle is predicated on an Iñupiaq orientation towards the world and differs quite profoundly from non-Iñupiaq worldviews. Therefore, explaining the importance of maintaining small, traditional, rural villages and landscapes can create communication difficulties in cross-cultural settings. It is apparent that within an Iñupiaq orientation, subsistence is necessary for maintaining personal meaning, cultural continuity, and physical security – whether or not this translates into an outsider’s understanding.

During an interview with Brice Eningowuk, he comments that Shishmaref residents “*can’t get away*” from hunting or subsistence practices, regardless of the uncertainty about the future or about various scenarios of relocation following a disaster.

Interview with Brice Eningowuk September 24, 2009

EM: “And what does the future look like for you?”

BE: . . . We're [*Kigiqtaamiut* people] going to be hunting; we're going to be doing subsistence no matter what, I think. That's one of those things I feel we can't get away from.

Consider also this statement from Raymond Weyiouanna: "without subsistence our lifestyle, our culture wouldn't be held together, I suppose." Subsistence in these examples is not something people choose, but rather something that people *are* – something that cannot be "gotten away from."

6.3.2 I don't want to move, even if I move

In interviews conducted from 2004 to 2006, residents reported unanimously that they did not want to move to Nome or Kotzebue (Schweitzer and Marino 2006:67).

When I returned to Shishmaref in the late 2000s, I learned that some of these same people who were interviewed had moved to Nome. What was the cause for this discrepancy?

In the interview script constructed for the Army Corps of Engineers, one of the first questions asked of participants is whether or not they wanted to move to Nome or Kotzebue. The interview script assumed the individual as the basic unit of analysis – but this is not what interviewees seemed to be answering if they responded "no," only to move away.

In a classic essay on the nature of anthropological understanding, Clifford Geertz argues against assuming the primacy of the independent (or, individual) self in our cross-cultural endeavors:

The Western conception of the person as a bounded, unique, more or less integrated motivational and cognitive universe; a dynamic center of awareness, emotion, judgment, and action organized into a distinctive whole and set contrastively both against other such wholes and against a social and natural background is, however incorrigible it may seem to us, a rather peculiar idea within the context of the world's cultures. Rather than attempt to place the experience of others within the framework of such a conception, which is what the extolled “empathy” in fact usually comes down to, we must, if we are to achieve understanding, set that conception aside and view their experiences within the framework of their own idea of what selfhood is (Geertz 1974:31).

The emerging field of cross-cultural psychology continues in this vein, pointing out that many non-European based cultures construct the self and the agency of the self with a focus either on independent or on interdependent relationships (Fiske et al. 1998; Greenfield 2009; Triandis 1995, Markus & Kitayama 1991). While “every individual self carries elements of independence and interdependence” (Markus and Kitayama 2010), the degrees to which the former or latter provide underlying structures for organizing social behavior vary between cultures. In other words, there are both practical and cognitive distinctions between cultures in which independence is the basis for social life and cultures in which interdependence is a foundation for social life.

Applying this framework to the interview script and the answers we received to our initial interview question, we might say that the “I” that participates in the

community of Shishmaref does not want to be relocated to Nome or Kotzebue, regardless of whether or not the individual “I” does actually move or desire to move to Nome or Kotzebue. Shishmaref residents need for Shishmaref to exist – even if they live somewhere else. The individual is in part constituted by the existence of Shishmaref as a social unit – thus agency is interdependent and the interdependent self does not want to relocate.

This interdependence may seem to run counter to the importance of autonomy in Iñupiat and Yupiit culture, and the taboo on telling anyone what they should do, both of which seem to indicate high levels of independence (Morrow 1991:65-69; Kingston 2008:160) – but this is not necessarily the case. Autonomy and relatedness, or interdependence, can be domain specific and socially situated (Luciano 2010:498). Culturally defined social practices, social performances, and material goods belong in different degrees to independent or interdependent domains of social life. Subsistence practices have specific interdependent characteristics, for example, while the cash economy is based more exclusively in individualistic domains.

This analytic tool of independence and interdependence sheds light on Hopson’s explanation that living in the Arctic landscape is “not a choice,” by which she may mean it is not an independent choice, but rather an interdependent one. It also may explain Iyatunguk’s statement that it was “time to step up.” Under certain conditions it becomes a responsibility and obligation of the individual to participate in the social structure of the village – to align personal agency with participation of the group. So when asked, “Do you want to move to Nome or Kotzebue?” the answer is “no” as a functioning member of

an interdependent Shishmaref in which a critical number of family members will “step up” and create this social world. We, Shishmaref people, need to be in Shishmaref – regardless if any particular individual moves to Nome, Anchorage, or California.

6.3.3 Extending interdependence to the landscape

The interdependence of personhood is understood in the literature of cultural psychology as a matter of culturally and socially defined relationships between people; but Ingold asks,

What makes a relationship social, and are such relationships confined to human beings? Why should it be supposed that we encounter the nonhuman components of our environment – animals, plants, inanimate objects – in their sheer materiality? What do we mean by saying that our relations with these components are material relations? Or to put the question in its even stronger, converse form, what does it mean to say that these relations are not social? (1986:184).

Trying to understand why tenacity and an abiding dedication to the landscape is such a prominent feature of Shishmaref social life, exacerbated during this episode of high risk, necessitates investigating fundamental assumptions about people’s relationships with their environment. Northern indigenous scholars often report that many ethnic groups attribute agency to non-human things including animals, landscape, and weather (Nadasdy 2007; Ingold 1986). Animism in this context is not the imbuing of spirit into

animate things, but rather is a conception of the material world as being inseparable from what we may term spirit.

Animacy, then, is not a property of persons imaginatively projected onto the things with which they perceive themselves to be surrounded. Rather – and this is my second point – it is the dynamic, transformative potential of the entire field of relations within which beings of all kinds, more or less person-like or thing-like, continually and reciprocally bring one another into existence. The animacy of the lifeworld, in short, is not the result of an infusion of spirit into substance, or of agency into materiality, but is rather ontologically prior to their differentiation (Ingold 2006:10).

This is true in Shishmaref as well. Josh Wisniewski writes about *anjzugaksrat iniqtigutait*, the set of rules and laws used in Shishmaref that govern right action in the world and have particular salience for hunting luck and success. Under *anjzugaksrat iniqtigutait* or “Eskimo Law,” *sila*, often translated as weather, is actually conceived of as the “environment, the organization of the world, consciousness, and weather without implying a differentiation between these conditions of the world” (Wisniewski 2011:141). *Sila*, under this translation is animate, as understood by Ingold in the passage above. The world is imbued with agency prior to differentiation into humans, animals, and landscape. If relationships among sentient beings – including humans, animals, and landscape – are what interdependently construct agency and personhood, then the landscape and relationships with the landscape literally, not figuratively, are definitive of *Kigiqtaamiut* people and culture. If relations are what “bring people into existence,”

according to Ingold, then we can understand the tie between *Kigiqtaamiut* people and landscape a mutually constitutive relationship.

Translating these cultural imperatives into bureaucratic frameworks is extremely difficult. Subsistence occupies an uncomfortable terrain in agency reports concerning the relocation of Alaska Native villages that are exposed to erosion and flooding. Subsistence is not quite defined as an economic imperative – though it competes with market labor and is in some ways a function of the economy – and it is not quite solely symbolic or recreational either.

A report from the IAWG contrasts “jobs” with subsistence opportunities: “BLM firefighting, construction work, and other seasonal jobs often conflict with subsistence *opportunities*” (my emphasis, 2009:18). In this case, subsistence is distinct from economies, but still exists within a worldview in which an individual may take advantage of “opportunities.” In the next passage from the IAWG, the report identifies Alaska Native peoples as *interested* in culture and tradition. Culture and tradition presumably includes subsistence. “Remote Alaska villages typically are largely native, have a significant *interest* in culture and tradition” (my emphasis, IAWG 2009:91). Shishmaref residents, as demonstrated by the preceding interviews, make much stronger statements about the importance of remaining on traditional land and having access to subsistence territory. The banner for the Shishmaref Erosion and Relocation Coalition is the strongest indication that the connection among people, animals, and land is more vital than an “opportunity” or an “interest.” The banner reads that *We* are worth saving [my emphasis].

6.4 A Conclusion: Taking Indigenous People Seriously

In the article, *The Gift of the Animal*, Paul Nadasdy writes that there would be a radical shift in anthropological theory if anthropologists accepted as an actual, not merely metaphorical, truth that humans and animals could have social relationships with one another.

In short, we must acknowledge that they are not just cultural constructions and accept instead the possibility that they may be actually (as well as metaphorically) valid. For the most part, however, we have refused to do this. In this article I take seriously the possibility that northern hunters' conceptions of animals and human-animal relations might embody literal as well as metaphorical truths (Nadasdy 2007:26).

This idea of taking people seriously applies in the Shishmaref case study as well. For *Kigiqtaamiut* people, complete removal from traditional lands constitutes culture loss and disintegration through the eradication of social relationships that include interdependent relationships with the landscape. Agency planning should begin with the first imperative of Shishmaref residents themselves, "we must have access to the ocean," and access to traditional subsistence lands. While there are no current plans to move *Kigiqtaamiut* people off of traditional land, and the ACCIMP is actively working to develop a site for relocation on *Kigiqtaamiut* territory, relocation and consolidation of indigenous groups throughout the circumpolar North has been a consistent trend for the last 100 years (Schweitzer et al. forthcoming). Shishmaref residents know this, and express significant fears that diaspora, dispersal, and integration into a larger community will be the outcome

for their own village. The threat of removal, diaspora, dispersal or integration becomes particularly looming because of the geographically widespread flooding and erosion risks being experienced by Alaska Native communities today. If we accept that Shishmaref residents must (as they say) remain on traditional land, then answers to complicated logistical and economic questions stem from this local imperative.

A case for Shishmaref residents remaining on subsistence territory should not, therefore, be framed in terms of a cost/benefit analysis – predicated on percentages of subsistence foods that make up household caloric intake or the amount of transfer payments versus household financial independence. Rather, solutions to the expense of service delivery and risk mitigation can be analyzed by first considering whether or not Alaska Native peoples have a right to traditional territory, a right to rurality, and a right to subsistence. Solving complex problems can take place under this rubric.

This chapter addresses the tenacity of home – *why* it is important to take Shishmaref residents seriously when they say they need to stay near the island and near their traditional land base. Most significant in this chapter is the call to take Shishmaref residents seriously, whether or not the theories presented have ultimate explanatory power. Unanimously, Shishmaref residents who were interviewed said that they did not want to merge the village with a larger community – but wanted instead for Shishmaref to remain a discrete village within traditional territory. Whether or not this cultural imperative is understood through theories of interdependence and animism is secondary to the fact that this imperative is explicit and decisive. This demonstrable decisiveness is enough to make remaining on *Tapqagmiut* territory a bureaucratic mandate.

Chapter Seven: Shishmaref, Colonization and Climate Change: Concluding Thoughts on
an Ethnography of Vulnerability

One might be tempted to say that these resettlement projects fail because of the shortage of resources and skills that plague developing countries. Let us not forget how resource-rich countries such as Canada and the United States have disrupted their marginalised 'native' populations through resettlement projects. If North America can't make it work, you might ask, what hope do third world countries have?

-Chris De Wet 2001:4642

It is difficult for those of us professionally involved in Indian policy to comprehend the level of unimportance that Indian law and policy has occupied on our scale of national priorities.... It is particularly ironic that despite a generally low level of national attention, a great many people not only claim familiarity with but readily volunteer answers to questions concerning Indian affairs.

- Rennard Strickland 1979:217

That under the ice netting has been going on for years and years. Not nothing new. We have a system, a way of doing it.

-Clifford Weyiouanna Interview on July 21, 2008

7.1 A Summary of the Shishmaref Case Study

This research is an ethnography of vulnerability – a sketch of the complex factors historically and contemporarily that create vulnerability and low adaptive capacity in Shishmaref to erosion and flooding. Merging historical data (including data from the oral and written records) and contemporary experiences of vulnerability (through ethnography, interview, and survey) is a way to capture in the present the individual, community, and global movements of history, society, and environment as they play out in one particular location. This is grounded, case study research. Creating a research project to engage this scope and perspective on vulnerability is unique to anthropology – and in the end this research is a holistic study in the creation of a moment in time where

Kigiqtaamiut people and other Shishmaref residents wait for what will happen next – the study, the storm, the organized relocation, or the emergency evacuation.

The Seward Peninsula has been inhabited for at least 4000 years, by dynamic and flexible cultures that adapted to changing ecological conditions, adopted new technologies, moved around, and moved on. Today in Shishmaref, continued erosion and flooding and the ineffective long-term viability of shoreline stabilization make migration off of the island and resettlement elsewhere the only reasonable solution.

Migration itself is not a maladaptive strategy to ecological shifts – conversely, for millennia migration has been a successful strategy to ecological shift (Kelly and Todd 1988; Erlandson et al. 2008). However, the last 100 years of displacement and resettlement are a mostly failed experiment in government organization which resulted in the further impoverishment and social disarticulation of moving populations (Cernea 2000; De Wet 2006; Oliver-Smith 2006b, 2009; Hugo 2011). In light of these resettlement failures, it is critical to understand the actual outcomes residents are trying to avoid. Vulnerability in Shishmaref is not exposure to rising waters and falling bluffs, but is rather, that, subsequent to rising water and falling bluffs, Shishmaref residents will experience negative outcomes. In the event of a large storm, Shishmaref residents are likely to be threatened with loss of life and loss of property. In the long term these risks must be mitigated through relocation.

If a major flooding event results in emergency evacuation and relocation or if Shishmaref residents are relocated out of traditional hunting areas, the literature suggests that residents will be at risk of increased impoverishment, landlessness, homelessness,

and social disarticulation (Cernea 2000). Cernea writes that “impoverishment of displaced people in the central risk in involuntary population resettlement” (1997:1569). Underfunding of displaced and resettled populations has been a central feature of resettlement failures throughout the 20th century, and underfunding during resettlement can translate into generational poverty and the inability of resettled populations to make a living or reconstitute important social structures (Hugo 2011:275). Throughout the world – whether climate change related migrants relocate into urban environments or whether villages are recreated in close proximity to where they have been – in order to prevent widespread negative outcomes to migrating populations; governments, outsiders, and/or institutions will need to dedicate large amounts of funding. “To resettle those families and communities displaced by climate change will be expensive” (Hugo 2011:275).

Diaspora and dispersal out of traditional subsistence territory is the single greatest fear of residents I have interviewed in Shishmaref. The literature suggests that diaspora and resettlement outside of subsistence territory could lead to negative financial and social outcomes for residents. *Kigiqtaamiut* people themselves see removal from subsistence territory as a mechanism of cultural disintegration and the possible disintegration of the landscape as well. There is a complex relationship among people, society, and landscape in Shishmaref, as discussed in chapter six. Regardless of the academic understanding of this relationship, it is unequivocal that residents see the dispersal of Shishmaref residents as *increasing risk* to themselves and their cultural heritage. This position should be taken seriously. Recurrent throughout American Indian and Alaska Native/US policy is the imposition of outsider ideologies through

infrastructure and institutions, which either failed to create any sustained improvement in the lives of American Indians and Alaska Natives, or made the quality of life worse. As Rennard Strickland writes, “a recurring historical fact is that Indian policy makers have believed, or acted as if they believed, that Indians did not know what was good Indian policy (Strickland 1979:214).” Today, Shishmaref residents believe that reconstructing the village on the mainland is the best solution in order to mitigate risk and remain on traditional subsistence territory.

7.2 Rapid Ecological and Social Change

The decision Shishmaref residents are making to stay close to home occurs against a backdrop of dramatically changing social and ecological conditions. Climate and ecological changes are taking place in Shishmaref today. While it is difficult to parse out how climate, development, and natural processes of erosion combine to create risk of flooding, it is clear that ecological changes are occurring in the area and that these ecological shifts create uncertainty, both ecologically and psychologically, and contribute to the growing threat of disaster on the island.

Even more significant to creating risks of flooding are the social changes that have occurred in Shishmaref over the last 100 years. In the past, mobile infrastructure made high mobility an adaptation possibility for *Tapqagmiut* people. Today, life in Shishmaref has integrated modern infrastructure into the seasonal round of the village, the daily activities of people in place, and the basic service needs of community members. Shishmaref residents rely on the school for (part of) their education, bulk fuel

tanks to store fuel for boats and snow machines used in subsistence hunting, the gym for community events, sports (basketball), and potlatches, the clinic for basic health care services, the washateria for washing laundry, the church for worship, weddings, baptism and funerals, the runway and barge landing for importing goods and people into the village, and communication technology (internet, phone lines, cable) for participating in long-distance relationships, running businesses, and to facilitate information consumption. The integration of immovable infrastructure into daily life is the process of sedentarization, which is a mark of the state project (Scott 1998).

Modernity, particularly modernity expressed through infrastructure, is also an extension of the colonial project (Spybey 1992:100). To acknowledge that colonialism impacts contemporary life in Shishmaref does not negate *Kigiqtaamiut* agency. As infrastructure, Western institutions, and new technologies have become integrated into daily life in Shishmaref, decisions made by US politicians, by local leaders, by school teachers, by school children, by the Shishmaref Native Corporation, and by multitudes of others have shaped and reshaped the ideological and cultural contours of contemporary life on the island, and shaped the use and disuse of infrastructure and technology, as has been demonstrated in previous chapters.

The infrastructure that has been integrated into the daily lives of the *Kigiqtaamiut* was expensive to build. This was true in 1901 and remains true today. Sheldon Jackson was required to petition outsiders for additional funding for school projects on the Seward Peninsula because federal funding was inadequate even at the turn of the century. Original infrastructure investment in Shishmaref was justified by the ideological belief

that modernization, Christianization, and civilization would benefit Alaska Native tribes – and was part of a global colonizing project that occurred throughout the world. These projects have created risk and vulnerability among colonized communities. Anthony Oliver-Smith says,

Increasing vulnerability to hazard continues relatively unabated today, largely because of the undermining of indigenous adaptations, based on long term experience in local environments, through direct government policies or political economic forces creating production systems inappropriate to local culture and environmental conditions (1996:315).

Subsequent infrastructure and/or service delivery in Shishmaref, such as an airport, electricity services, and a barge landing were built and/or subsidized by the government as standard practice for rural service delivery in the United States (Warner 2009:3).

Delivering the services of high modernity is expensive in rural Alaska. The institutions, civilization, and modernity that early missionaries, educators, and politicians worked to create in rural Alaska now require funding to protect and continue – this is a colonial trade off. From an economic perspective, however, colonization is typically cost effective for the colonizers (Spybey 1992).

For the last 113 years, the infrastructure and technology (including shoreline stabilization) built on Sarichef Island has cost millions of dollars. Now residents need millions of dollars more to protect or relocate that infrastructure to a location on the mainland. Roughly, rebuilding the village would cost \$100-200 million US dollars (USACE 2006:6). Shishmaref residents do not have the financial capacity to fund these

infrastructure projects internally. Even cost sharing projects for state and federal development are difficult for small, rural communities. One recommendation by the government accounting office regarding villages experiencing flooding and erosion was to waive federal cost-sharing requirements. “The Corps currently imposes a cost-share of between 25 and 50 percent of project planning and construction costs. These sums, which are generally in the hundreds of thousands of dollars, are difficult for villages to generate” (USGAO 2003:44).

Shishmaref residents do not have the financial resources to undertake large-scale infrastructure projects such as building an airport or barge landing on the mainland. This is the infrastructure trap. Traditional adaptation strategies to flooding are, to a certain extent, rendered obsolete while modern adaptation strategies that are built around the protection and replacement of infrastructure (FEMA intervention, Army Corps of Engineers protection through levees, shore stabilization) are expensive, and therefore more difficult to justify for small populations.

7.3 Village Viability

An underlying issue for villages that need to relocate because of climate change-related erosion and flooding is whether or not Alaska Native rural villages are viable in the 21st century. As the number of villages exposed to erosion and flooding increase, and as cost estimates for relocating a single village top 200 million USD, it often seems that the unspoken question is why these villages, some as small as 80 people, exist in the first

place. Urbanization into larger economic hubs can seem like a rational plan for small villages without running water that face increased risk.

The urbanization of Native American peoples is a consistent trend in federal policy. The termination and relocation policies following WW II were successful in moving large numbers of American Indians out of reservations and into urban areas. This was explicitly a federal response to assimilate and increase employment among American Indians (Snipp 1996:66). Eventually these policies were “widely attacked, especially by American Indian advocate groups” (Snipp 1996:66) and most policies were halted or reversed by 1975. In the Arctic, consolidation of Alaska Native and Siberian Native settlements occurred through both Soviet and American government projects (Schweitzer et al. n.d.).

A real question is not whether climate change and flooding risks will be *a* catalyst to force Alaska Native peoples to urbanize or to relocate out of traditional land; but whether climate change and flooding risks will be the *next* catalyst for forcing Alaska Native people to urbanize and relocate out of traditional land. With this historical grounding, it is exceedingly clear that Alaska Native villages and settlements have been fighting against disintegration and fighting for recognition as “viable” entities since the colonial project began in earnest.

7.4 The Vulnerability Model

This brings us to the vulnerability models discussed in chapter three. This research fits most squarely into the political ecological model of vulnerability because it

established that colonial history and access to institutions were key variables to explaining vulnerability. However, the pressure and release model also helps to explain how changing climatic conditions can affect, but not singularly create, risk. In the end, this dissertation argues that understanding risk requires historical analysis. This is due in part to the influences history has on creating vulnerability and exposure in the first place, and because of the ways in which history continues to play out in the daily lives of individuals.

Vulnerability in Shishmaref is tied explicitly to colonization projects and development – and risk exposure today is a function of original infrastructure that was ill-suited to a fluctuating sand island and, subsequently, the inability today in a market-driven economy for small populations to control and rebuild critical infrastructure when it is exposed to risk. Thus, we see colonization not only creating high-risk environments but also inhibiting adaptive capacity. The variables that contribute to risk in Shishmaref are linked to these issues of colonialism, cultural misunderstanding, and marginalization. These are characteristics embodied by disaster victims all over the world.

These issues are cross-cutting, complex, and embedded in daily interactions and larger cultural worldviews. In Chapter Four I discussed how original development in Shishmaref did not appear to take local ecological knowledge into consideration when selecting a site that was suitable for permanent, sedentary infrastructure. This is demonstrative of inequitable colonial engagement – but it is even more demonstrative of the inequitable outcome distribution of poor choices, in that it is the descendants of the *Kigiqtaamiut*, not the descendants of the educators and missionaries, who have to deal

now with the possibility of fatalities due to a large storm or cultural disintegration through diaspora.

In chapter five, I provided an ethnographic account of a phone meeting with the Immediate Action Working Group. The failure of that meeting to foster real communication was not a failure of *Kigiqtaamiut* people to be savvy to bureaucratic processes. Rather, it was a failure of poor organization and timing of the meeting agenda, slow technology, a failure to match needs with organizational mandates, and a failure for Alaska Native peoples and local leaders to be equally represented in comparison to agency workers in bureaucratic settings.

These situations are rife with issues of social justice and the continued marginality of minority and rural populations, and demonstrate that vulnerability is the product of *systems of inequity* – not characteristics inherent to a single community. What vulnerability models should also be able to demonstrate are systems of inequity – not only simple characteristics of vulnerable communities. Vulnerability models need to incorporate not only impoverishment, for example, but systems that promote both impoverishment and wealth.

7.5 Why the Public Should Care about Shishmaref

This research set out to address the issue of vulnerability to flooding and erosion in Shishmaref; but equally important to this primary focus are the inevitable questions that follow. Namely, what can be done about vulnerability and risk in Shishmaref; and why should anyone outside of Shishmaref care? The answers to what creates

vulnerability and what can be done about it are inextricably linked. By understanding the social, ecological, and infrastructural building blocks that create vulnerable communities, we can understand how best to build resiliency and adaptive capacity and lower vulnerability in at risk communities. The answer to the second question is both more challenging and more critical. In this case, the limits of scientific inquiry intersect with the beginnings of an ethical dilemma that will likely not be answered satisfactorily with research and ever more bits of data and information (Callison 2010).

Climate change itself presents a monumental ethical dilemma to global residents. From what we know about disaster and vulnerability we can predict that marginalized and already vulnerable populations are more likely experience negative outcomes of climate change than their resilient counterparts – research so far has predicted this to be overwhelmingly true (Thomas and Twyman 2005; Commission on Climate Change and Development 2009; O'Brien and Leichenko 2000; Adger et al. 2006; Ribot 2010). These communities are also the least likely to have produced the majority of greenhouse gas emissions that cause anthropogenic warming. Even in cases like Shishmaref – in which climate change is only a part of complex ecological, social, and infrastructural interactions that create flooding and damage from flooding – the burdens of moving are linked to changing ecological conditions, and this raises questions about how burdens of anthropogenic warming are and will be distributed.

Shishmaref also raises profoundly ethical questions about Native American rights to traditional homeland. In the continental United States, indigenous land issues are often the result of removal policies and subsequent long-term land tenure of areas by non-

Native peoples. In Alaska, Alaska Natives often hold title to their land through the corporation system that was developed through ANCSA. Do Alaska Native people, subsequently, have the right to real and realistic access to these land claims and the right to remain on traditional territory?

Based on the information and analysis presented in this case study, I believe the answer is yes. The history of Shishmaref demonstrates the rapid social changes that have occurred in the last 100 years. From development and colonization to boarding schools, Alaska Native peoples have been outstandingly flexible to rapid social shift. This flexibility has limits. Both formally and informally, Shishmaref residents make these limits explicit – saying that removal from traditional land is equivalent to cultural disintegration. Failure to respond to take seriously the threat of cultural disintegration among Alaska Native peoples because of risks associated with colonial development and ideology is unethical. Real and realistic access to traditional territory – a requisite condition for Shishmaref residents to maintain cultural identity – should be an inherent right for the *Kigiqtaamiut*. Within these mandatory constraints policy makers and Shishmaref leaders can discuss futures of Shishmaref that incorporate risk management and promote social, cultural, ecological and economic sustainability.

7.6 Suggestions Moving Forward

In general, vulnerability studies like this one help to elucidate the outcomes of political and social choices, so that we can act on the ethical dilemmas we face concerning climate change and disaster with more full awareness and understanding. In-

depth ethnographies of vulnerability and disaster are still rare in anthropology. Future research should be directed at filling this gap. Only with robust comparative case studies will be able to conduct meta-analysis on disasters and vulnerability. In Alaska, the next research agenda may be an investigation of what creates resiliency in Shishmaref – a methodological project designed around what to foster and how to build capacity in communities that need to relocate, instead of those social variables that help to create risk. For now, I offer six suggestions moving forward.

1) Climate change demands new disaster response protocol

The governance structure for disaster response in the United States through Homeland Security and the Federal Emergency Management Agency (FEMA) is ill equipped to handle changing ecological conditions. Because disaster response to date is based in protocol that emphasizes rebuilding in place, this does not allow for flexibility when ecologies and landscapes change. With the onset of climate change outcomes – options should be developed for individuals and communities that can provide disaster relief or disaster mitigation while making structural changes (such as rebuilding on new sites) that also mitigate future disaster risks. This builds flexibility into disaster relief.

2) Create a central agency for relocation planning

This research found that the turnover rate was extremely high among agencies and agency workers who were tasked with the relocation of Alaska Native Communities linked to increased erosion and flooding risks. This high turnover rate raises serious

questions about institutional memory at the state and federal level. Shishmaref residents experienced multiple iterations of ‘government help’ and become fatigued by inexperienced workers. This leads to miscommunication and inefficiency.

Protocol for relocation in cases of increased risk and flooding associated with climate change needs to be developed at a state or federal level (Bronen 2011). A central agency or program should be developed to avoid redundancy, improve efficiency, and give structure to ad hoc relocation efforts happening today in multiple communities. The ACCIMP could possibly fill this role – but that has yet to be determined.

3) Work closely with local institutions

“ A clear finding of the literature on resettlement has been that too often the process has been a ‘top-down’ one in which the involvement of those being displaced has been limited” (Hugo: 2011:279).

Top-down planning has been a significant failure of government relocation efforts for the last century. This research found relocation planning at the state level was often not coordinated with planning at the local level. Schematically these situations mean that at different scales of intervention (local, state, federal, international) – institutions are working against one another. Local participation also becomes compromised when decisions are made in Anchorage and/or Juneau and not made in conjunction with local leaders.

Shishmaref residents express a strong desire for self-determination with regards to relocation planning. This is a highly valued priority. Any successful and efficient

relocation planning requires joint efforts from multiple institutional levels; but specifically requires *meaningful* local participation. To assure meaningful local participation there should be a priority on in person communication among local, state and federal leaders. Meetings and information sharing events should take slow technology, non-English speakers, and untraditional institutions (such as the elders council) into consideration.

4) Develop mechanisms to encourage personal cross-agency relationships

This research suggests that the most successful way to accomplish cross-agency communication and multi-scale efficiency and understanding is to encourage long-term personal relationships among agency workers and local leaders. These long-term, personal relationships are the best mechanism for fostering progress by encouraging efficient, culturally-appropriate communications, avoiding redundant research and planning, lengthening multi-scaler institutional memory, and finding creative solutions for moving forward. Developing long-term personal relationships may broker the gap between the realities of village life and the lives of agency workers in Anchorage and Juneau and could satisfy Shishmaref residents' requirements that bureaucrats "see for themselves" the risks rural communities face.

3) Outline risks and outcomes in explicit terms (while recognizing culturally divergent value systems)

In Shishmaref, relocating residents away from flooding risks is not enough to constitute a successful adaptation. Instead, Shishmaref residents need to avoid the outcomes of fatalities, loss of property, social disarticulation, and cultural disruption through loss of access to traditional hunts and *ugruk* preparation areas. Keeping discourses about relocation explicit in terms of what to avoid and what to accomplish is crucial in creating real, long-term adaptations to changing conditions. In the case of Shishmaref, relocating residents to a site on the mainland; but one that does not offer practical access to the coast during the spring or offer access to coastal conditions for preparing bearded seals will not produce a successful relocation.

All “sites” are not equal. What constitutes an appropriate subsistence site and an appropriate site from an engineering perspective may differ. In order to avoid the mistakes of the past such as ignoring local knowledge – communication among agencies and local residents must be sensitive to differences in value systems and site requirements. Compromises that may have to be made regarding an appropriate site will be difficult – communication among agency workers and local residents must be as meaningful and precise as possible. Explicitly outlining risks, outcomes, and goals is vital in these communications.

6) Acknowledge a Alaska Native right to traditional subsistence territory

While climate change and other ecological shifts present new, risky conditions, this is not the first time risk has been used as a catalyst to move Alaska Native people off of traditional lands and/or to consolidate Native villages into larger towns or cities.

Historical relocations and urbanization of American Indians and Alaska Natives have been a central feature of the Indian/US policy and have frequently been unsuccessful – leading to urban poverty, loss of a land base, and cultural disintegration. Today the literature demonstrates community and individual health benefits to cultural coherency and the maintenance of long-standing cultural traditions.

Promoting healthy Alaska Native and American Indian communities in a post-colonial United States means state and federal agencies must work closely with local tribal leaders and take people's assessment of their own health and well being seriously. In Shishmaref this means taking seriously the claim that removal from subsistence territory will lead to cultural disintegration. Following, the state should acknowledge an Alaska Native right to realistic and sustained access to traditional subsistence territory and property claimed through the ANCSA process. Formal acknowledgement to a Native right to access traditional land could act as a starting point in planning the relocation process.

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