

Look to the Ravens: Reconceptualizing Communities of Practice into Ecosystems of Practice

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Abstract:

The academic idea of a community of practice—a group of people who come together to share and learn from one another—has been used to understand learning structures in a wide array of fields. This conceptual framework, however, is rooted in human exceptionalism, considering anything other-than-human to be a resource instead of an active and critical participant. Working to remove this anthropocentric language and better fit with Indigenous epistemologies, I propose to reconceptualize communities of practice to ecosystems of practice: communities of practice that consider other-than-human actors to be key participants in the situated learning process. I ground this definition through a case study of a Gwich'in hunting and fishing ecosystem of practice by showing clear inclusion of other-than-human members and highlighting their importance in educational processes. Actively redefining and reconceptualizing community of practice theory shifts overall cultural perspectives to better embrace other-than-human entities and fosters environmental empathy.

Keywords: community of practice; ecosystem of practice; situated learning; Indigenous education; land education; nature as teacher

Introduction:

“When hunting we always looked up. Easier to find the caribou if you look to the ravens. They dip, you see, the wing. It’s like a salute then you know that’s where to look.” A Gwich’in Elder and culture bearer explains the hunting practices of the Gwich’in people of Arctic Village to interviewers from the Alaska Department of Fish and Game in 1991. When I ask this Elder about the same thing thirty years later the response is similar: “Yeah, the only difference now is that after they show us where to shoot, more ravens will come at the sound of the gun. They’ve figured out when they get some food too. It works out for everyone.” Our conversation mirrors the Fish and Game interview but we focus less on regulation and more on how Gwich’in hunting practices are learned, taught, and passed on from generation to generation. The Elder outlines for me an approach that is very close to the academic concept of a community of practice (CoP), a group of people who come together to share and learn from one another (Dubé, Bourhis, & Jacob, 2005). But there is a key difference in the shared Gwich’in practice and the highly theorized definition of a community of practice: it is not just humans that are participating, the ravens are key members.

To locate the ravens and frame their importance I argue for an expansion from a community of practice to an *ecosystem of practice*. Previous scholarly work around communities of practice is deeply rooted in Western epistemologies leaving a significant gap in scholarship considering communities of practice through Indigenous epistemologies. Using an Indigenous epistemological lens sheds light on the limited consideration community of practice literature has given to anything that is not human. This fixation on humanity leaves critical gaps in how to define membership, roles, and participation within a community of practice, especially in considering other-than-human actors.

In this article, I first identify the Western underpinnings of community of practice theory, before exploring how current conceptions misalign with many Indigenous epistemologies, justifying the need for a change in terminology to move away from anthropocentric language and human exceptionalism. I then begin an exploration of how we might define an ecosystem of practice, addressing issues of membership and inclusion of other-than-human actors. To contextualize this definition, I look to a Gwich'in hunting and fishing ecosystem of practice drawing from two sets of interviews with the same Gwich'in Elders conducted thirty years apart.

My interest in these interviews and the role of the ravens is generational. My father was part of the initial Alaska Fish and Game study, and our family has maintained deep connections with the Arctic Village Gwich'in community which allowed me to conduct the follow-up interview. Growing up in Alaska makes me a native Alaskan, but I am not an Alaska Native. I write this article conscious of my position as a white settler man, working to collaborate through interviews and discussions with Elders to help further illuminate Alaska Native beliefs and understandings.

Communities of practice:

The academic concept of a community of practice (CoP) was born at the intersection of education and social anthropology from Etienne Wenger and Jean Lave, respectively, in their book *Situated Learning* (1991). Drawing from Vygotskian psychology which emphasizes how the mind cannot be understood in isolation from society (1979), Lave and Wenger place learning as a result of the activity, context, and culture in which it is situated. This is a clear conceptual shift away from traditional understandings of knowledge as true justified belief. Justification of belief and the

source of this justification remains a critical and contentious discourse. Internalist and externalists disagree on how beliefs and knowledge are created and justified. Feldman & Conee (2001) argue the internalist side of knowledge justification, claiming that only that which is directly or introspectively available can justify beliefs and create knowledge. This individualist, cognitive, evidence-based approach emerging from Piagetian psychology places the burden of knowledge on the individual. The counterargument of externalists claims that factors other than those which are specific to an individual can also justify individual beliefs (Goldman, 2009). While this allows for a broader range of interpretations, it still places the onus on the individual to be the mediating source of what is and is not knowledge. Under these conceptions, knowledge is either an object independent of human action or embedded in an individual (BonJour & Sosa, 2003).

Situated learning, however, contends that knowledge is embedded in a community. This places the justification for believing something as emergent from interactions. Instead of defining knowledge as justified true belief, or justified belief through internal and/or external factors, situated learning places knowledge as justified belief constructed by shared practice. This perspective views knowledge as a public good that is socially generated, maintained, and exchanged within emergent communities of practice (Brown and Duguid, 1991; Lave, 1988; Lave and Wenger, 1991). Now, formal learning spaces no longer hold exclusive rights to knowledge production and dissemination, as entwining learning with context opens all interactions to become potential learning spaces. Important to note is that situated learning still applies to formal learning spaces such as schools but asks educators to consider factors beyond the curriculum such as the potential influence of school culture on learning (Suchman, 1987).

With situated learning as a foundation for understanding how learning happens, Wenger (1998) asserts that when people learn together the result is a community of practice. As a new approach to learning, CoP theory expanded out of education and anthropology to be applied across numerous academic disciplines including organizational studies (Gherardi, 2009), disaster relief (Miles, Burton, & Kang, 2019), public policy (Bicchi, 2011), music (Snell & Hodgetts, 2007), art (Noble, 2021), and architecture (Green, Hibbins, & Haughton, 2013). Despite the wide array of fields and applications of CoP theory, the academic world appears to agree on using Lave and Wenger's (1991) original definition as the baseline: "people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (p. 4). Regardless of specific language, the pieces present in every definition are a group of people, a shared domain, and interaction. Here is where we find misalignment, where do the ravens fit into this model?

From communities to ecosystems:

In contrast to the predominantly Western perspective on knowledge detailed in the previous section, many Indigenous epistemologies decentralize humanity. Weenie (2009) places the source of Indigenous knowledge as sacred stories, songs, ceremonies, and teachings from communities and Elders. This is an epistemology that relies on the connection between the community and its spiritual beliefs and traditions supporting what Cajete (1994) terms an "ecologically-informed consciousness". Within this conception the community is a sacred place, a center for teaching and learning supported by every community member toward the betterment of the community as a whole. What comprises a community, however, extends beyond an individual, a family,

or a village as whole, to encompass relationships between people, plants, animals, natural actors, and phenomena; more concisely described by a Lakota metaphor, “we are all related” (Cajete, 1994). This way of knowing requires appreciation, understanding, and empathy of the natural (Knudtson & Suzuki, 1992). Cajete details the source of American Indian knowledge through this ecological lens:

American Indians symbolically recognized their relationship to plants, animals, stones, trees, mountains, rivers, lakes, streams, and a host of other living entities. Through seeking, making, sharing, and celebrating these natural relationships, they came to perceive themselves as living in a sea of relationships... With this awareness, tempered by intimate relationships with various environments over a thousand or more generations, Indian people accumulated and applied their ecological knowledge (p. 74).

The longevity of this theory of knowledge and its view that knowledge can be received directly from other living and non-living entities, both human and other-than-human, contrasts sharply with Wenger’s anthropocentric Western epistemology. Pierotti & Wildcat (2000) place Traditional Ecological Knowledge in this same framework, including all aspects of physical space as part of a community, including animals, plants, and landforms.

Environmental education scholars have long pushed toward the concept of nature as teacher (Ford & Blenkinsop, 2018; Hall & Clover, 1997). Indigenous education scholars place land as a requirement for Indigenous education, a stance succinctly summarized by Simpson (2014) as “Indigenous education is not Indigenous or education from within our intellectual traditions unless it comes through the land” (p. 9). Land-based learning centers Indigenous land-based perspectives, counteracting entrenched settler colonial perspectives of the role of the land in education (Bang et al,

2014). By including other-than-human actors as potential and perhaps essential members of a community of practice, learning can happen communally without another human being. A community of practice can exist between different environmental factors and an individual or groups of individuals.

This learning *with* the world fundamentally reimagines the centrality of human actors within a community of practice and places added emphasis on other-than-human actors as members of the learning process. The inclusion of other-than-human actors, however, signals a significant departure from Wenger's (1998) original conception. He places anything other-than-human as passive resources to be taken from and used. Although this anthropocentric perspective may appear plausible in corporate environments, as a general description of human learning it is contextually and culturally biased. The delineation of anything other-than-human as a resource becomes increasingly problematic in the settler colonial tradition of viewing Indigenous peoples as less-than-human, and thus a resource to be abused for material gain (Hughes & Highwater, 1983).

As I have a specific focus on the Alaska Native communities, I will highlight some examples of as to how Indigenous Alaskan knowledge relies heavily on interacting with and understanding natural forces. Yup'ik Elders view animals and natural actors such as rivers, trees, and the ocean, as co-inhabitants of a sentient world, nonhuman persons responsive to thoughts, words, and deeds (Fienup-Riordan, 2020). Animals are said to have "ears through the ground" (p. 11) and will not come to hunters who disrespect them. Athabascans express a similar relation with fish who are only caught when they choose to give themselves to the fisherman (Kofinas et al, 2010). Canadian Inuit take the very shape of the land to be an indication that it is teaching them where to look for caribou or where to be wary of wolves (Raffan, 1993). Alaska Native

Elders and community members from across the unique and varied communities and cultures consistently describe what Lave and Wenger would identify as a novice-expert relationship between a human and the environment around them as it teaches through extended and deep ecological roots how to live. This perception is not unique to Indigenous groups in Alaska. The many roles of the other-than-human members as active participants of these learning ecosystems have been illustrated through scholarship in a plethora of Indigenous settings including among the Haudenosaunee (Kimmerer, 2013), the Cree and Metis (Styres, 2011), the Runa (Kohn, 2013), and the Maori (Manning & Harrison, 2018).

This conception shows education as situated and communally derived, similar to Lave and Wenger's (1991) conception of a community of practice, but diverges by considering other-than-human participants to be a key actors within the community. This is a significant gap in how CoP theory can be considered and used. I propose to reconceptualize CoP theory to place other-than-human actors, including animals and the land, as integral interlocutors, thus expanding from a community of practice to an *ecosystem of practice*.

Defining an ecosystem of practice:

An ecosystem of practice is a community of practice that considers other-than-human actors to be participants in the situated learning process. The first step toward clarifying this larger term is defining its composite parts. The term ecosystem originally stems from ecology and refers to a biological community of interacting organisms and their physical environment (Ayres, 2012). More recently, the term has been claimed by a variety of different academic disciplines and has been generalized to refer to any type of network or system. Business management has redefined an ecosystem to refer to “an

interdependent network of self-interested actors jointly creating value” (Bogers, Sims, and West, 2019, p. 4). Occasionally these newer definitions harken back to the physical environment in which they are situated, such as Grandstrand and Holgersson (2020) who refer to an innovation ecosystem as “the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors” (p. 1). None of these definitions, however, attribute any agency or interconnection of other-than-human actors beyond use as an artifact or resource. This subversion of ecosystem creates a flawed anthropocentric model of what should be a deeply interconnected and natural concept. In my use of ecosystem, I return to Pierotti & Wildcat’s (2000) conception of Traditional Ecological Knowledge, placing a community of interacting organisms and their physical environment on level footing and considering all members important.

In defining practice, I align closely with Wenger’s (1998) framework of practice as activities or sets of activities. Activity comprises the actions of and interactions between different actors as they exist within a community. Practice refers to patterns of activity across multiple actors within the community to bring meaning to a set of otherwise commonplace activities (Jarzabkowski, 2005). These activities embedded in or subsumed by practice simultaneously draw on and build communal knowledge. As Akoumianakis et al. (2008) describe, “practices represent the collective wisdom, rules of thumb and common ground (i.e., processes, tools and artefacts) characterizing a community” (p. 369). To be a community or ecosystem of practice is to share, learn, and grow through this collective wisdom and knowledge. The necessary expansion beyond traditional CoP conceptions of practice is to reconsider what constitutes an actor to also include other-than-human actors.

A critical aim in defining both the parts of an ecosystem of practice and the term itself is working to remove anthropocentric language. The pieces present in most definitions of a community of practice can be expanded and adapted with this change in language. A clear example of this is that while one the central characteristics of a community of practice is a group of people, an ecosystem of practice has a group of actors, which could include both human and other-than-human. Other common central characteristics such as a domain, community, and practice (Wenger et al., 2002) need to be expanded to use ecosystem instead of community. Domain, the area of knowledge inspiring members to participate, guiding their learning, and giving meaning to their actions, allows for other-than-human interlocutors. Within an ecosystem of practice domain is expanded to include the interests and purposes these other-than-human members. As defined above, practice easily can be shifted to incorporate all members of an ecosystem. These types of small but critical adjustments also work for Wenger's (1998) three interrelated parts of the structure of a community of practice: mutual engagement, joint enterprise, and shared repertoire. Mutual engagement is how members (for ecosystems of practice both human and other-than-human) participate, establish norms, and build relationships. Joint enterprise is how shared understanding is created through these interactions. Shared repertoire is the outcome of the practice, the set of communal resources that are produced through interaction and learning. Again, ecosystem of practice theory adheres closely to community of practice theory with a few key distinctions.

On other-than-human actors:

With the cardinal distinction for an ecosystem of practice being the inclusion of other-than-human actors, the question then becomes: how do these other-than-human

actors function in an ecosystem of practice? Members of communities of practice traditionally move on a trajectory from novice to expert as they practice and interact. It is difficult to frame a river as a novice on the movement of fish, so the immediate temptation is to place many, if not all, other-than-human actors as experts within an ecosystem of practice. This is in line with the way many Indigenous groups speak of other-than-human actors within their world. As Kimmerer (2013) writes:

“[I]n Native ways of knowing, human people are often referred to as ‘the younger brothers of creation.’ We say that humans have the least experience with how to live and thus the most to learn—we must look to our teachers among the other species for guidance. Their wisdom is apparent in the way that they live. They teach us by example. They’ve been on the earth far longer than we have been, and have had time to figure things out” (p. 9).

This mentality, while not referring to a specific ecosystem of practice, depicts other-than-human actors as teachers and experts. But hidden in this description is the idea that these other-than-human actors have also learned and grown themselves over time. The implicit assumption is that time and experience can provide wisdom and knowledge, and that this is not specific or unique to humanity. Kohn (2013) provides an example of the difference in scale of how long this learning process can take noting how tree characteristics and special orientation over time “form relatively more nuanced and exhaustive overall representation[s] of the surrounding environment” (p.81). We can also assume growth and learning by other-than-human actors through examining existing hierarchies in Indigenous knowledge systems of natural forces.

As an example, we can return to the words of the Gwich’in Elder from the opening, we see ravens learning within an ecosystem of practice over the course of thirty years. The technological advent of hunting with guns caused the ravens to learn

and adapt their practices. Learning continues to be bi-directional between the humans and the ravens within the ecosystem of practice. What we can ascertain from this is that other-than-human actors are most often experts, but also have the capacity to learn and grow through shared practice. This bi-directional learning can also extend to what most Western culture conceives of as non-sentient forces such as rivers or mountains. The river learns as we learn. When I place a rock into the river, I learn quickly that I should not build my boat out of rocks. As I try other options the river discovers that bark is not rock. My purpose here is not to say that learning within an ecosystem of practice must inherently be bi-directional, as Simpson (2017) describes an ecosystem of practice where humans were reliant on deer, the learning relationship only going in one direction, after which the deer ultimately chose to leave the ecosystem of practice. Instead, I aim to highlight ways in which the bidirectionality of an ecosystem of learning is possible.

Here, however, we run into concerns over how to limit and define what other-than-human actors are members of an ecosystem of practice. It could be possible to attribute agency and membership to every grain of sand on the beach or air molecules floating around us. A member in a community of practice must be an active practitioner. Membership is dependent on some level of expertise or experience in the role or subject area of the community of practice (Wenger, 1998). There is a simple process to determine membership among human participants as you can ask and ascertain practice, expertise, and experience. But who are we to judge the practice, expertise, or experience of a maple tree in a syruping ecosystem of practice? Membership and limitation must be defined by members of the ecosystem of practice. While it may be difficult for the other-than-human members of an ecosystem of practice to make their needs and preferences known to the human, this does not necessarily create a structural flaw. It is

not uncommon for members of larger communities of practice to not know every other member, or even the total number of members (Wenger et al., 2002). Knowledge generation and transmission can still come from these unacknowledged or unknown members; indeed, awareness of full membership is not a condition of participation. Scope in an ecosystem of practice can be actively fluid and undefined.

A Gwich'in hunting and fishing ecosystem of practice:

I now ground of these theories through a structural example of what an ecosystem of practice looks like in an Alaska Native context. This section draws on Alaska Fish and Game interviews from 1991 of nine Gwich'in Elders looking into hunting and fishing practices. Despite the Alaska Fish and Game interviewers primarily targeting their questions at hunting and fishing practices and potential regulations that would best fit with Alaska Native cultural understandings, the interviewees spoke extensively about their ecosystems of practice, including how teaching and learning happens. To help clarify some of these perceptions and explore changes over time, I interviewed two of these same Elders 30 years later in 2021, building on the initial interviews, but focusing more heavily on educational practices and outcomes. I undertook these interviews as a white settler man entering an Alaska Native space, working to be conscious of the inherent biases and power dynamics that come with that relationship. The interview data was analysed using NVivo qualitative data analysis software with multiple rounds of coding trees developed and improved through consultation with the Gwich'in Elders. The following analysis was also member checked by the participating Gwich'in Elders to ensure that I accurately represent their words and meaning.

The Gwich'in Elders defined their domain, or shared area of knowledge, as the gathered hunting and fishing wisdom grown through generations of experience. Elders discussed specific strategies they have learned for hunting and fishing. Mentioned examples of this shared knowledge base include the importance of properly cleaning fish, only hunting for as much food as is needed, and how to make tools from different parts of animals.

Building and drawing on this shared domain is the second piece of an ecosystem of practice, what conventionally would be referred to as the community. This ecosystem is the set of members, both human and other-than-human, that participate in the learning and practice. Elders described learning their hunting and fishing practices from five primary sources: Elders, parents, peers, animals, and the land. The first three sources closely match most considered membership in a community of practice, with experts and novices, all human. Elders and parents were often described as these experts, transmitting cultural knowledge through generations with important experience to be shared. One Elder discussed learning from their parents saying, "Our parents brought us up straight, they taught us how to hunt, fishing and gathering." Another delved more deeply into the role of the Elders in learning, "As times progressed, as we grew, we always follow the law. Our Elders teaches us to have respect and obey what the Elders say."

But learning was also described as coming from animals and the land, entities that would traditionally be described as resources instead of active members of a community of practice. For best fishing practices one Elder mentioned looking to bears, "If you watch the bear they know where is best. After they leave you put your nets there." Another discussed being respectful to moose and caribou, "They say, when a person runs down a caribou or moose, they shouldn't laugh, brag, or make fun of it,

people don't like that. We shouldn't be saying that kind of a things to the animals, we should just be quiet, and be happy about it. The moose knows and won't come." Bears, moose, caribou, ravens, eagles, and rabbits were all mentioned as key sources of knowledge. The land itself was also described as an active participant, including mountains, trees, and rivers, with one Elder noting, "The river says when the eels are coming. If you listen or don't listen you will miss the whole thing." The tone and frequency in which animals and the land were mentioned as members of the ecosystem was similar to Elders, parents, and peers. There was no distinction between the five members. The words of the Alaska Native Elders here show why the term community is insufficient and inaccurate in describing and defining membership. Ecosystem of practice more accurately describes the Alaska Native context.

The final requisite piece of both a community and an ecosystem of practice is the practice itself. One Elder detailed the series of activities and interactions around hunting ducks:

"Then in the spring, there's a lake, we go there and hunt for duck. If the lake is wide it says to come. After bunch had been taken, they start to plucking the feathers off the duck and say 'Oh, we'll be sleeping warm this winter.' Bags of feathers are piled. After they take it all home, then start with making some big blankets (goose down). They even made parka with them. And in the smoke cache, all cut, ready to dry ducks are hung, this will feed the family in the winter... dad said the ducks know to stay warm and keep us warm."

The described ecosystem of practice includes participation from the speaker, their peers and human community, their father, the lake, and the ducks themselves. The pattern of activities that take place across all of these different actors shows interaction and learning, in addition to resulting in other important practical outcomes for the human

participants such as food and clothing. As we only have the human perspective here, it is unclear what, if any, practical outcomes may emerge for the ducks and the lake. Making sense of this practice, however, requires inclusion of other-than-human actors—the lake and the ducks. Omission of these critical participants does not accurately represent the hunting and fishing ecosystem of practice. The shared wisdom of the Gwich'in Elders maps clearly onto the proposed structure of an ecosystem of practice with a shared domain, an ecosystem, and practice.

Having established how this case study demands classification as an ecosystem of practice, the above excerpt also sheds light on the structure of an ecosystem of practice. Here we look to Wenger's (1998) structural criteria of mutual engagement, joint enterprise, and shared repertoire, but with active and intentional attention to and inclusion of other-than-human actors. Mutual engagement is happening between all of the different ecosystem members including established norms of annual hunting practices at a specific time, dictated by both human interpretations of time and the lake's indication of readiness. Through the joint enterprise of hunting, understandings of warmth and subsistence are created. Finally, emerging from this consistent pattern of practice is the shared repertoire of how and when to hunt, how to clean and store the ducks, and the uses of the different parts of the ducks. Once again, inclusion and understanding of all members is necessary to elucidate the complex structure of the ecosystem of practice.

Adapting to changes and challenges:

Membership, participation, and practice have all changed in the thirty-year period between interviews. The Gwich'in hunting and fishing ecosystem of practice has not existed in a vacuum and has undergone considerable change and upheaval.

Understanding the change in the ecosystem of practice over this thirty-year period requires a complete picture of all members, including other-than-human members. All members participate in the changes and adaptations, reacting to the many challenges facing this particular ecosystem of practice.

Elders in the 1991 interviews were already expressing concern for the intergenerational transmission of their culture and practices. One Elder articulated their concern saying “Talking to younger generation is pretty hard. We should get them together and talk to them... to understand the meaning of how we live. Maybe they will remember it in the future.” Even thirty years ago, outmigration of Alaska Native youth from the villages to the larger cities was threatening the continuance of the ecosystem of practice. Even some of the remaining youths were reluctant to learn traditional practices, a situation one Elder described as “frustrating... half the kids don’t listen.”

Reacting to the fear of loss of critical cultural knowledge, several Elders in the initial 1991 interviews mentioned the importance of setting up a systematic and sustainable way of preserving their culture and passing down knowledge. One Elder suggested a concrete plan:

“Yes, look to me that we have to teach them with it. We should talk and write down everything what our people did in the past. We should go to fish camp to talk about this and write it down. Without any hesitation, we should build a house here in Arctic Village and start to teach each other. This question you had asked me. We should start with all our knowledge and stand for it then start teaching ourselves to read and write in our language. We should start gather in that building and teach each other, we will accomplish many things in our traditional way of life.”

The Elder continued by placing significant emphasis on the importance of this proposed schoolhouse in Arctic Village, as only in this specific context would the learning make sense. How could you learn from the Chandalar river without sitting at its bank?

Removing the knowledge from context would remove important teachers and students among the other-than-human members of the ecosystem of practice. Talking again with this same Elder thirty years later many of the steps suggested above have happened. The schoolhouse in Arctic Village focuses on teaching Gwich'in traditions, including hunting and fishing practices, and many new physical and digital archives have been created with the expressed intent of storing cultural knowledge. When I asked about the Elder's thoughts on these efforts he replied, "We started now, and it is better. But still the kids don't all want to learn or see." The concerns have not been fully alleviated, but the ecosystem of practice continues, changing and adapting to the world around it.

The animals and land were also noted to be reacting to the changes in hunting and fishing practices. One Elder in 1991 attributed the then recent scarcity of game to this change in practice saying "The people never ran out of any animal even there was many people on the land. This is because they know how to handle the animal. There were more animal in their days." Another Elder placed the same scarcity as based on decisions made by animals and the land, lamenting that "the river gets mad more often now... sometimes the fish do not come... they are not treated right the caribou so don't show themselves." Without proper attention to the animals and respect shown to their importance as a member of the ecosystem of practice, the other-than-human participants adjusted both their interest in participating and the way they choose to interact. As another Elder described, "that's how it is and that's why the balance of animal nature is disrupted, that goes for moose, caribou, bull. Because of all this, things are not the same as always." The recent interviews showed similar changes in the way

that other-than-human actors participated in the ecosystem of practice. Mirroring the 1991 description of the river, in 2021 one Elder said “the river breaks angry now in spring. Too warm too fast.” Following this up with a discussion of caribou migration patterns noting that the animals “don’t know the right place to go now.”

Under the existing—but flawed—lens of community of practice theory, these two critical and complex challenges to the Gwich’in hunting and fishing *ecosystem of practice* could be summarized quite simply: kids don’t want to participate anymore, and there aren’t as many animals anymore. Unpacking the nuances of these problems, however, insists on the inclusion of other-than-human members. Concerns with out-migration and disinterest in cultural practices cannot be addressed without the place-based contextualization of Arctic Village and all the human and other-than-human interactions that comprise the ecosystem of practice. Understanding *why* the animals’ migration patterns and population density have changed is impossible without the perspectives of the animals themselves and the necessary respect for the animals to continue to participate in the ecosystem of practice.

Examining the changes and trajectory of the Gwich’in hunting and fishing ecosystem of practice over the past thirty years illuminates a living, learning, vibrant, fluid ecosystem, maneuvering its way through many difficult challenges by adapting to the shifting tangible and intangible landscapes. Membership and practice of both human and other-than-human participants evolved, and Elders seem certain will continue to evolve. This ecosystem of practice is not static but dynamic. Indigenous communities and practices can often be erroneously viewed by Western societies as fixed, old-fashioned, and antiquated when they are in fact modern and evolving (Levine & Robinson, 2019). To fully understand the complex dynamics of an ecosystem of

practice, it is critical to include the important contributions of other-than-human members.

Conclusion:

While unfamiliar with the academic concept of a community of practice, the two Elders I spoke with in the recent interviews both audibly laughed when asked directly whether there are other-than-human participants in their hunting and fishing practices. In an amused tone one Elder followed up their chuckle by asking the simple question, “how could we hunt without animals?” The Western slant of my question and the incredulity of the answer from the Alaska Native perspective highlights a distinct and important contrast in worldviews. In this Indigenous context the anthropocentric idea of a community of practice does not align. In order to explore meaning within this culture, the theoretical lens must adapt to engage and consider the ontological and epistemological understandings of the culture. Expanding to an ecosystem of practice allows for this necessary flexibility.

Ecosystems of practice better align with Alaska Native understandings and many other Indigenous worldviews. The new conception fits within the growing push for Traditional Ecological Knowledge to be combined Western science (Pierotti & Wildcat, 2000). Future research should explore the potential for ecosystems of practice outside of Indigenous contexts. Urban environments have their own ecosystems with often different other-than-human actors playing critical roles. A considerable portion of the literature on communities of practice comes from the management science field, and investigating how ecosystems of practice may be used in these settings could point to improvements in business outcomes.

In this time of wild disregard for nature there is a fundamental moral imperative for both academics and practitioners to push back against anthropocentric cultural norms. Actively redefining and reconceptualizing community of practice theory shifts overall cultural perspectives to better embrace other-than-human entities. If we understand what we learn from the river, the tree, and the raven and how they connect and participate in our ecosystem we build environmental empathy. Many Indigenous groups have found and fostered sustainability through respect for the land because they exist within the perspective of an ecosystem of practice. Highlighting these viewpoints in bastions of Western culture such as the academy, the boardroom, and the classroom builds a more ecologically connected younger generation while simultaneously urging older generations to shift their mentalities. We have a lot to learn from the ravens.

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