

“We don’t know anything about whales”: ecological knowledge and ways of knowing in Ulukhaktok, Northwest Territories, Canada¹

Peter Collings, Tristan Pearce, and Joseph Kann

Abstract: This paper reports on interviews conducted during June and July 2015 to document ecological knowledge of beluga whales (*Delphinapterus leucas*) in Ulukhaktok, Northwest Territories. Beluga whales are not a traditionally available or important species for Ulukhaktomiut, but they have appeared in increasing numbers in the waters around the community, and hunters have actively pursued and taken them. We conducted interviews in English with 31 Inuit about their beluga knowledge. A Key Words in Context (KWIC) analysis of the word “know” in the narratives reveals different conceptions of what it means to know something about whales. “Know” variously references practical skill, concern and empathy for others, or the developing awareness of one’s place in the world. Each of these meanings is coded uniquely in Inuinnaqtun, providing insights about the important differences between researchers and Inuit in how “ecological knowledge” is understood and activated.

Key words: qualitative data analysis, traditional ecological knowledge, Inuit Qaujimajatuqangit, beluga whales.

Résumé : Cet article fait état des entrevues effectuées au cours des mois de juin et juillet 2015, afin de documenter les connaissances écologiques sur les bélugas (*Delphinapterus leucas*) à Ulukhaktok, Territoires du nord-ouest. Les bélugas ne sont pas une espèce traditionnellement présente ou d’importance pour les Ulukhaktomiut, mais ils sont apparus en nombres croissants dans les eaux autour de cette communauté et les chasseurs les ont activement poursuivis et capturés. Nous avons mené des entrevues en anglais avec 31 Inuits à propos de leur savoir au sujet des bélugas. Une analyse de mots-clés en contexte (« Key Words in Context (KWIC) » du mot « connaître » (« know ») dans les récits révèle des conceptions différentes de ce que veut dire savoir quelque chose à propos des baleines. « Connaître » fait référence aux habiletés ou aux compétences, à la préoccupation ou l’empathie pour autrui, ou au développement de la conscience de la place que l’on occupe dans le monde. Chacune de ces significations est codée de façon unique en Inuinnaqtun, apportant des perspectives à propos des différences importantes entre la façon dont les chercheurs et les Inuits comprennent et appliquent « les connaissances écologiques ». [Traduit par la Rédaction]

Mots-clés : analyse de données qualitatives, connaissances écologiques traditionnelles, Inuit de Qaujimajatuqangit, bélugas.

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P. Collings and J. Kann. Department of Anthropology, 1112 Turlington Hall, Box 117305, University of Florida, Gainesville, FL 32611-735, USA.

T. Pearce. University of the Sunshine Coast, Locked Bag 4, Maroochydore DC, QLD 4558, Australia.

Corresponding author: Peter Collings (e-mail: pcollings@ufl.edu).

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Introduction

In the community of Ulukhaktok, beluga whales (*Delphinapterus leucas*) have since 2000 become increasingly common visitors during July and August, and residents of the community have hunted them opportunistically. However, there is little precedent for beluga hunting by Ulukhaktomiut, and there appear to be no traditional mechanisms for organizing hunts, established practices for tracking and killing whales, or formalized distribution systems for these animals.

During summer 2015, we interviewed Inuit to document their ecological knowledge about whales. The research was conducted in response to the previous summer's hunt, during which 33 whales were landed. The abundance of the harvest, coupled with perceptions about the lack of a hunting tradition, raised concerns among both residents and managers about the safety and sustainability of whaling in the community. And, indeed, when we explained our research to residents, we were met with the common refrain "we don't know anything about whales" and an occasional suggestion that our study would be "easy" as a result. And, at first glance, the interview data seemed to support that assertion: our first interviewees provided little evidence for something resembling what scientists label "ecological knowledge" about beluga whales, even though hunters had obviously been wildly successful.

The combination of success and subsequent denial of expertise raised an important question: what does it mean to know something? Rather than focus on the limited sets of facts about whale behavior, feeding practices, toolkits, or hunting procedures in our interviews, we turned our attention to a broader inquiry into what kinds of knowledge our informants conveyed to us. We focus on the use of the English word "know" in these narratives to examine ways Ulukhaktomiut categorize knowledge.

In the following, we provide a brief overview of beluga hunting in Ulukhaktok before turning to a condensed review of some of the research on Inuit worldview and ways of knowing. We then turn our attention to the interview narratives, focusing on how the word "know" is used in different ways, ranging from the concrete and straightforward "I don't know" to more complicated uses that signal the importance of establishing empathy and understanding the needs of others. A fourth use of "know" is less directly tied to the word itself but signals concepts such as learning, teaching, and remembering.

The findings suggest that Inuit categorize "ecological knowledge" as practical or factual knowledge, perhaps the least important layer of knowledge in the Inuit cognitive world. "We don't know anything about whales" reflected a central problem of what it means to know something: despite success at hunting whales, Inuit were reluctant to claim authority in the absence of a respected hunter or elder to guide their learning. Furthermore, the results suggest that more complex ways of knowing — empathy and understanding and awareness and memory — form the building blocks for what outsiders might call practical knowledge, providing Inuit with the cognitive flexibility and mental skillset to become competent in novel conditions.

Background: beluga hunting and ecological knowledge in Ulukhaktok

Beluga hunting in Ulukhaktok

During July and August 2014, Ulukhaktok, a community of roughly 400 in the Inuvialuit Settlement Region, experienced a dramatic increase in beluga whales, which hunters avidly pursued. By the end of the summer, hunters landed 33 whales, a remarkable abundance of meat and maktaq for the community. Even after widespread sharing, especially to family and friends living in other communities, many Inuit lacked freezer space for the catch and resorted to creative measures for storage, including building

extensions for their existing freezers, rotating meat in and out of their freezers, and experimenting with drying meat.

The hunt was noteworthy beyond its abundance. There is little precontact or contract-traditional precedent for hunting beluga whales in Ulukhaktok. There are no traditions for cooperative whale hunting, established hunting practices and toolkits, or distribution mechanisms for the catch. The lack of cultural tradition generated concerns about the potential loss of wounded animals, wastage of improperly butchered or stored meat, and future sustainability of beluga hunting in the community. Both residents and outsiders raised additional concerns about the safety of hunters and observers during hunts.

The success of the hunt quickly attracted the attention of the Department of Fisheries and Oceans (DFO) and the Fisheries Joint Management Committee (FJMC). DFO is a federal department whose mandate includes the conservation, protection, and sustainability of Canada's fisheries resources. FJMC is a co-management organization composed of both representatives appointed by the federal government and Inuvialuit appointed by the Inuvialuit Game Council. FJMC's mandate is to incorporate traditional and local knowledge into the science and management of fish and marine mammals in the Inuvialuit Settlement Region. FJMC works closely with DFO to co-manage all fish and marine mammals and their habitats.

Scientifically, DFO and the FJMC sponsors monitoring programs in the Beaufort Sea, which includes sampling animals to establish age, population health, contaminant loads, and feeding behaviors. Although there is significant monitoring and scientific work on beluga in the Beaufort Sea, most of this research occurs in communities where whaling is a recurring activity (see [Strong 1990](#); [Harwood et al. 1996, 2002](#); [Harwood and Smith 2002](#); [Harwood and Kingsley 2015](#)). Because the abundance of whales around Ulukhaktok was a novel experience, the harvest provided a unique opportunity for scientific inquiry (see [Loseto et al. 2018](#)).

It was also generally understood that Ulukhaktomiut were inexperienced whale hunters, despite increasing experience with whaling. Beluga have appeared locally with some frequency since about 2000, and Inuit have successfully hunted them. Collings' field notes, for example, reference successful beluga hunts in 2012 and 2010, with additional hunts during the previous decade. Nevertheless, the consensus appears to be that there were no traditional mechanisms for regulating the hunt. Documenting hunter knowledge and practice about beluga, therefore, would provide baseline data for establishing a local management program, ensuring future sustainability and developing best practices for hunting.

Pearce and Collings returned to Ulukhaktok in June 2015, supported by funding from ArcticNet ("Knowledge Co-Production for the Identification and Selection of Ecological, Social, and Economic Indicators for the Beaufort Sea", Lisa Loseto, PI) to interview Inuit about the previous summer's hunt. Our goal was to document Ulukhaktomiut knowledge about beluga whales, including (1) recollections of beluga hunting in the past, (2) understanding of beluga behavior, feeding patterns, and social organization, (3) descriptions of current hunting practices, and (4) recommendations for developing local management strategies.

We quickly encountered difficulties in pursuing these objectives. The first problem was that, despite observing the previous summer's hunt from a distance, neither Pearce nor Collings directly engaged with the hunt itself. Given the opportunistic and spontaneous nature of the hunt, it would have been difficult to take part in a hunt as an observer. Participation would also have been inappropriate, as we would take space in an activity to which we could not meaningfully contribute. In the absence of participant observation in hunting activities, we were somewhat hamstrung in our ability to develop an effective interviewing strategy (see [Collings 2009](#)).

A more pressing problem was that Inuit were quick to deny the existence of ecological knowledge about beluga whales. “We don’t know anything about whales” was a common observation made by community members. This denial of knowledge was curious because it occurred despite increasing familiarity with hunting beluga, which we alluded to above. Over the past 15 years, Ulukhaktomiut have developed some specific beluga-oriented strategies, including evidence of increasing coordination of hunts, the employment of new killing implements, and the emergence of systematic distribution patterns (see [Collings 2017](#)).

Given these obstacles, our interviews were necessarily semistructured. We began with very general questions about beluga whales and whaling but mostly allowed interviewees to direct the interview toward topics and concepts with which they were most comfortable. Given the general reluctance to claim authority about whaling — only one individual, an elder in his 80s, claimed even modest expertise — it became clear to us that the interviews were not about traditional ecological knowledge (TEK) of beluga whales so much as they were about knowledge more generally.

Academic engagement with Inuit knowledge systems

TEK has long been important in Arctic research. TEK research demonstrates the detailed and practical knowledge Inuit possess about the environment ([Inglis 1993](#); [Usher 2000](#)) and documents the utility of TEK for scientists ([Freeman 1992](#); [Nuttall 1998](#), pp. 71–95). We lack the space to comprehensively treat TEK research here. For our purposes, we note that TEK research has been driven by the political and scientific problems of wildlife management. Although TEK research recognizes the ways in which practical knowledge about the environment is embedded within the wider context of Inuit culture (see [Huntington 2005](#); [Berkes 2008](#)), in practical terms, research frequently targets collecting sets of facts about specific species or areas but ignores the more holistic implications of Inuit knowledge ([Wenzel 2004](#)).

The concept of *Inuit Qaujimaqatunqit* (IQ) emerged in both academic and political discourse to better convey the traditional Inuit worldview ([Laugrand and Oosten 2009](#)). IQ intends to capture both traditional and contemporary Inuit philosophies about the world and humanity’s place in it. IQ has since become encoded in Nunavut governance as the guiding principal for political decision-making ([Thorpe 2004](#)). Ideally, IQ encapsulates Inuit values and beliefs about human–environmental relationships, going beyond TEK. A continuing problem, however, is the increasing tendency among researchers to equate IQ with TEK, despite IQ specifically drawing attention to the complexities of Inuit beliefs and value systems and how these have persisted despite significant economic and social pressures to change ([Tester and Irniq 2008](#)).

IQ is also a formal coding of a broader academic inquiry into how Inuit cognitively engage with their social and physical environments. Outsiders have historically had some difficulty in this endeavor. [Fienup-Riordan \(1990\)](#), for example, traces outsider views of Inuit as rooted in the philosophy of Rousseau or Hobbes: Inuit were viewed as either uncorrupted by civilization or uncivilized brutes. Those who preferred Rousseau often portrayed Inuit as industrious, hardworking, and pragmatic people representing an embodiment of the protestant work ethic. [Bates \(2007\)](#), writing about Inuit philosophies of prediction and uncertainty, observed that Inuit and other foragers have often been presented as lacking a concept of the future. Bates, like Fienup–Riordan, traces portrayals of Inuit as either primitives or Westerners in parkas, arguing that neither view is accurate. Inuit may not predict or plan the way Westerners do, but Inuit nonetheless have an “astute awareness of the future and its connection to the present” ([Bates 2007](#), pp. 87–88). He demonstrated that the Inuit concept of the future is different from Western ideas and should not be assessed in comparison to Western science.

We might pragmatically explain Inuit worldview as consistent with Inuit surroundings. In a wildly unpredictable environment, it does not make much sense to say that one “knows” anything as an absolute truth, which in turn encourages cognitive skills that emphasize flexibility and adaptability rather than concrete planning strategies. The Inuit reluctance to claim absolutes, furthermore, applies to both environmental and social knowledge. Briggs (1991), for example, found that judgements about others’ behavior and motivations are heavily qualified and that Inuit are reluctant to engage in broad, all-encompassing absolutes. Change, it seems, is the only constant. Inuit continually make observations and revise their expectations and understandings as new information appears. Omura (2005) labeled this approach tactical thinking, a mode of practice embedded within the social and physical environment. The environment is not a resource to be exploited but a partner with which Inuit constantly negotiate. Continually monitoring and attending to the detailed and dynamic features of the environment allows hunters to take advantage of novel opportunities. Collignon’s research on Inuinnait geographical knowledge (Collignon 2006) concurs with Omura. She argued that Inuinnait relationships with the environment are enacted knowledge, organized around the dynamic relationships between people, the land, and memories embedded in the landscape.

Additional inquiries into Inuit knowledge systems appear in the literature on socialization and education. Scholarship in this domain is consistent with Briggs’ observations on human development. Knowledge acquisition depends heavily upon the learners’ direct experience with the subject at hand. Crago (Crago 1992; Crago et al. 1993), for example, documented the general process: Inuit expect children to learn by observation rather than direct instruction. As children acquire knowledge about topics of interest to them, they signal their interest through engagement in the activity, which then signals their readiness for adult attention. Annahatak (1994) (see also Kawagley 1995) argued further that the Inuit educational system is learner-driven. Individuals progress at their own pace rather than conform to uniform expectations of cognitive and social development.

Given these parameters, Inuit place greater emphasis on knowledge acquired by direct experience and observation. In Ulukhaktok, our experience is that Inuit frequently locate the source of their information when they provide it. Information acquired from others through hearsay, for example, is heavily qualified with statements such as “I heard about it”, indicating their social or physical removal from the event under consideration. The best way to acquire knowledge or skill is not to hear about it, or read about it, but to observe others performing the activity followed by active participation (Searles 2000). One’s knowledge is further validated if it is acquired under the guidance of a respected, usually elder, expert (Pearce et al. 2011).

Ulukhaktomiut also reference valid knowledge transmission through the phrase “talking to”. The idiom “talking to” highlights the important connections between young people and elders, which occur through a combination of story-telling and direct instruction. In this way, elders transmit their knowledge and experience to “those coming behind”. Although times have changed, Inuit still regard knowledge transmission as a critical role for elders, a key component of aging well (Collings 2001). Furthermore, younger Ulukhaktomiut note that both a key component of wellness and an important coping strategy for the stresses of community life is having an elder to talk to (Collings and Marten 2014), a finding that has been documented elsewhere in the Arctic (Kral et al. 2011).

This brief review suggests that Inuit engage with the world around them using cognitive frameworks that are different from those employed by the typical researcher. In the realm of knowledge about beluga, for example, our goals involved documenting what is best characterized as factual knowledge: absolutes about animal behavior, scripts for finding, tracking, killing, and processing a whale, and descriptions of the whaling toolkit. We

suspect, however, that our inquiry “what do you know about beluga whales” is much more nuanced. The words “know” and “knowledge” reference different concepts for our informants, leading to some confusion about what, precisely, we were requesting and what it was that Inuit were trying to provide.

A close parallel to our interests appears in [Nagy's \(2006\)](#) analysis of Inuvialuit life histories. She examined the narratives of Inuvialuit elders' life stories, paying attention to how their narratives were translated from the three dialects spoken in the Inuvialuit Settlement Region (Siglitun, Uummarmitutun, and Inuinnaqtun) into English. The translators' choices revealed key details about Inuvialuit cognition and lexical specificity in the domain of memory, uncovering a complexity of terminology rivalling schemas employed by academic psychologists.

We follow [Nagy \(2006\)](#) for comparison, albeit with some caveats. Ulukhaktok belongs to the Inuvialuit Settlement Region, but there are significant linguistic and cultural differences between Ulukhaktok and the other communities in the Inuvialuit Settlement Region ([Collings 2014](#), pp. 108–110). Nagy likewise highlighted general problems of translation between linguistic systems, which may be more significant in Ulukhaktok because our interviews were conducted in English. UNESCO ([Moseley 2010](#)), for example, lists Inuinnaqtun as “definitely endangered”, meaning that children no longer acquire Inuinnaqtun in the home. [Dorais \(2010, p. 230\)](#) highlighted that English is the dominant language in all four communities of Inuinnaqtun speakers, while [Aylward et al. \(1998\)](#) reported very low rates of Inuinnaqtun use in the home. [Collings \(2014, pp. 110–112\)](#) has observed the frequent use of Inuinnaqtun words and phrases in English discourse and local interest in language revitalization, but there are only a handful of truly fluent speakers in the community, all over age 60.

Given the academic problems briefly highlighted in this section, we pose the question “what does it mean to know something?” When we asked our interviewees about beluga ecological knowledge — broadly, “what do you know about beluga whales and how to hunt them?” — how do we account for a reluctance to claim authority about beluga hunting despite evidence of both hunting success and indications that hunters did, in fact, possess considerable knowledge about how to hunt these animals? To address this question, we examine the different ways that Inuit use the English word “know” in their narratives and explore how different Inuinnaqtun concepts appear coded in a single English word.

Research methods

We employed a purposive sampling strategy in selecting interviewees, as we were soliciting specific information and knowledge related to individual experience. We targeted individuals who had experience hunting whales during previous years (including 2014) and elders who had recollections of whale hunting in the past. Twenty three of the 31 interviewees were men, and 11 (8 men and 3 women) of our interviewees were elders aged 60 or older. The research was licensed by the Aurora Research Institute (license No. 15699), which oversees scientific research activity in the Northwest Territories. Ethics and IRB approvals for the research were obtained from both the University of Florida (protocol No. 2015-U-0657) and the University of Guelph (REB No. 15MY019). Interviews were recorded in private settings, either in our residence or in the home of the interviewee. Interviews lasted between 35 and 90 min. All interviews were conducted in English, for reasons discussed previously. Six interviews were joint interviews. Five of these were married couples. The last of these were two brothers who asked to be interviewed together.

The interviews were semistructured. Interviewees discussed what they knew about beluga and tended to embed their knowledge of beluga whales within their own experience, which allowed interviewees the autonomy and freedom to direct the course of their narrative and control the interview. Half of our interviews were conducted with a research assistant, a

younger hunter who was actively engaged in the interview process. One interview included a whale biologist as an observer. Interviews were recorded digitally and transcribed later.

As we discussed earlier, Ulukhaktomiut were reluctant to claim authority or expertise about beluga whales. Interviewees had limited experience with whaling and so felt that they could provide little in the way of ecological knowledge about these animals. Our own informal observations and interactions with community residents reinforce this sentiment. An additional difficulty with conducting this research had more to do with the nature of knowledge transmission, discussed earlier. Informants were reluctant to claim a position of authority both because they were still learning themselves and because there were few (if any) elders from whom they could legitimately validate their own expertise.

In this paper, we consider the uses of the word “know” in the narratives to uncover how Inuit understand what it means to possess knowledge about a specific topic. We used a Key Word in Context analysis (KWIC) (see [Bernard and Ryan 2010](#) for an overview) of the word “know” in the narratives, paying attention to where and how the speaker used it in a sentence. KWIC as a form of basic content analysis has a well-established history, frequently employed as a means for quickly establishing cultural domains and how informants construct the cognitive world around them.

For our study, we identified all of the uses of the word “know” in an interview and highlighted the sentence in which the word appeared. Each example was then printed on a separate card and then sorted into piles of statements that were most alike. The method allowed us to highlight the different uses and meanings that our informants attached to the word “know”. As we discuss below, the different uses of English “know” correspond to specific concepts in Inuinnaqtun. We report Inuinnaqtun wordbases and concepts using [Lowe’s \(1983\)](#) orthography.

The uses of “know” and its Inuinnaqtun relatives

Analysis of the narratives suggests that the English word “know” was employed thematically in four different ways. The first of these uses was the quite common utterance “I don’t know”. “I don’t know” served one of two functions, either as an acknowledgement of lack of expertise about a subject or as a signal of social discomfort. A second use of “know” appeared in contexts where the speaker established the possession of skill or knowledge based on direct experience or practice, signaling the presence of practical ability and certainty about some aspect of the world around them. A third use of know appeared as the phrase “you know”. “You know” served two functions. One of these functions was as filler, a pause while the speaker sought the proper response to the question. “You know” was also used to inquire about the state of the listener, a somewhat more abstract use of “know” that we think directly connects to Inuit ideals about human development and connections with the social world.

Each of these uses of “know” in the narratives served distinct purposes. That is, the word “know” directly referenced a specific concept or idea corresponding to a specific Inuinnaqtun code. “I don’t know”, for example, directly translates from Inuinnaqtun *nauna*. We address each of these more concrete uses of “know”, noting that our choice of presenting the material is deliberate. The use of *nauna* is reasonably straightforward; the third use of “know” as a means for conveying empathy is more abstract.

We then consider text in which “know” references one or more of these three uses but, in context, connects to other English words such as “learn”, “teach”, “understand”, and “remember”. This more abstract use of “know” hints at much more complex ideas about knowledge transmission, memory, and understanding.

Before continuing, we offer a disclaimer. We concur with Nagy (among others) that the Inuit cognitive world is extraordinarily rich and complex. We present here a framework represented by the different uses of “know”. We provide Inuinnaqtun wordbases that we

think most closely match the English use of “know”, but we are well aware there exists significant overlap between, and greater specificity within, each of the categories we postulate here. We employ the term *kangiqliyuq* as a label for social knowledge and empathy, for example, with the awareness that there are multiple terms for this concept.

The excerpts we present below have been lightly edited for readability, with additional interview text added as necessary to improve comprehension.

Nauna: a signal for social discomfort

Not surprisingly, in an exercise where our interviewees frequently denied expertise, the denial of knowledge — “I don’t know” — occurred with some frequency. The Inuinnaqtun word is *nauna*. In our experience, *nauna* is frequently employed in English discourse and signals that the individual lacks information to match the inquiry (Q: “I’m trying to find Joe, do you know where I might find him?” A: “*nauna*”). Typical exchanges in the interviews:

TP: What do those *qilalugaq* [beluga] that you’ve seen, do you know what they eat?

JK (male, age 65): I don’t know. It’s one thing I, or we, never got to check what’s in their stomach. Yeah, I don’t know if some of these people check them or not.

or

PC: Did your dad ever have a *naulaq* [toggling harpoon head] for whales?

RM (male, age 56): I don’t know, but he had a couple, one really long one for when the seals are sinking too fast. And a short one for when you are on ice.

The use of *nauna* in this sense is straightforward. And, indeed, we did find significant use of the phrase — Inuit did, after all, frequently claim they lacked knowledge about whales. A more complex use of the term, however, is to signal discomfort. Based on our experience, *nauna* is a reasonably common occurrence during inquiries about sensitive topics or in cases where the respondent has only reluctantly agreed to participate. To those paying attention, *nauna* is an indicator that the speaker wishes to conclude the interaction but does not want to offend the questioner.

We expected to encounter this second use of *nauna* but found a limited set of responses of this type. Our interpretation is that, despite asking Inuit about a subject in which they lacked expertise, there was relatively little social discomfort in the process — when we saw *nauna* employed, its use seems to mark that we were not approaching the topic effectively, as this excerpt suggests:

TP: I wonder what the *nattiq* [ringed seals] and *ugyuk* [bearded seals] think of the *qilalugaq* [beluga]?

JK (male, age 65): I don’t know.

The interviewer (Pearce) is trying to acquire information about cosmology, specifically the relationships between different animals. The interviewee’s response suggests that he was uncomfortable with the question, either because he had not previously thought much about it or because it was inappropriate. We favor the latter, that JK was simply uncomfortable with the question.

In these interviews, “I don’t know” as a signal of discomfort emerged specifically in the context of inquiries about cosmology. For some of our interviewees, we had not yet demonstrated we could appropriately handle this information. The most serious example of “I don’t know” to express discomfort occurred during an interview we conducted with a middle-aged male. After what we felt was a productive discussion of the history and experience of whaling in Ulukhaktok, Collings inquired about human–beluga relationships: do beluga, as other animals do, hear people talking about them, and are there negative consequences to talking about the animals? The interviewee responded with a stern *nauna* and became clearly agitated. We tried to shift the discussion, but subsequent terse responses led us to end the interview. It was very clear from the exchange that the line of questioning was unwelcome and that, in his mind, we were neither socially nor intellectually ready to handle any information he may have had.

Ilihimayuq: knowing as a signal of practical skill

A second category of “know” in the narratives is equally straightforward: interviewees employed the word “know” as a referent for practical skills or experience in a specific domain. During an inquiry about why beluga whales were in the waters around Ulukhaktok, MN offered that they were in Ulukhaktok for food. He then offers his certainty: he knows the beluga are here for the food because he has seen the evidence himself. In this exchange, Collings asks for confirmation:

PC: Yeah. So they’re here for the food, eh?

MN (male, age 81): Yeah, they found lots of food. Yeah. One morning, I climbed up there to the hill, there were lots of whales just behind here [pointing to the other side of Ulukhaktok Bluff]. You know, they’re not traveling, eh? They’re going in, feeding around, feeding around. There were lots of them, lots of whales traveling together, eh? Anywhere, just when they go that way, then they go that way, that way, anywhere. They’re looking for food, I know it.

PC: So they like char?

MN: Yeah.

PC: What else do they like?

MN: Um, crabs sometimes, they’ve got crabs in the stomach. Sometimes, they have octopus, eh? You know octopus, in the stomach sometime. I know octopus.

MN establishes he knows not only that they are feeding but also what they are eating — char, crabs, and octopus — because he has observed firsthand the contents of a beluga’s stomach.

GK used “know” in a similar fashion to establish concrete knowledge. During this exchange, Collings was trying to sort out beliefs about beluga:

PC: You know Tristan [Pearce] and I walked to Uyaraktuuq Saturday?

AK (male, age 41): And there is a grizzly around.

PC: And there is a grizzly. I don't even want to talk about that. I was over at RK's earlier today and SK was, SK was talking about fishing and "how we brought a big gun just in case, but I am not going to talk about it", and I said, "yeah, I am glad nothing happened but I don't want to talk about it either". But beluga might not be like that?

GK (male, age 49): No, I don't know, we are on a learning curve about that, we're, we still got to learn all the traditional laws about beluga. Like, we know now through experience how to get them from the deep to the shallows, we know now that when the whale surfaces in the deep, it doesn't go right before it surfaces, if you're going in the direction you want it to go when it dives, you just putter along...

PC establishes human–animal sensitivities regarding bears by relating a conversation about a grizzly bear close to the settlement. Talking specifically about bears is never a good idea because they can hear people. Talking about bears very likely leads to an unfortunate encounter with one. GK quickly admits that he does not yet “know” the degree of human–beluga sensitivity, referencing that people in the community are “still on the learning curve”. But, he then offers a set of skills that he and others do possess regarding beluga, such as how to drive a whale from the deep water into shallow water, where it can be harpooned and retrieved.

These examples highlight the use of the word “know” that most closely references the Inuinnuqtun term *ilihimayuq*, which Lowe translates as “knows how”, indicating the presence of competence in some activity or domain. Statements that employ “know” as a set of concrete skills or facts about things tended to be expressed concretely in the narratives, as in “we know from experience” or “I know it”. Knowledge in this sense is discrete and acquired legitimately through practice and experience.

Two asides are worth mentioning. The wordbase *Ilihima-* appears in more formal settings as *Ilihakvik*, “school”, the implication being that the school is a place for the acquisition of practical knowledge and skill, separate from the other forms of knowing that we find in the interviews. Perhaps more illuminating is GK's admission that he lacks knowledge about human–beluga relationships but responds with examples of specific skills. He implies that knowing how animals interact with humans is practical knowledge, something scientific researchers frequently categorize (or dismiss) as cosmology, unrelated to the kinds of practical knowledge targeted by TEK research.

Kangihyuq: establishing empathy and social connectivity

A third use of “know” appeared in the utterance “you know”. As with *nauna* above, “you know” served two functions. In American and Canadian English, “you know” is one of numerous fillers, indicating the speaker has paused but has not yet finished a thought. Examples from our interviews include:

TP: It's almost like people are just learning to hunt them [whales] now, eh?

DK (male, age 56): You know, teaching young people what to prepare for and how do you prepare and get one whale, at least. We tried to chase one that was already wounded, instead of just trying to shoot a new one. We tried to get one that was wounded and tried, you know, tried not to lose it. But sometimes some harpoons come off and then you lose the whale again. Sometimes it happens.

And:

PC: So how come there has been so many whales? There was lots last summer, and there was some a couple of summers before, too? How come they are coming around?

LN (male, age 55): I can guess. I've just got feeling, because, you know, there is always, there was a lot of little fish around last year, eh?

In these examples, the interviewee is using “you know” as a filler. That Inuit would employ fillers in their speech makes clear sense in our experience. Outsiders, especially researchers, are often unfamiliar with Inuit speech, which tends to be slow, quiet, and full of pauses. A speaker may utter several sentences and then pause for up to a full minute before completing the thought. Southerners unfamiliar with such discourse practice often assume the utterance is complete and unwittingly barge in on the conversation. Such boorishness is further compounded by the numerous, often rapid-fire questions, which are themselves inappropriate in contexts where one is expected to learn by observation (as discussed above, but see also Briggs 1970).

However, “you know” serves another, somewhat abstract function in these narratives. “You know” is an inquiry about the state of the listener’s knowledge, used to ensure that the listener comprehends the information conveyed by the speaker. An excellent example of this use comes from an interview with MN, who is describing how he caught a whale when he was a younger man:

MN (male, age 81): No, I got no harpoon. But I got a hook, eh? I got two hooks. I hook it with the, um, and then I kill it. Yeah.

SO: You killed it with a hook?

MN: Yeah. [Pause] You know the hook?

PC: The *nikhik*? Or the

MN: Four, three like that, it got a rope?

PC: Oh! The *kiviakhiun*?

MN: Right.

In this exchange, MN is explaining how, in the absence of a harpoon, he retrieved the whale. He uses the filler “um”, unsure if he should use the Inuinnaqtun word, which might introduce an unnecessary complication. SO (Sonja Ostertag, a biologist unfamiliar with hunting traditions in Ulukhaktok), assumes that MN killed the whale using *only* a hook. MN then inquires to establish that the interviewers are following his story. All that remained was to establish what kind of “hook”. Hook references two separate tools, one of these being a *nikhik*, a single hook mounted on a stick for (among numerous uses) hauling dead seals into a boat. The other is the *kiviakhiun*, a “sinking hook”, three or four hooks embedded in a lead ball and attached to a long line for retrieving sinking or sunk animals.

Another example of this use of “you know” appears in an interview with a married couple. Pearce inquires whether beluga molt or shed their skin. Had they seen whales rubbing their skin under ice or in shallow water?

SM (female, age 60): I was watching when I could see a few, I don't know how many, by Jack's Bay by the shallow part, with the new ones [babies and yearlings]. They were really black.

PM (male, age 61): Yeah, I think it must be same as seals. You know seals, in spring time, you know when they come up [close] to you, you can see the old fur.

In this case, PM uses “you know” to ensure Pearce understands the similarities between the two species and that Pearce understands ringed seal behavior — important because the interviewees are unsure of the limits of Pearce's cultural expertise, having never been seal hunting with Pearce.

A final example appears in an interview with a middle-aged hunter about best practices for killing and retrieving a whale:

TP: So where do you shoot them?

JA (male, age 48): Behind the head, not too much in the front, like where the bone is, because if you go close to the head, when you go right near the head, you sink them right away. So my uncle used to always tell me to wait for the bend, you know in the back, we had to harpoon it by the back part. Once you harpoon it, make sure you get it right on the head.

JA uses “you know” partially as a filler but also to ensure that Pearce is following the conversation, that he understands where, precisely, on the animal that one should attempt to set the harpoon into the animal.

The use of “you know” in these examples best corresponds to the Inuinnaqtun term *kangihiyuq*. Lowe translates the term to mean “understand”, and Nagy likewise records similar meanings in her analysis of life history narratives. We posit here that *kangihiyuq* indicates “knowing” in a social sense, specifically indicating empathy and concern for others. The question “you know?” establishes that the listener is following the conversation and understands what the speaker is saying.

Ensuring that the listener understands conforms to traditional expectations of knowledge transmission and the individual autonomy granted to a speaker. In research on successful aging and the life course, Collings (2001) documented the importance of connections between elders and juniors as a mechanism for transmitting knowledge across generations. In more recent research on how Inuit cope with stress (Collings and Marten 2014), Inuit reported that “talking with elders” was an important mechanism for addressing the problems inherent in contemporary community life, indicating that traditional knowledge retains value in the modern world.

Furthermore, speaker autonomy allows the interviewee to direct the course of the conversation. As we discussed previously, asking questions is particularly rude and intrusive. We suggest that in this kind of linguistic environment, it makes sense for speakers to assume responsibility that the listener understands.

Beyond the immediacy of the interaction, understanding the needs of others is coded in the Inuit human development program as part of being a genuine person, or *inummarik*, one who recognizes his or her interdependence with both community members and his or her environment. The concept of *inummarik* is well documented elsewhere (see Brody 1975; Stairs 1992), but the use of “know” to establish empathy is the practical expression of this ideal:

EK (female, age 52): That's why we hunt seal, me and my brother, in the wintertime, because our family grew up on seal all year round. And we know how it is for elders to crave it, so we hunt for them in like January, February.

In this passage, EK establishes her awareness of the needs of others and signals her desire to meet those needs. The social use of "know" also appears in narratives discussing knowledge transmission. SM establishes an awareness of the needs of children and the responsibilities that elders have toward younger people in the community:

SM (female, age 60): Our children will know and their children will know, so it's always what we carry down, what we want to carry down from us to our kids... I hope our grandchildren respect the land and animals like we would have. So, just carry this on, find people to teach you, you know if there isn't someone, you know, like when broken families or there is no mother or father to teach, then hopefully someone else will teach them. That's how come they have summer camps and stuff like that.

A third example of "you know" to indicate understanding of one's place in the world appears in a conversation in which the interviewee expresses his good fortune at having enough proper food to eat. Collings asked about food preferences:

RK (male, age 46): I mean, I am not choosy with meat. Meat's meat to me, because I've had it all already. Bear meat, black bear, grizzly bear, polar bear, to me they are all... Meat is meat, because you know some people don't get meat at all. Maybe it's because they don't like meat, they're more vegetarian or into noodles, you know there are people like that.

In the context of the interview itself, RK expresses near sadness that some people don't have meat to eat because it is unavailable to them. He then expresses his awareness that some people don't like meat, implying, perhaps, a different sense of sadness.

Qauyima: knowledge in the context of memory and awareness

The first three uses of "know" in the narratives were concrete. That is, we could infer the different meanings applied to the word "know" by the context in which it was used in the sentence. Our speakers used "know" to indicate discomfort or lack of knowledge, the presence of practical skills, or their awareness of the needs of others.

It should be apparent even from these limited examples, however, that the data are a bit messy. Speakers' utterances sometimes contained multiple incidents of "know", each with a separate meaning attached. And, while "I don't know" directly maps onto the Inuinnaqtun *nauna*, "know" used as a marker of sociality is a bit more abstract.

It is in these spaces where speakers used "know" in multiple ways that a fourth, more complex use of "know" appears in the narratives. This meaning of "know", in fact, does not appear to be attached to the word "know" itself but rather to the words that occur *around* it. Consider the following statement from JA, taken from an interview with Pearce:

JA (male, age 48): You know, from just listening to elders, past elders' stories, and teachings from my uncles and my aunts, it's just like I really didn't know how to hunt whales. But then, just listening to their stories and remembering things, I tried to do what the stories were told to me, the way they were told to me. So I always try to follow elders' different hunting methods. ... I mean, I use their hunting method but try to define

them to my, to what I like to do, and try not to make any mistakes because some of the elders say when you make a mistake during a hunting trip, it could either cost you your life or a really bad injury.

The text contains two uses of “know”: first as a filler and immediately afterward as an assertion of lack of expertise. What stands out is its proximity to two other words: “teaching”, which appears in the same sentence, and “remembering”, which appears in the following sentence. JA is discussing the importance of connectivity across generations, highlighting how elders’ stories remained relevant in his own life.

Another example appears in the following discussion about proper hunting. Collings was nearing the conclusion of an interview with two brothers, and they were discussing the problems of DFO and FJMC paying hunters for tissue samples. Both GK and AK suggested that hunting whales for purposes of taking money was poor treatment of the animal and could lead to undesirable outcomes. GK links improper motivation with negative consequences and then provides an example:

GK (male, age 49): To me, this [hunting for sampling money] goes against any type of hunting I was taught to do. It was, you know, you take the animal respectfully and treat it with respect. If you don’t, you are going to have hard luck. I don’t know if this applies to whales, but with other animals you do not use stuff that was, that belonged to a hunter that passed on that wasn’t given to you from them before they passed away. If, when they pass away and their stuff is distributed around, if you end up with some of their hunting equipment, once you use it you kind of have hard luck with finding the animals you want, or taking them.

AK (male, age 41): I know it’s like that with polar bear.

PC: Okay, but if your dad gave you a harpoon head before he passed...

AK: Then I use it.

PC: You could use it?

AK: Yep, that’s the way I understand things anyway.

GK: The rifle I use to hunt for muskox is the same. I bought it from a guy before he passed away, so he was still around when I got it and that’s one of the best hunting rifles I ever owned. I take muskox, a few hundred yards, one shot in the neck and they drop.

This excerpt includes the use of “know” as filler, declaration of the absence of knowledge, and an assertion of a fact: “I know it’s like that with polar bear”. However, in the interview, these uses of “know” appear in the context of teaching — being taught to treat animals and objects properly — and an assertion of understanding, of having internalized the lessons.

Another example of “know” used at this more abstract level occurs in an interview during which our research assistant Roland Notaina, a younger hunter, asked JK about advice that he, an elder, would give to younger hunters:

RN: What kind of advice would you give to young...

JK (male, age 65): The advice is, um, you know, the younger people they should go with the older people. The one who knows all the stuff and then, they come to see how it is done. You know this whole idea, hunting and trapping. . . I don't have to be told, just, I just watch my dad and see how things are done and that's how I learn. You know, I don't have to be told. This way for the younger generation it's best to go with an elder or a well-known hunter, and they come to see how things are done properly and in a safe way.

As with the previous examples, “know” has multiple uses in the narrative, as a filler and as a reference to practical knowledge (“the one who knows all the stuff”), but within the context of learning at the hands of a recognized expert.

Our sense is that our speakers are, in these contexts, invoking the Inuinnaqtun word-base *qauyi-*, or the term *qauyima*, which Lowe and Nagy both translate as variously meaning “consciousness”, “awareness”, “learning”, or “memory”. More concrete links between “know” and *qauyima* appear in the following examples:

EK (female age 52): My first ever memory, we were camping at uqhuqhirvik. You know where that cairn, or memory statue, is? And I remember we were sleeping and then we could hear lots of yelling and excitement. It was just my parents, us kids stayed in. . . So we were all sleeping and next thing — I know how old I was, because I remember hearing all the excitement — and the next thing we were running along the shore and the whales were right there. And my mom was shooting at them, and my dad was in a boat, but they got away. And then I don't remember after that. I only remember lots of excitement and yelling and seeing the whales, white and gray and white. That was my first ever experience with beluga whales.

EK uses “know” to establish her certainty of the memory, first rooting it in the location and then relating the activity that occurred there as an expression of her developing awareness. DK highlights the importance of knowledge transmission by relating his father “talking to” him when he was younger.

DK (male, age 56): That's the only way they are going to learn, is by watching. You know. If they don't watch and see what they are doing nobody's going to learn. That's how come we have to keep trying to teach them our culture that we were bought up with, so it doesn't die away. You know?

RN: Then once they learn, they are going to want to try and try and try.

DK: If they're going to get a picture of it. . . Young kids got more brains than adults. They stay in memory for a long time. You know children, kids, they could learn really easy, not like adults. You know they could pick up anything really easy, kids. That's what my dad always said. . . He told me, most of all though, look after your grandkid's stomach. I don't want to see them hungry.

It should be apparent here that the excerpts, and the Inuinnaqtun wordbase we apply to the concepts here, invoke the formally coded *IQ* — traditional values and beliefs about people and their place in the world, which are ideally used to guide contemporary life. While *IQ* is not formally encoded in Ulukhaktok in discourse, the narratives suggest that awareness of the world and connectivity across generations remain key guideposts for our speakers.

Discussion and conclusions

We noted earlier that the Inuit cognitive world is more complicated than we could hope to address in a single article. Indeed, our analysis of the four uses of “know”, which we link to Inuinnaqtun concepts, presents some problems for attempts at simplification. One of these problems is that some Inuinnaqtun wordbases overlap these categories. For example, Nagy documents in the life histories she analyzed that *qauyima* references memory and consciousness, but it *also* references practical knowledge, which we categorize as best represented by *ilihimayuq*.

GK’s statements about human–beluga interaction provide some guidance in reconciling this problem. Recall that Collings inquired specifically about beluga awareness of human intentions — are an Inuk hunter’s motivations appropriate? — and he responded that he did not know about that, but he did, through experience, know how to get a whale to shore. We suggest that the overlapping meanings for *qauyima* place practical knowledge within a wider cosmology. That is, “knowing how” to hunt beluga is partly a set discrete behaviors, something akin to a cookbook. “When the whale surfaces in deep water, do *x*”, or “target location *x* for setting the harpoon into a whale”, for example. “Knowing how” in terms of proper behavior and motivation, however, requires an awareness, *qauyi-*, of the relationship between the hunter and the animal, a cognitive sensitivity that goes beyond knowing a simple script of physical activities. We suspect that this level of practical knowledge as awareness is more dynamic, requiring a hunter to continuously observe and assess the state of an individual animal and adjust their own state of mind accordingly.

Our analysis has its limits: we are inferring categories from the context in which our speakers used a single English word in interviews. Furthermore, the interviews were intended for a different purpose. Our goal was to capture only a single category of knowledge, but we discovered during analysis that much more was occurring in the interviews. Research specifically exploring Inuit cognition would flesh out what is clearly a much more complex domain.

That said, our findings provide some insights into collecting “ecological knowledge”, especially in rapidly changing contexts where Inuit are developing expertise with what may be locally unfamiliar species. Our initial question, an inquiry into the ecological knowledge Ulukhaktomiut have about beluga, met with numerous denials. “We don’t know anything about beluga” was more indicative of how Inuit interpreted our question as a request for only one *kind* of knowledge, *ilihimayuq*, the practical, discrete, concrete knowledge about beluga behavior and ecology, which hunters had difficulty codifying.

Additionally, our initial inquiry is something our informants were clearly prepared for. Researchers have conducted TEK and related research for decades. Asking for facts about a species falls within a well-understood script. We also think that imparting this kind of knowledge is, for Inuit, the least harmful. That is, this kind of knowledge is easy to convey, and outsiders who otherwise lack awareness can comprehend it. It is instructive that some of our interviewees became uncomfortable or agitated when our questions strayed into the realm of cosmology. Perhaps we could not be entrusted with this information, or perhaps our speakers feared that their assertions would be ridiculed and dismissed. Much “knowledge” that Inuit possess remains hidden from outsiders, partially aided by the way Inuit categorize what it means to know something.

We close with an observation about the central problem of the paper. Why were our interviewees quick to claim they lacked knowledge about beluga? We noted at the beginning of this paper that Inuit have been hunting whales periodically over the past 15 or so years, and the interviews did contain numerous references to knowledge about beluga, usually with a caveat that they were still learning, or that their knowledge was under

construction. We suspect that part of the problem is that hunters had not acquired their practical knowledge of whales legitimately. Ulukhaktomiut had generated some expertise through observation and practice, but they had not done so under the guidance of a respected hunter or elder. Only a single interviewee (MN) was comfortable claiming knowledge about beluga. During his interview, he related being taught by a respected hunter during a visit to Tuktoyaktuk, which legitimized his knowledge and ability. After returning to Ulukhaktok, he applied those lessons to the Ulukhaktok environment. Later in the interview, he noted that he then provided advice and instruction to another hunter (DK), fulfilling his role as teacher:

MN [male age 81]: So, I got that whale. Just learning from EF [MN's teacher in Tuktoyaktuk], I remember that one. I learned it.

Last year, boys, and people, they see some whales, and lots of people just take off, right away, the boats are going so fast, they go crazy [laughter]. So, people never get nothing, and they come back. Later, they see another whale, they try it again, nothing, and they're coming back. DK is always leading, everybody goes again, comes back with nothing.

Finally, I talked to DK. 'You can't go hunting like that, DK. Next time you see a whale, don't tell nobody, it's easier for you. Easier for you. If you're close enough, slow down, slow down, slow down. The whale is gonna come behind you, so turn around. Turn around really slow. From there, every day, he started to get whales [chuckles].

In the context of threats to traditional knowledge systems in the face of contemporary economic, political, social, or environmental pressure, we suggest that using the apparent erosion or lack of TEK as an indicator of cultural vulnerability is probably misplaced. Assertions such as "we're on the learning curve about that" indicate that the kinds of knowledge researchers try to document — in this case, about beluga whales — are probably the least important kinds of knowledge for Inuit. With strong connections to elders and cultural memory and an understanding of others' needs, Inuit appear to be well equipped to acquire and construct the kinds of skills to adapt to rapidly changing environments.

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