More-Than-Human Intimacies and Traditional Knowledge among Hunting Families in Northwest Greenland

Michael Anastario, Elizabeth Rink, Gitte Adler Reimer, and Malory Peterson

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Abstract. In this article, we explore shifting human/environment entanglements narrated by Inuit hunters in the community of Kullorsuaq in northwestern Greenland. We present findings from 29 in-depth qualitative interviews that were analyzed using an inductive analytical approach. We examine shifts in human-environment entanglements narrated by hunters and their wives, the ways in which traditional knowledge is transmitted amid shifting entanglements, and we characterize the more-than-human intimacies that develop and facilitate the transmission of traditional knowledge. We conclude that the actors who shape ecological policies pay close attention to the more-than-human intimacies implicated in the transmission of traditional knowledge that contributes to Indigenous autonomy in northwestern Greenland.

Inuit relationships with arctic environments have inspired ecological frameworks of analysis and the development of the discipline of anthropology itself (Boas 1888; Muller-Witte 1998, 2014). Today, the deleterious effects of climate change on arctic humans and their surroundings are well-documented, accompanied by narratives of ecological ruin that influence the representation of arctic lifeways. The term "Anthropocene" was first used by ecologists to reference growing evidence for the transformative effects of human activities on the earth, denoting the epoch in which human disturbances outrank other geological forces (Haraway 2016; Tsing 2015; Waters et al. 2016). Documenting, evaluating, and proposing solutions to the catastrophes of the Anthropocene remain necessary but risky endeavors; they risk privileging a vision of technology-driven humankind that requires solutions of human exceptionalism to bring about an end to the present emergencies of the human-impacted earth (Haraway 2016). As arctic lifeways are increasingly subject to incoherent state and

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ARCTIC ANTHROPOLOGY, Vol. 58, No. 1, pp. 54–65, 2021 ISSN 0066-6939 e-ISSN 1933-8139
doi:10.3368/aa.58.1.54 © 2022 by the Board of Regents of the University of Wisconsin System

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corporate effects, coupled with rapid climate change, the ongoingness of traditional Inuit knowledge amid these shifts warrants further analysis.

Everyday sensitivities to, reflections upon, and attunements to rapidly changing environments are pronounced among individuals in subsistence lifeways with intimate connections to nonhumans in local environments. In northwestern Greenland, human-environment and human-animal relationships are constantly negotiated and maintained in the subsistence hunting lifeway (Dowsley 2010; Hansen and Tejsner 2016). Human kinship, in particular, has been locally described as fluid and expansive, remade through genealogy, affinity, adoption, naming, friendship, shared place, hunting materiality, and identity among hunter networks (Dahl 2000; Trondheim 2010). *More-than-human* assemblages account for the active role of nonhumans in bringing phenomena into being with the humans they are attached to (Guthman 2019), while still maintaining properties of assemblages as open-ended, often unintentionally coordinated gatherings of ways of life that influence each other (Kirksey [ed.] 2014a,b; Tsing 2015). The shifting nature of environmental and human entanglements reveals the ways that biologies can be situated, local, and specific (Niewöhner and Lock 2018). As the webs of interconnectivity generating social affinity are thought to fragment as society becomes increasingly complex (Simmel [1922] 1955), we examine how those webs are implicated in the reproduction of traditional knowledge in arctic lifeways. In northwest Greenland, multispecies and interspecies encounters among the Inuit have been shown to counter mainstream representations of Greenland as threatened and disappearing, empty frontier zones, and/or wilderness areas (Nuttall 2020). We envision contingencies between humans and nonhumans as constituting intra-acting components that implicate human actors capable of differentiating the nonhuman components they are tied to over time (Barad 2014), who experience social affiliation through their shared experience of the shifting environment, and which attune to changes in the assemblages they are tied to. Intimacies develop in the milieu of multispecies and interspecies encounters, and these intimacies play a role in the transmission of traditional knowledge among the Inuit.

The conceptual frameworks we draw from raise questions that we aim to explore further in this manuscript. In what is now a rapidly shifting environment that is assembled with fragmenting social actors, what elements of traditional knowledge are retained and discarded over time? How should remnants of traditional knowledge, stripped of cosmovision with time and transmission, be represented in collaborative research efforts that honor its continued, albeit partial, existence? Drawing upon Marilyn Strathern's (1992) work, Donna Haraway (2016:101) writes that "It matters which stories tell stories, which concepts think concepts. Mathematically, visually, and narratively, it matters which figures figure figures, which systems systematize systems." One way to approach the contentious issue of representation regarding the fragments of traditional knowledge transmitted about the local, rapidly shifting environment might be accomplished by intra-acting with and returning (Barad 2014) a cosmovision that has eroded with the transmission of traditional knowledge. Throughout, we draw from the story of Sassuma Arnaa to guide the telling of the story of more-than-human intimacies. Sassuma Arnaa is a daughter/wife/goddess of the sea who was first tricked by her Fulmar husband, rescued from him, and soon after betrayed by her father, who cuts Sassuma Arnaa's fingers from a boat she clings to in the ocean. Her damaged phalanges give rise to the marine mammals she now controls in the sea, sometimes requiring the work of a shaman who appeases her so she will release the mammals when they do not appear (Boas 1888; Wardle 1900). Whales and other sea life are a gift of Sassuma Arnaa (Caulfield 1993). In particular, whale hunting is one of the activities that structure a biannual temporality in the hunter lifeway where whales, or more traditionally a single whale, coordinate/s with multiple humans depending on who or what may be intervening in the milieu of whales, hunting human families, sea goddesses, hunting quotas, hunting licenses, and the Greenlandic state (Dahl 2000:208). *Thinking with* the Sassuma Arnaa narrative provides a lens for understanding the ongoingness of a regime change amid the preservation of traditional knowledge. This mode of representation aids in illustrating the partiality of and unintended assaults on Indigenous autonomy as they occur in a rapidly shifting human–environment entanglement.

Methods

Study Background and Design

The findings presented in this manuscript are part of a larger study that took place over a five-year period called Population Dynamics in Greenland (PDG). PDG is built on a 15-year partnership between Ilisimatursarfik (the University of Greenland) in Nuuk, Greenland, and Montana State University in Bozeman, Montana. The combined team conducted a community-based participatory research (CBPR) study of the complex social, cultural, and environmental determinants of reproductive health in Kullorsuaq, a settlement of approximately 500 people in northwestern

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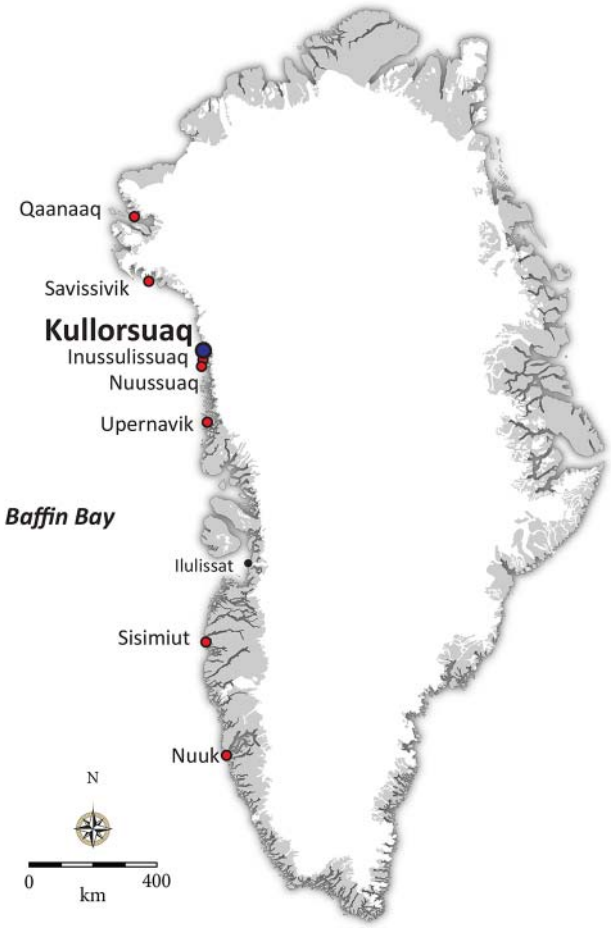

Figure 1. Map of the location of Kullorsuaq and other place names mentioned in the text in northwestern Greenland.

Greenland (Fig. 1). A long period of community engagement preceded the development of PDG's research design. Using CBPR, community members guided the research team to understand everyday life (lifestyle, beliefs, and hunting traditions of the families that lived in the community), which was deemed necessary to better understand reproductive health in its local context. Although the primary set of research questions explored in PDG examined topics related to reproductive health in Kullorsuaq, such as cultural beliefs about pregnancy, relationship characteristics, kinship networks, and women's health, a subset of research questions addressed human–environment entanglements in the daily lives of people living in Kullorsuaq.

As part of PDG's CBPR framework, a community advisory board (CAB) comprised of five community members (three women and two men) was established to help develop an interview guide that explored the impact of the built environment, climate change, hunting and fishing policies, and connection to place on the daily lives of hunters and their wives living in Kullorsuaq. Recruitment took place by word of mouth, direct recruitment by the CAB, and posting a sign on the board outside the community store. The interviews were conducted in Kaallisut, translated, and subsequently transcribed into English for analysis. Interviews lasted one to three hours and took place in a community center. Interview incentives included bullets for hunting (for male participants) and coffee, a candle, or decorative napkins (for female participants). Ethical approval for the study was given by the Scientific Ethical Committee for Health Services Research in Greenland and the Montana State University Institutional Review Board. For this subset of PDG, 35 people were approached to participate in the interviews. Twenty-nine interviews were completed with 20 males who hunted and fished to make their living and nine women who identified as the wife of a hunter-fisherman. The ages of the interviewees ranged from 22 to 60.

The remoteness of the settlement and reliance of local families upon the hunter lifeway lend toward a rich analysis of human-environment entanglements. According to local oral history, the settlement was established in the early 20th century and grew around three main families, with outside individuals migrating to Kullorsuaq from nearby towns and settlements such as Qaanaaq, Savissivik, Upernavik, Inussulissuaq, and Nuussuaq. In the early phase of the settlement, Kullorsuaq was described as an attractive area to migrate to because of many hunting opportunities and an abundance of ice which readily enabled travel by dog sled.

All interview transcript analysis was guided by a grounded theory framework where we used an inductive coding procedure (open coding in the gerund followed by axial coding) to generate the codes used to develop the results section of this manuscript (Charmaz 2006). Interview transcripts were open-coded using Atas.ti analytic software, and axial codes were subsequently developed and used to structure the results presented below (Atlas.ti 2016).

The Hunter Lifeway

We first provide a brief overview of human-environment entanglements in everyday hunter lifeways. This context is essential for understanding the ways in which knowledge of these entanglements is transmitted, as well as how local perceptions of how the entanglements implicating traditional knowledge have shifted with time.

To understand the impetus for hunting, it is worth briefly mentioning how hunting families described preferences for Greenlandic foods

Figure 2. Hunter from Kullorsuaq with sled dogs going to hunt seal.

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(typically marine-mammal meat). Hunters often described *craving* seal meat, *longing for* seal fat, and not *feeling satiated* if no seal had been eaten that day. Marine mammals, in particular, compose a significant portion of the diet in northwest Greenland (Bjerregaard and Jeppesen 2010), and the household has been considered the basic unit of food production in Inuit societies (Freeman 2005:59–76). In a national survey of *Kalaallit* (Greenlandic Inuit)*, mattak* and seal meat received some of the highest food-preference ratings, with seal meat being the most frequently consumed food on a daily basis (Pars et al. 2001). Diets in Greenlandic villages have been found to be particularly local relative to the rest of the country, and a propensity for a traditional Greenlandic diet has been found to increase with age, among village residents and by hunters/fishermen and their families (Bjerregaard and Jeppesen 2010). In Kullorsuaq, some described Greenlandic animals such as polar bears, walrus, narwhals, and belugas as rich in "vitamins." One hunter said he didn't feel full after eating Danish food, pork, or beef, but that seal meat satiated him. Hunters described positive emotional feelings after returning from a hunt and in response to seeing human kin eat their catch. These embodied aspects of traditional Greenlandic food make sense of the impetus to hunt particular species described throughout.

Hunting families in Kullorsuaq described hunting beluga, narwhal, seal, walrus, polar bear, and fish. Generally, but not always, men described dedicating their time to hunting and women preparing/processing sealskins, blubber, and food preparation. Since childhood, hunters described listening to stories and directly observing members of older generations hunt before participating in their own hunts with tools (boats, harpoons) provided directly by parents. Hunters' wives described learning to work with and becoming attuned to the texture of sealskin from their mothers. Hunting values described included not wasting the

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animal carcass, feeding parts of the catch to sled dogs, and sharing divisions of the whale catch with other families in the settlement, which was also observed in practice (field notes, Kullorsuaq, October 2017).

Lifeways centered on whaling reflect centuries of practice by Greenlandic Inuit hunters (Caulfield 1993). Marine mammals comprised 48% of the faunal assemblage at the nearby Saqqaq excavation site of Nipisat, ranging from 2020 BC to 810 BC, indicating a long-standing and historical familiarity with and hunting of whales among the Greenlandic Inuit (Gotfredsen and Møbjerg 2004). Communality in whale hunting practices (both in hunting and sharing of the catch) has been documented in the nearby town of Saqqaq, and *mattak* (whale skin), meat, and blubber are not only locally shared but also shared as gifts throughout Inuit kinship networks (Dahl 2000; Milton 2005). Attunement to signals from the local environment amid a material scarcity conducive to communality in hunting practice made storytelling important to the transmission of hunting knowledge.

Hunters described older family members telling stories about lunar temporalities, ice formation and melting cycles, tide patterns, cloud formations, storm systems, and animal migratory behaviors that informed the contemporary practice of traditional hunting. For example, one hunter described how:

> We go hunting according to the moon; during the new moon, we make a hole on the ice and put down a balloon. My father told me if the balloon goes away from land, the weather will be bad this month and that the animals would be difficult to catch. First, I didn't understand what he meant, but then I understood that when the balloon drifts toward the land, the animals like seals and other animals will come closer to land, or there will be more of them that month. That I have noticed. On the shortest day of the year, early in the morning, we study the seaweed now. It is a special day for our family, and others have started to join us. Studying the seaweed is something our ancestors have been carrying to their children, and my father taught me how to study the seaweed. It is amazing what we can get out of studying the seaweed; whether the winter will be bad with less animals or good with lots of animals.

In some versions of the story of Sassuma Arnaa, combing or cleaning her parasite-ridden hair (i.e., seaweed) through the shape-shifting work of a shaman releases marine mammals when they do not appear (Boas 1888; Wardle 1900). In crossing the ontological boundary (Viveiros de Castro 2004), the shaman's interaction with Sassuma Arnaa would require attunement to the seaweed to manifest a release of whales (i.e., food). The hunter's description above is focused on nonhuman elements of a cosmopraxis stripped of its metanarrative.

Hunters and their wives attuned to and reflected upon nonhumans in ways that characterize rapid shifts in the local environment. For example, hunters' wives described learning to work with sealskin from a young age and observing a greater frequency of hairless skins on seals over their lifetimes, which they attributed to warmer water in a warming climate. Hunters described rapid shifts in ice formations and animal migrations over their lifetimes. Many described sea ice being thicker in the past, forming earlier and remaining frozen for a longer duration of time (typically from October to July). This contrasts with descriptions of ice being thinner and forming only during the darker winter months in the present. Hunters' observations of the ice are generated from experiences dogsledding, spending relative amounts of time and effort boring holes to hunt seal, and changing navigational signals, such as never-before-seen land formations accompanying the melting of the ice cap. Hunters described feeling *anxious and alarmed* on the ice today, given the dangers associated with falling through the continuously thinning ice while hunting.

Temporary and permanent navigational markers such as ice inform local traditional knowledge in the Arctic (Whitridge 2004). Mark Nuttall (2018:6) writes that

> weather words are becoming critical for anticipatory knowledge, for how people prepare, focus, and think about how they must act (*silattorsarpoq*), and for how they navigate a world in which daily life plays out in surroundings of movement, emergence, and becoming.

Changes in the ice cover are salient in the memories of Kullorsuaq residents, and this, in turn, has partially contributed to shifts in the technologies used by hunters to hunt. Inuit hunting technologies and techniques have been recognized for their responsiveness to the Arctic's climate (Dugmore et al. 2007). Technology carries with it the knowledge that goes into its making (Strathern 2004), and disappearing technologies reflect ongoing epistemicide, which refers to the killing of traditional knowledge (Grosfoguel 2013; Hall and Tanden 2017). The changing climate is one of the factors implicated in how local hunting technologies are shifting with a human-environment entanglement.

Changes in the ice cover were described as changing hunting behaviors, including less reliance on dog sleds and more reliance on gasoline-powered boats. Hunters described the changing ice conditions as negatively affecting sled dogs' paws, contributing to less polar bear hunting but more

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Figure 3. Hunters at the fjords near Kullorsuaq with a catch from a minke whale.

fishing. Hunters lamented their decreasing ability to predict the weather due to warmer water, strong tides, high winds, and unfamiliar cloud formations. One hunter reflected on the changes he has observed in the local environment:

> Sometimes when I am out hunting and take a break looking around, I think about how much changes there are. Some places are unrecognizable from the time I started as a hunter. I know the places, but I can see that there are differences. Some places are not a part of the mainland anymore—they are now islands because of the melted ice. That's how it is now.

Hunters also narrated shifts in whale stocks they claim coincide with the changing ice formations. Hunters described seeing more narwhal and beluga, as well as new whale species entering local waters, such as bowhead, humpback, and minke whales (Fig. 3) (Kullorsuaq, October 2017). Hunters' observations were confirmed by a separate study of narwhals, where catch statistics showed an increase among hunters after 2002, which does not appear to reflect an increase in hunter effort rather than hunters' attributing the increase to changed sea-ice conditions (Nielsen 2009). Furthermore, the resurgence in minke whales could reflect low quotas imposed on minke whale catches toward the end of the 20th century in western Greenland (Caulfield 1993:144–155). Intermittent sightings of bowhead whales have been historically observed in western Greenland, albeit in relatively small numbers (Born and Heidi-Jørgensen 1983).

Hunters described new fish species like capelin appearing in local waters. Hunters described seeing more ravens, more reindeer, and fewer seals over time. As these changes continue to occur, and as there is a stronger local market incentive for fish, many hunters appear to be disproportionately favoring fishing activities in comparison with hunting practices requiring ice travel by dog sled. In sum, the changing climate was narrated as one of the factors that influenced hunting technology and practice, as well as shifts in the size of local animal populations.

More-Than-Human Intimacies

More-than-human intimacies are the affective renderings and sometimes ineffable attachments that develop between nonhumans and their human counterparts. They emerge from deep observation, reflection, heightened sensitivities, dreaming, and storytelling among humans in which the transmission of traditional knowledge regarding nonhumans also takes place. In Inuit lifeways, components of the landscape (e.g., the ice, the ocean) comprise active memoryscapes and visionscapes that signal cosmic forces and effects (Sejersen 2004). Hunters narrated the dispositions of the prey they hunted, described dreams about the dogs they used to hunt prey, and expressed wonder at the unobserved species perceived to exist in the environments they hunted in. Here, we characterize more-than-human intimacies that hunters narrated, and we illustrate dynamics surrounding the transmission of traditional knowledge in hunter lifeways.

Hunters and hunters' wives described a wide range of emotions associated with observing the environment, typically while hunting or boating. One hunter described an immense adrenaline rush after harpooning a beluga and feeling stronger when encountering new prey. Hunters described experiences of crying outside, nostalgia/longing for contact with the unsettled outdoors after spending too much time in the settlement, feeling more energy when out in nature, feeling deeply touched by the sounds heard in nature, feeling peaceful, rich, strong, and having other affective responses in direct relation to nonhumans.

Hunters narrated the dispositions of nonhumans being hunted for human food. Some sensed that prey have become more *nervous* with shifts in the environment. One hunter described his *fascination with the maternal instincts* he observed when a young narwhal was attacked by an adult narwhal. Another told how *he controlled* a seal's

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movement with his thoughts. The heightened sensitivity to nonhumans in local environments extends to the dogs used by hunters. Everyday attention to dog training, feeding, and caretaking was described. Indeed, the everyday conditions of sled dogs occupied attention in Franz Boas's late 19th-century fieldnote observations about the Inuit of Baffin Island (Boas actually wanted to take two pups from a litter back with him to New York before gifting them to a man in K'armaxdjuin who had lost his dogs) (Grønnow 2009:191–201). Less-stable conditions on the ice have recently been documented as affecting dog sledding in northwestern Greenland (Hansen and Tejsner 2016). In Kullorsuaq, numerous immaterial concerns emerged surrounding dogs. Hunters described dreaming about their dogs and experiencing signals in the material environment (like a rock landing near one's foot) that would determine the future birth of puppies. Hunters also described their sled dogs attacking *qivittoq* (outcasts) and protecting them from a *tupilak* (lethal creatures created by shamans) when sledding with their human counterparts.

Hunters told stories about seeing a giant lizard-like being, animals that looked like seals, a large man with thin arms living underwater in the sea, and large worms living in Baffin Bay. Hunters described ice-trails made by presumably large creatures that had never been seen before (these stories bear similarity to the giant *kullugiaq* [worm] or *aasik* [caterpillar] [Grønnow 2009:191–201]). Some suspected that Greenland had numerous species that had never yet been observed by humans. One hunter explained that the unobserved animals hide when they hear hunters:

> I think they're going to hear them the second they tread on that ice, and they are going to hide away. And I've seen that lake myself—there are many seagulls around that lake. Seagulls are only in places where they can have something to eat. And I think there's much more life and animals here we're not aware of around that lake.

Much more than "myth," these stories exhibit local intimacies surrounding knowledge of nonhumans or "other-than-humans" (Hill 2012:41–57) in the local environment.

There were also perceptions that nonhuman spirits can be associated with humans, animals, or gods. Several described how after dying, the spirit of a person might remain earthbound as a result of unresolved affairs. One hunter commented that "The nature of the world has its own cycle that we don't know of . . . we can't control nature and we can't change nature." Several hunters described perceiving nonhuman presences or having direct contact with spirits. Such perceptions included hearing footsteps or something walking where there was no visible being, hearing voices emerge without visible beings creating them, seeing strange lights appear and disappear, perceiving that someone nonhuman was attempting to communicate, and hearing the kayak make a particular sound before catching a whale. Direct experiences included being sexually assaulted by an invisible being, feeling a protective force form around the exterior of the body in particularly bad weather, observing strange whale behavior and cloud formations before the arrival of Christian missionaries, and observing the levitation and movement of otherwise inanimate objects.

Many were intent on describing their dreams, interpreting dream experiences in relation to the nonhuman world. Individuals described premonitions regarding the birth and death of humans, the birth of canine pups, future material gains, and future hunting incidents as occurring in dreams. Dreams were often described with a symbolic interpretation (e.g., defecating in the dream signaled material gains in the real world or being attacked and eaten by dogs in a dream signaling wrongdoing against the person in the real world). Dreams were also described as a way to understand and communicate with other community members and kin who were in difficult life spaces, including debilitating health conditions and near/transitional death experiences. While distinct, these intimate connections with nonhumans and corresponding storytelling practices bear similarities with stories told by the Montagnais of Lake St. John about "Caribou man," who dreamed of a female caribou before waking and joining the herd. After joining, he communicated with Montagnais about their troubles in life arising from killing caribou too freely (Speck 1925). Although everyday reliance upon shamanic practice has eroded with time, dreams were an intimate space for meaning-making and might be interpreted in some cases as ontological boundary crossings (Viveiros de Castro 2004). The salience of dreams in the interview should not be discounted; as one hunter interrupted the interviewer to state, "I would really like to tell you more about the dreams I've been having while I was sleeping."

The more-than-human intimacies we describe here might offer a sanctuary for psychospiritual expression following the epistemicide that accompanied colonization. In the 1950s, the Danish government began to "modernize" Greenland. Early Cold War tensions increased international interest in fortifying military presence and modernizing infrastructure in Greenland. Coupled with an increase in global market participation through industrial cod fisheries, Denmark initiated a strategic development plan in Greenland to grow the economy and maintain autonomy amidst the rising arctic warfare threat in 1950. Ensuing years

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saw construction of hospitals, schools, housing, dockyards, harbors, and transportation networks in southern and western Greenland, led by the Danish government (Nielsen 2013). Despite pressure from the United Nations to move towards decolonization, Danish policymakers fell short of granting autonomy to Greenlanders during this period of modernization, instead replicating a neocolonial agenda of development that reified Danish control over technological, political, economic, and social reforms in Greenland (Nielsen 2013; Olesen 2019). The modernization package was both preceded and accompanied by Christian missionaries engaging in acts of conversion (Abrams 2009). This effort included a legal provision to outlaw drums (made of sealskin) that were used in shamanic practice (Johnston 1977). While no mention is made of Sassuma Arnaa in descriptions of the more-than-human intimacies presented here, it is worth recalling that she was first *tricked* by her Fulmar husband, *betrayed* by her human father, and *appeased* by a boundary-crossing shaman to *gift* whales to hunters (Boas 1888; Wardle 1900). In the narrative, affiliations between nonhumans and humans are tied to strong emotions that require repeat ontological boundary crossings to result in satisfactory hunting outcomes and general survival. In Amerindian perspectivism, a non-Western ontological paradigm, it is necessary to know how to personify nonhumans, and it is necessary to personify them in order to know (Viveiros de Castro 2004). In Kullorsuaq, the experience and expression of more-than-human intimacies may offer a form of ongoingness for elements of a cosmopraxis that no longer accompanies the intergenerational transmission of traditional knowledge.

Shifting Management Regimes

Our underlying interest in women's reproductive health brought attention back to the intrusive role of the nation-state in everyday life. Nation-states are notorious for infringing directly on Indigenous women's reproductive autonomy (Sanford 2003; Theidon 2013; Sanford et al. 2016). Sometimes the ways in which this infringement takes place can be less obvious, indirect, and slow moving. The anthropologist Anna Tsing (2015:23) promotes "watching the interplay of temporal rhythms and scales in the divergent lifeways that gather" as a potential method relevant to environmental studies and political economy. Tsing (2015:23) observes that "assemblages drag political economy inside them, and not just for humans." While we have relied on hunters' narratives to illustrate how traditional knowledge is dynamically transmitted amid intimacies with elements of a shifting environment, the rise of the Greenlandic state's marine-mammal management regime occurs at a time when shamanic engagement with Sassuma Arnaa has been eradicated from traditional practice. The context of a slow and unspoken shift in jurisdictional authority from Sassuma Arnaa to the Greenlandic state provides a foundation for ongoing epistemicide and multilayered infringements on Indigenous autonomy.

With external pressures from the North Atlantic Marine Mammal Commission (NAMMCO) and Greenlandic/Canadian Joint Commission on the Conservation and Management of Narwhal and Beluga (JCCMBN), the Home Rule government was urged to intervene and implemented a hunting regime in 1992 (Sejersen 2001). In Sisimiut, Sejersen (2001) illustrated how shifting technologies amid the new management regime excluded users and promoted community heterogeneity, transforming the rules applied to the division of beluga whales (a central component of traditional hunting practice for the Inuit). The government of Greenland introduced quotas on narwhal hunting in 2004, requiring a license for the period and species, along with a hunting permit (Nielsen 2009; Nielsen and Henrik 2013). The state licensing system and establishment of quotas were lamented by hunters who often described this new regime as externally imposed. One hunter poignantly commented:

> I don't think the number of narwhals/belugas has changed. There have been many narwhals/belugas since my childhood. There are many of them, so I think the restrictions are too much. Also, for the hunt of narwhal in the Baffin Bay . . . they made it as a protected zone. It felt like they took "our" land from us.

Hunters criticized international nongovernmental organizations and elected state officials that aimed to increase protections for animals with policies despite their ignorance of local/traditional ecological knowledge, arguing that disarticulations between local knowledge and studies commissioned by the state resulted in the enforcement of nonsensical quotas. Hunters expressed desires to have local officials spend time with hunters in the local environment prior to making determinations regarding licensing and quota restrictions.

Hunters generally expressed frustration with the bureaucratic processes required for obtaining a license. License accessibility barriers included lengthy periods of time between license application submission and issuance, disqualifications for engagement in nonhunting income-generating activities, personal handicaps, and supplemental versus professional license determinations. Even while some hunters agreed with the quota restrictions, the waiting times associated with license issuance were described as being highly restrictive to subsistence-hunting families who rely on catches for their livelihoods. Furthermore, hunters

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may forego other income-generating activities to comply with hunting license restrictions, aggravating local conditions of unemployment and economic poverty. Lifetime hunters described having trouble supporting their families, having trouble selling sealskin, and not being able to accrue income from other jobs to remain in compliance with the conditions necessary for maintaining a professional license. Some hunters were disqualified from obtaining licenses with little to no income-generating activities available to them and were downgraded to accompanying other hunters with licenses on hunts but not engaging directly in hunting.

Quotas on whales were a contentious topic. The potential scarcity introduced by the quotas, particularly for a hunter who has not yet participated in a catch, was described as driving hunters to break with traditional collective-hunting practices and adopt more individualistic behaviors. One hunter described how:

> What we were used to back then was, when I harpoon a beluga, and when someone else also harpoons it, then we split the beluga . . . . But we no longer do that for the white beluga. When someone harpoons it, then the one who has harpooned it will get the whole beluga.

Whereas traditional hunting practices involved collective approaches to the hunt and catch based on one's role in a multihuman hunt for one whale, the quota system was described as encouraging more individualistic behavior and more whale killing. Hunters described becoming rivals with other hunters during the beluga-hunting season, competing to catch the largest number of whales possible until the state-enforced limit is reached. As a result, hunters described more reckless hunting techniques involving gas-powered boats and hunting rifles, abandoning the use of the traditional kayak and no longer taking the time to drive narwhal into shallow water. One hunter described entire whales being shot, sinking to the bottom of the ocean, and the carcass completely wasted. Others described numerous parts of the whale carcass going unused (as opposed to all parts of the whale being divided/split/utilized by community members). One hunter critically stated:

> When the quotas were introduced, the way of hunt changed. Hunters are rushing out to be the first ones to make sure that they get narwhal/beluga. Before the quotas were introduced, hunters hunted with patience.

Hunters described a higher frequency of equipment theft and boating accidents that accompanied the shifting regime. Hunters explained how traditionally, the community knows when not to hunt an animal because the herd is too thin and when it is appropriate to hunt a species because they are too abundant. Hunters described situations where too many narwhals were eating too many fish, resulting in a decreased number of fish but an abundance of narwhal that could not be hunted as a consequence of the quotas. Amidst conditions of material scarcity in Kullorsuaq, the introduction of the quotas appears to have altered the dynamic interface of local ecology and traditional knowledge, undermining collective strategies and driving more individualistic approaches in line with the new regime.

In addition to the unintended consequences of the regime shift for marine mammals, hunters described direct effects on their psyches. One hunter commented that:

> People need to feel that they are worth something; if they don't—some commit suicide, there are more and more people committing suicide. If one is from a hunter family and can't be a hunter anymore, one starts worrying. Healthy and strong people that can't or are not allowed to be hunters; it is a feeling of failure for those people.

The hunter linked the increasing incidence of suicide in the Arctic to the effects of the regime shift, which concurs with findings that the national modernization package has been a factor implicated in the increased suicide rates in Greenland (Bjerregaard 2006; Hicks 2007). The felt devaluation of human hunters and the implied devaluation of the divine feminine are ways in which the regime shift gradually erodes Indigenous autonomy. Inuit institutional arrangements have been documented as having ethical norms to support sustainable resource use, including taking animals only in response to the need for food, avoid waste, and limit physical disturbance of the animal population when taking from it. That success in the hunt will result from the hunter's respect toward the hunted animals (Freeman 2005:59–76). The regime shift, as narrated by hunters, deteriorates the foundations of communal and individual autonomy, redefining local value in ways that ignore one's intimacy or attentiveness to the local ecosystem.

Discussion and Conclusion

In this qualitative study of hunters and their wives in northwestern Greenland, we explored how shifts in human-environment entanglements dynamically interact with traditional knowledge that is fostered through more-than-human intimacies. There was a sense of alarm and lament by interlocutors as they narrated the troubling consequences of these shifts, including the devaluation of human lives and wasted, sinking whales. The uncanny similarity of the sinking whales to the fate of

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Sassuma Arnaa is punctuated by her absence from hunters' narratives. Amid the erosion/eradication of cosmopraxis and continued epistemicide for the Inuit of northwest Greenland, more-than-human intimacies fostered ongoingness in the transmission of traditional knowledge.

Our findings support those documented by Freeman (2005:59–76) that traditional Inuit knowledge that informs local resource stewardship is aligned with a sustainable approach to marine animals. Furthermore, our study shows the incoherent effects of state-imposed licensing and quota systems that have been documented elsewhere (Sejersen 2001), where technological interventions such as gas-powered boats and guns are used to respond to the competition (as opposed to collectivity) produced by the quota system. In her analysis of biopower, Rosi Braidotti (2010:204) claims that

> technological interventions that are part of the ongoing technological revolution neither improve nor suspend historically situated relations of inclusion and exclusion that occur along demarcated lines of alterity and "otherness," often intensifying exploitation and discrimination.

In the context of shifting human/environment interactions, we illustrated how technological shifts became implicated in an assemblage during a regime shift. The results contribute to gradual, ongoing epistemicide.

Our documentation of more-than-human intimacies in part highlights the ways in which remnants of traditional knowledge are retained in collective memory. The oral histories of living hunters reflect a similar finding that Virginia Nazarea (2005) encountered in subsistence farmers reconciling everyday farming practices with the knowledge regime of modern agricultural science—that is, the *irreverence for* (as opposed to the *resistance to*) the hegemony of the scientific-knowledge regime. Elements of a traditional knowledge, even if stripped of cosmology, are retained through practice over generations. The salience of human longing, the erosion of cooperative practices, an excess of wasted nonhuman lives, and Inuit exclusions from their own lifeways carry serious ethical questions regarding Inuit sovereignty in arctic spaces that are simultaneously gaining attention from natural scientists. While our use of a more-than-human lens is partially intended to assist with thinking across disciplinary lines that increasingly center attention on Greenlandic spaces, our ongoing consideration of the Sassuma Arnaa narrative is intended to keep salient the underlying ontological disruptions behind the broader modernization of Greenland amid shifting human–environment entanglements. Sassuma Arnaa's death results in a gift of whales and other sea life, and the eradication of her name from local stories coincides with whales now experiencing her same sinking fate. Our findings suggest that the actors who shape local ecological policies pay close attention to the intimacies and perspectives of those who can narrate local ecological change and who was considered an expert in deciding how resources are extracted from those ecologies until recently. The simple act of not doing so contributes to systematic forgetting, epistemicide, and the erosion of Indigenous autonomy.

Acknowledgments. The authors would like to thank the people of Kullorsuaq for welcoming the research team into their community. In particular, we could like to thank the people in Kullorsuaq who participated in our study. We are grateful for the guidance, support, and insight we received from our community advisory board members who assisted us with our project's implementation in Kullorsuaq: Uthilie Jensen, Johan Jensen, Hans Danielsen, and Birgitta Kammann Danielsen. We would also like to thank Maliina Abelson of Nuuk for her encouragement in conducting our study with the people of Kullorsuaq. This study was funded by the National Science Foundation—Arctic Social Science Program. Award Number: 1319651, Principal Investigator—Elizabeth Rink, Ph.D., M.S.W.

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