

Hunting with Polar Bears: Problems with the Passive Properties of the Commons

Jeremy J. Schmidt · Martha Dowsley

Published online: 15 April 2010
© Springer Science+Business Media, LLC 2010

Abstract Inuit in Canada's Arctic conceptualize both human hunters and their polar bear prey as active participants in the hunt and as part of a larger socio-economic system requiring the involvement of both humans and animals. Although often treated through the lens of common-pool resource theory, the Inuit viewpoint conflicts with Western wildlife management systems that typically treat animals, and nature in general, as passive. When polar bears are understood as active participants in the hunt, the rights associated with common property regimes and assumptions about collective-choice decisions in common-pool resource management require significant revision. In this paper we argue that common-pool resource theories which assume natural resources are inherently passive cannot adequately account for the system of active relationships operating among Inuit in Arctic Canada. The co-management system of Nunavut Territory, Canada, uses a flexible quota approach, which, while following conservation guidelines, allows some space for the traditional Inuit-polar bear system to operate. This example shows how common-pool resources may be managed sustainably without the attendant assumption that natural resources exist passively outside of common-pool resource regimes.

Keywords Common-pool resources · Property · Management · Polar bears · Indigenous · Hunting · Inuit

J. J. Schmidt (✉)
University of Western Ontario,
London, ON, Canada
e-mail: jschmi7@uwo.ca

M. Dowsley
Lakehead University,
Thunder Bay, ON, Canada
e-mail: mdowsley@lakeheadu.ca

Introduction

Modern resource management has inherited a peculiar ontology. Its tradition is based on dualisms, such as passive/active and subject/object, which provide base distinctions for Western understandings of the human-environment relationship. For instance, Gifford Pinchot, the first head of the U.S. Forest Service, remarked that, "There are just two types of things on this material earth—people and natural resources" (Pinchot 1998: 325). Likewise, the functionalist dictum that "resources are not, they become" is based on a tidy distinction between humans, on the one side, and the "neutral stuff" of nature on the other (Zimmerman 1933). However, many indigenous cultures view animals and other aspects of the natural world (such as plants, mountains and rocks) as non-human persons who are sentient, spiritually powerful and are also active, causative agents (Hallowell 1960; Tanner 1979; Brightman 1993; Scott 1996; Salmón 2000; Nadasdy 2003; Stoffle and Arnold 2003). The differences between these two views are sharpened in cases where human effects on common-pool resources are of concern to both western and indigenous wildlife managers.

This paper critically explores how the dualism between active humans and non-active nature has been articulated in the discourse on common-pool resources. We argue that the philosophical commitments of common-pool resource theory perpetuate a bias towards Western conceptions of rationality and causation. Therein, humans are considered the only active agents in collective-choice decisions due to their capacity to rationally construct, coordinate and execute logical courses of action. Virtually everything else is considered passive. Problematically, this bias is often unquestioned in explanations of the management of natural resources that are held in common by groups of people whose worldviews do not countenance such claims. We

present evidence supporting our argument through a case example involving polar bear hunting by Inuit in the Nunavut Territory of Arctic Canada. The Nunavut case highlights how assumptions regarding the “passive properties” of the commons marginalize Inuit practices that regard polar bears as non-human persons and as active participants in collective-choice decisions.

We begin by identifying underlying assumptions in the account of common property and, subsequently, common-pool resources and then discuss their relationship with attitudes towards wildlife in Western thought. Next we examine how Inuit hunters perceive of polar bears as non-human persons who engage in relationships with humans that include rewarding and punishing humans through different physical and psychological interactions. The case study suggests two scales at which Inuit views of human-environment relationships are problematic for common-pool resource management and assumptions of passivity in the commons. One is in terms of individual human/bear relationships. The second is at a community level, the human community/bear community relationship. We conclude by arguing for an account of common-pool resources management respectful of indigenous views of polar bears as conscious, non-human persons involved in active social relationships with humans.

Background

Since its seminal articulation by Ostrom (1990), at least two issues have arisen in common-pool resource theory’s account of how groups manage resources held in common that are relevant to discussions of natural resources as passive or active. The first is the need for an account regarding how the selection of a particular rights regime corresponds with both the nature of the good that rights are assigned to and with the human institutions that legitimate resource claims (Sandberg 2007). The second concerns the construction of the subjects who take part in common-pool resource decisions (Agrawal 2003). Here we consider each issue in turn. In the case that follows, both issues confound the attempt to apply western concepts to the Inuit beliefs about the management of polar bears in Arctic Canada.

Rights to Common-pool Resources

The complexity of socio-ecological systems implies that there are no a priori rules for predicting what type of rights regime will be chosen to manage a particular resource. By definition, a common-pool resource implies that some system is in place to legitimate certain claims and to deny others. In this sense, common-pool resources are often contrasted with open-access resources, where no norms for

enforcement exist and which may lead to the types of overexploitation characterized by Hardin (1968). Formerly, common-pool resource theory characterized claims to the commons as claims of common property. Therein, common property was understood as “*private property for the group of co-owners* (since all others are excluded from use and decision making)” (Bromley 1991: 25, original emphasis). This conception of common property followed Western legal traditions in interpreting private property rights as bearing on relationships between persons with respect to things as opposed to bearing on the relationship between persons and the object of property itself (see Glenn 2007). As such, the assumption within private property that the relevant social relationships legitimating resource claims exist only among human persons finds a counterpart in common property theory and its corresponding rights of: management—the right to use property as seen fit; exclusion—the right to exclude others from using property, and; alienation—the right to transfer property. Schlager and Ostrom (1992), for instance, argued that decisions regarding common property present collective-choice problems where communities of human persons authorize the extent and limits of resource rights and define the qualities of those who may acquire them.

Critics have pointed out that the above view treats natural objects as passive because they are excluded from participating in the social relationships that are relevant to property decisions (Stone 1974). Some ascribe the basis for this view to John Locke’s theory of acquiring a property in the commons via the human labor applied to natural resources. There is merit to this view given Locke’s influence in western property theory and his “modest” calculation that the ratio of human to non-human work in acquiring property was 90:1 (his actual belief was 99:1) (Locke 1963: 338). Regardless of its basis in Lockean or in utilitarian claims, this view of natural resources, and their appropriation through property rights, considers the earth’s biophysical systems largely as an idle reservoir and, as such, fully available for human use (Brown 2004). Moreover, this assumption is shared between private and common property systems. As Bromley (1991: 29) states, “The difference between private and common property is not to be found in the nature of the rights and duties as much as in the number to which inclusion or exclusion applies.”

In the Western view of natural resources, animals are not considered property (common or otherwise) until they are appropriated into a legal or economic system. As a result, a conceptual dichotomy exists in which wild animals are viewed as constantly trying to evade hunters (hence requiring “work” to apprehend) rather than as being involved in social relationships with humans regardless of their utility (Ingold 1994). Moreover, in the Western worldview the knowledge of the relationship between

animal and human behavior is not reciprocally shared between both parties (Scott 2006). By ignoring the non-empirical judgments in these two tenets, a natural framework for rational hunting and management strategies has emerged: namely, to determine the most effective and efficient use and allocation of resources within a community of human resource users and to protect the efforts and claims of these resource users through appropriate rights. Conceived of in this way, conceptualizing rights to resources held in common has focused on matching the production function of a resource by a human community with an appropriate allocation function for its successful management (Ostrom 2003).

Recently, the discourse has shifted away from defining resource claims in terms of common-property and worked largely in the vernacular of common-pool resources. This approach draws a distinction between resources and rights regimes, arguing (among other things) that conflating the two domains unnecessarily limits what may be shared as part of “the commons” and the ways in which the resources of the commons may be constructed and negotiated apart from rights regimes (Hess and Meinzen-Dick 2006). In cases where property regimes exist, the discourse on common-pool resources continues to recognize that particular rights regimes are dependent upon the social context of a group and, to varying degrees, on the nature of the resource that property rights affect. However, from the common-pool resource perspective, strict categories such as “common property” are replaced with a more nuanced evaluation of what constitutes a “resource unit” and what social and institutional norms operate to make that unit discrete from other aspects of the environment (see Ostrom 2007).

Despite the putative shift from common-property to common-pool resources, there has been no substantive shift in the conception of resources as inherently passive. As such, the categories used to delineate a “resource unit” from its broader social-ecological system still uniformly exclude any active contribution of non-human persons, or ‘nature’ more generally. This point is taken up further in the next section regarding the construction of subjects who participate in collective-choice decisions. Here we may note that, whether in terms of “common-pool resources” or “common property,” natural resources are situated vis-à-vis the shared assumption that collective-choice decisions are coextensive and co-terminate with human agency. As such, both characterizations rely on particular assumptions that enable broader aspects of a social-ecological system to be transformed into manageable parts. However, the ontological and epistemological premises for this transformation can prove difficult to reconcile with worldviews that do not draw similar distinctions within the commons.

The Construction of Subjects

A second difficulty of extending Western knowledge and values to non-western cases of common-pool resource management arises regarding the construction of subjects. In the early literature on common-property, subjects were defined in individual terms with systems of management viewed as a corresponding corporate group (Bromley 1991). From this perspective, common-pool resource theory typically offered game-theoretic explanations for human behavior in collective-choice decisions by relying on rational choice models. More recently, developing cogent explanations and models of how individuals act has required adjustments to the assumptions of rational choice models (such as full knowledge of costs or benefits) to accommodate how individuals interact with familial, cultural and social structures (Ostrom 2005). However, as Agrawal (2003) points out, the process of identifying with, and contributing to, community institutions shapes individual subjects as issues of power, status and custom play out in different strategies for managing common resources. As a result, particular cases of common-pool resource management reflect imbricate relationships between individual subjects and familial, cultural or social institutions; they are not simply a matter of relatively autonomous subjects navigating social structures.

Further, it is somewhat misleading for common-pool resource theory to draw a hard distinction between the self and the community because individuals often define themselves in relation to the community and not in individualistic terms (Brown 2008). As research regarding the formalization of community norms indicates, an individual’s relationship to the community is embedded in normative social relationships that may be undermined through the processes of explaining, codifying and regulating behavior; especially where this is done in a manner that does not account for the reciprocal social interactions that enable both the individual and the community to persist in an acceptable manner (Fernandez-Gimenez *et al.* 2008).

It is already recognized that the sphere of eligible subjects (and different types of participation) in collective-choice decisions may vary culturally depending on the weight assigned to criteria such as age, citizenship, gender and so on. Given the particulars of the case study below, we may observe that circumscribing the community of eligible participants in a manner that excludes non-humans (a priori) relies on at least two dualisms of Western thought—subject/object and active/passive. Since such thinking affects the empirical application of common-pool resource theory to non-western groups, it is directly relevant to investigate how the sphere of eligible participants in collective-choice decisions may vary in terms of non-human participants.

From an empirical perspective, the question regarding the criteria used to establish participation in the collective-

choice authorization of rights must take its cue from the notion of the “subject” that is expressed by the particular group under study. This is the case because describing the particular institutional framework chosen to manage a common-pool resource, and explaining the establishment of resource claims, requires populating the community of participants in collective-choice decisions. Consequently, the manner in which different groups identify the subjects (and define their relationships) involved in collective-choice decisions defines the boundary relevant to a particular groups’ strategy for managing resources held in common.

The next section presents a case study regarding the Inuit conception of the polar bear as a non-human person active in collective-choice decisions regarding polar bear hunting. The study challenges both issues discussed above. In regards to the first, the Inuit socio-economic system has evolved using concepts that are not readily, or accurately reducible to, Western ideas of nature, persons or resources. In regards to the second, the construction of the subject in the Inuit worldview challenges us to reconsider the relationships relevant to common-pool management exercises by expanding the community of persons beyond humans and by grounding relationships among persons in reciprocal relationships that assign an active role to all participants. Hence, while the literature already gives place to the adjustments made to accommodate the changing nature of resource availability over time and space (such as in bird migration or climate variation), we consider how well common-pool resource theory accounts for instances where the “resources” are themselves active members in determining the qualities of resource uses and in the authorization of those who may acquire rights.

Case Study: Inuit and Natural Resources

On its surface, the Inuit system of land use in the North American Arctic has elements that appear to follow a common-pool resource framework. For example, the Canadian Inuit can be divided into eight regional groups based on linguistics, culture and ecological adaptation (Damas 1968, 1972; Usher and Bankes 1986). Each group has typically been further divided into bands that defined themselves by their common geographic territory and named themselves after it, adding the suffix—*miut* meaning ‘people of’. The territorial claim was expressed through oral histories of the area as well as recent use of both land and sea ice. Permission was sought in using the territory of another group of people. Thus, although boundaries were fluid, group claims to territories were recognized.

One major difference between Western and Inuit views of common-pool resources is that Inuit do not view land and resources as ‘ownable’ things separate from human.

Rather, humans’ interactions with the environment and animals are understood as manipulating mutual relationships. In fact, many aboriginal peoples express a connection to the land based on mutual spiritual creation between landscape, humans and non-human persons (Fienup-Riordan 1990; Stoffle and Arnold 2003). Moreover, to Inuit, animals were traditionally, and to some extent still are, seen as partners in the relationship rather than objects that are solely subject to human will (Usher and Bankes 1986; Wenzel 1991; Stairs and Wenzel 1992). From this perspective, rights to the land and resources were traditionally use rights rather than ownership rights (i.e. there was no right of alienation) (Usher and Bankes 1986). Despite these features of Inuit relationships, the Inuit system of rights has previously been considered as a common-pool system in which groups of people held rights to resources (NTI 2000).

Inuit and Animals

Many hunting-gathering groups, including the Inuit, view wildlife and humans as integrated in one economic and social system with reciprocal rights and responsibilities (Usher and Bankes 1986; Fienup-Riordan 1988; Bodenhorn 1990; Nuttall 1992; Stairs and Wenzel 1992; Ingold 2000; Salmón 2000; Tyrell 2008). Maintaining proper relationships with animals through respectful hunting and distribution of hunt products is believed to perpetuate the system and ensure the flow of food and other hunt byproducts to humans (Bird-David 1990; Fienup-Riordan 1990; Stairs and Wenzel 1992).

For Inuit, hunting responsibilities include a prohibition against taking more than is needed, as well as restrictions on behavior toward, and thoughts regarding, animals (Rasing 1994). The intention to use an animal for food and to share that food with other people is key to maintaining the system (Nuttall 1992). In fact, the harvested animal does not belong wholly to the hunter; rather it is a commonly held good, subject to customary rules of distribution (Sandell and Sandell 1996; Bodenhorn 1990; Nuttall 2000). For example, Robbe (1994) discusses the Inuit division of animal carcasses in Ammassalik, Greenland. Several categories of people are considered to have consumption rights, including the ‘owner’ (*iittaa*), hunting party members (*ningertit*) and those people present when the carcass was butchered (*avitsilaartit*). Each category of person has rights to different body parts and amounts of meat and organs, which vary depending on the type of animal and the ordering of each person within a given category. Animals, as sentient beings, are believed to be aware of the proper rules for thinking about animals, hunting, and using and distributing animal products. Therefore, it is not only the humans who actually hunt that are involved in the relationship with animals. Rather, the relationship includes the interactions between the

individual hunter (or hunting party) and one animal and also the interactions between the human community and the animal community. Furthermore it assigns to animals the ability to know and respond to human thoughts, intentions and actions.

This system differs in two ways from the typical view of common-pool resources. As already mentioned, herein animals are not passive resources; they are active participants. For instance, even without a successful hunt, an individual hunter may maintain or improve social relationships between humans and animals through appropriate behavior before, during and after the hunt (as well as in other arenas of interaction with animals), and thus increase the likelihood of success in the future. Second, the Inuit, and more broadly, aboriginal, hunting system is not only a common property system in the sense of human use of physical resources, but is also a commons in terms of social and mental efforts needed to maintain the system. As we consider below, shirking one's responsibility to think and act properly is considered to be as potentially damaging to the system as not sharing physical resources. The role of animals as actors in the modern Inuit socio-economic system will be explored further using the example of the polar bear (*nanuq*), a particularly powerful and sentient animal in Inuit culture, which is also subject to Western common property management systems in the Canadian Arctic.

Inuit and Polar Bears

Inuit place polar bears in a special symbolic category not shared by other animals or other bears. This is so because polar bears inhabit both the land and sea ice, are intelligent and are human-like (Giffen 1930; Randa 1986; Trott 2006). Polar bears play an important role in Inuit stories (Nutarakittuq 1990; Metayer 1972) and serve as model hunters and male symbols and were frequently employed as shaman's helpers (Trott 2006). In some geographic areas they were subject to more ceremony before and after hunting than other animals (Hallowell 1926; Giffen 1930), and while many traditions are no longer practiced, a difference between the treatment of polar bears and other animals can still be noticed today in Inuit and related cultures. For instance, among the Inupiat of Alaska, 'regular' game is divided up and used by the hunters involved in the kill, while polar bears and whales are butchered in 'public' spaces and their meat is distributed to a wider range of people (Bodenhorn 1990). Robbe (1994) notes that the Inuk 'owner' of a polar bear carcass in Ammassalik, Greenland is termed '*nannitteq*' rather than the more general term for owner of an animal carcass, *iittaa*, while the category terms for hunting party members and those present at the butchering remain the same as for other animals.

Across the Inuit cultural area, bear hunters are held in particular esteem by their communities, above that of other hunters (Sandell and Sandell 1996), and in the Baffin region of Canada, bear hunts are carried out more solemnly than other hunts (Wenzel 1983). Polar bears are particularly dangerous and, because they are believed to understand human actions, words, thoughts and intentions, they must be treated with respect beyond that shown to other animals. As L. N., an Elder from Qikiqtarjuaq, Nunavut, remarked, "I think the polar bears are not like any animals because polar bears are the only ones that can make a decision and make a plan." (Dowsley unpublished field notes 2005, see Dowsley (2008) for data collection methodology for this and other quotes).

The special relationship between individual humans and individual polar bears and its extension to groups of humans and groups of bears can be well illustrated by a personal experience. While gathering data on polar bears and Inuit views of wildlife management in the eastern Canadian Arctic in 2004 and 2005 (Dowsley 2008), the second author of this paper was cautioned in several communities to avoid being hopeful of seeing a bear. She was warned that such thoughts could cause a bear to appear unexpectedly and harm her or others in the community. Hoping to see a bear was considered disrespectful to bears, who appear when they wish, rather than when humans want them. The bears know humans' thoughts and one might appear to 'fulfill your wish' (in an ironic way), potentially causing harm to the thinker or others. These cautions underscore the importance of the human community in the area maintaining proper thoughts regarding polar bears. The second author was, through her interest in bears, incorporated into the psychological aspect of the human community-bear community relationship. Although she was not participating in the physical aspects of the human-bear relationship through hunting or eating bear meat, her behavior and thoughts were seen as affecting the community's relationship with bears and could potentially cause negative repercussions not only for herself, but for others.

Many Inuit express the belief that polar bears are sentient and, in fact, have superior mental powers to humans in that they are psychic and can read human thoughts and intentions. For example, a common understanding of aggressive bears was expressed by D.K. a senior Qikiqtarjuaq hunter: "From what I've seen, disrespectful people have their property damaged [by bears] more than other people" (Dowsley field notes 2005). From the Inuit perspective it is clear that polar bears communicate through their actions. For example, M.N. an Elder from Qikiqtarjuaq said,

"I know polar bears have the same mind as humans. They can think for themselves and make a plan. It is like humans. When the polar bear knows the human doesn't like it, it will retaliate against the person." (Dowsley field notes 2005).

A quote from L.N., also from Qikiqtarjuaq, demonstrates how respecting the sentience of polar bears is an important aspect of maintaining the human-bear relationship,

“My mother’s father told us to never make fun or say bad things about bears. If we did they would remember us. They have minds like people and are able to sense if someone dislikes bears. They will come after you. It can also just be an aggressive bear. I strongly believe the saying that bears have a mind like humans so I am going to keep respecting them like I was taught.” (Dowsley field notes 2005).

Inuit conceive of a different relationship between polar bears and humans than between humans and other animals. The two levels of that relationship—hunter/bear and human community/bear community—are both stronger than parallel relationships between humans and other animals, at least in part because of the mental and psychic power attributed to polar bears.

Inuit and Wildlife Management

Modernization has not erased the Inuit socio-economic system regarding land use, animals or, more specifically, polar bears, but it has overlaid two other considerations: commercial use of wildlife and non-Inuit involvement with animals. While both have caused conflict in terms of the Inuit socio-economic system (Dressler *et al.* 2001; Sejerson 2001; Dowsley 2010), it is the latter that is currently more difficult to reconcile because of the differing view of animals as passive or active resources.

Wildlife management, as defined by Euro-american traditions, began in earnest in Arctic Canada in the 1960s. At its most general level, wildlife management refers to the control of human consumption of animals. Inuit and other North American aboriginal groups have often had communal hunting controls for various species, in particular ones that congregate in large numbers such as fish, geese and caribou (Riewe and Gamble 1988; Fienup-Riordan 1990; Berkes 1999). The hunting rules that provided a control on harvests depended on the ecology of the species and cultural beliefs about how to interact with it. Hunting levels were controlled not only by technology and manpower, as is generally thought, but also, at least for some species, by the quality of the human relationship with animals. These controls continue and have evolved under new circumstances today (Fienup-Riordan 1999; Zavaleta 1999). For solitary animals such as polar bears, decisions made by the animal, communication from animal to hunter, and whether the hunter made the appropriate response are considered by hunters to be determining factors in evaluating the outcome of a hunt (see Wenzel 2004; Nadasdy 2007).

Despite communal controls, increases in harvest levels during the mid-twentieth century prompted non-indigenous wildlife managers to develop quota systems for some animals. Since 1968, these quotas have been in place to manage polar bears in Arctic Canada (Schweinsburg 1981). These developments have not been without controversy. The most easily understood and frequently successful argument against particular quotas has been that scientists were incorrect in their population estimates. Inuit have stated this in reference to caribou, whales and polar bears in various areas (Riewe and Gamble 1988; Dowsley and Wenzel 2008; George 2008). However, the more subtle and less understood arguments against quotas relate to the wildlife management paradigm of considering animals as passive resources. For example, Fienup-Riordan (1990) recorded many comments by Yup’ik Eskimo elders in Alaska who complained about the way non-Yup’ik geese researchers interacted with geese, and who expressed concerns that the geese would leave because of this mistreatment.

Modern Management and Use of Polar Bears

Despite its continued importance, the position of the polar bear in the socio-economic sphere of Inuit life has changed considerably in the past century. The economic value of the animal has increased from being occasionally hunted during the pre-contact period (Freeman 1976; Schledermann 1990) to being a key food source in some communities during the 1970s (Kemp *et al.* 1977). Today, this subsistence role continues in many Northern communities (Wenzel 1991) where hunting and the eating of country food in general are considered to be important cultural activities for many Inuit (Condon *et al.* 1995; Wenzel 1995). Polar bear skins also became important in the 1970s, when they rivaled sealskins for overall economic value in some communities (Wenzel 1991). The recent introduction and development of sport hunting has further increased the value of the polar bear in the cash economy (Wenzel 2008; Dowsley 2010).

As a result of these developments, Canadian Inuit communities are now faced with decisions about how to use their group quota for polar bears each year. They must decide whether to allow a sport hunt and, if it is allowed, how many tags will be allocated to it and how it will be outfitted (privately or by the community Hunters’ and Trappers’ Organization). The remaining tags must be distributed to hunters in the community, who consistently outnumber the tags available. Communities deal with this supply-demand problem in various ways including lottery draws for tags and short tag-holding periods (Tyrrell 2006; Dowsley 2010). While Inuit appear to have adapted to the imposition of quotas on their harvesting of polar bears, as evidenced through these mechanisms and through their economically successful development of a sport hunting

industry, many Inuit are uncomfortable with the modern management system because it denies personhood to bears and conflicts with their worldview (Tyrrell 2006; Wenzel 2005; Dowsley and Wenzel 2008). For instance, when asked why might the polar bear population be decreasing? L.N.N. from Qikiqtarjuaq answered, “Because maybe they are being controlled and it is similar to retaliation” (Dowsley field notes 2005).

Aboriginal perspectives are being adapted to the modern management situation in the Inuit and Eskimo homeland of Arctic North America. For example, Zavaleta (1999) reported a nascent understanding among Yup’ik Eskimo hunters that animals are aware of management regulations and policy and monitor local human behaviour regarding these new rules. Similarly a Qikiqtarjuaq Elder (L.N.N.) stated “the polar bear knows there are seasons when humans can’t kill polar bears and if a man kills one out of season the polar bears might get mad” (Dowsley field notes 2005). As well, one quarter of Elders and hunters interviewed across three Baffin Island communities (4/16) said they supported the quota system because it was good for bear conservation (Dowsley 2007). These findings imply that not only has there been a shift in the hunter-bear relationship as a result of Western-style resource management; there have also been adaptations in the bear community-human community relationship. Interpreting these findings requires fundamental revisions to assumptions within common-pool resource management theory.

Discussion

The allocation of polar bears in Inuit culture requires revising two central ideas that assume the objects of common-pool resource claims are in passive relationships with those entitled to goods. The first concerns resource subtractability. The second concerns rights of alienation.

Inuit do not consider polar bears a subtractable resource in the same way as Western wildlife managers because Inuit and Eskimo understandings do not include a loss of natural capital if hunting is increased (Bodenhorn 1990; Fienup-Riordan 1999; Wenzel 2005; Dowsley and Taylor 2006a, b; Dowsley and Wenzel 2008). Rather, hunting in a proper fashion draws more animals to the hunter(s) and ensures a continual supply of products to humans. As a result, problems associated with resource scarcity in the allocation of goods are understood with respect to the maintenance of proper relationships with polar bears. Low hunting returns result from either, or both of, physical and psychological errors on the part of the humans.

Given that Inuit do not view resources as subtractable, one point of view on their socio-economic system might argue that it is an open-access regime rather than an

instance of common-pool resource management. However, supporting this objection would require foregoing the evidence presented above that Inuit do in fact have mechanisms for managing resources that issue from community norms for the proper authorization of resource claims. Moreover, it would require asserting the dominance (and accuracy) of a quantitative, scientific paradigm of western wildlife conservation. But, as Freeman (1989) argued, the inductive generalizations of western science offer only limited purchase on the dynamics of complex, non-linear systems. Likewise, and in contrast to scientific accounts based only on quantitative assessments of (a limited number of) variables, Peloquin and Berkes (2009) have argued that the qualitative aspects of indigenous knowledge present an alternate, and not necessarily conflicting, way to navigate social-ecological complexity in resource management. On this basis, it appears that the social and psychological norms of the Inuit—insofar as they relate to polar bears—do fall within the category of a common-pool system, yet with the caveat being that their system does not incorporate a Western view of resource subtractability.

Returning to the case at hand, the introduction of the quota system, the counting of bears through scientific studies and stating, based on these activities, how many bears could be harvested are considered by some Inuit to be arrogant, and therefore to be a psychological misstep (Wenzel 2005). Concerns over the quota system may be understood within the context of this discussion as also reflecting latent problems in the notion that resources are inherently passive, and that they may be quantified, deliberated upon and allocated expressly by human actors in collective-choice decisions. There are two issues here. On the one hand, the Inuit perspective emphasizes the qualitative aspects of properly maintaining the bear-human relationship as a key component in authorizing rights since bears give themselves to those hunters and human communities who have the appropriate qualities and maintain proper relationships. On the other hand, the quota system attempts to quantify the polar bear hunt by making the contestable assertion that the bears play no role in determining the number of total bears harvested and neither do they participate in supply/demand scenarios or types and methods of consumption.

A parallel issue to that of subtractability is evident in how Inuit view rights to alienation. Here it is interesting to note that, from the Inuit perspective, the best the quota system may do is to cover the human side of the hunter-bear relationship and, as constructed by Western managers, only the physical (i.e. consumptive) aspects of that relationship. This is the case because refusing to hunt an animal that presents itself after the quota has been filled may be considered disrespectful to the shared hunter-bear relationship (Wenzel 2004). While there is some space for

the continuation of the psychological aspects of the human-bear relationship in how the bear is treated after the hunter catches it (i.e. through appropriate food distribution networks and respectful thoughts) the purely quantitative quota system severely hobbles important psychological qualities of the human-bear relationship, such as the bear's right to decide who may hunt it and when.

This position further challenges the notion of passivity and the Western idea that the right to alienation may be exercised without consideration for the resource itself. Once polar bears are seen as actively participating in hunting activities, the right of alienation has direct social ramifications both in the obligation to take a bear that gives itself to the hunt and to allocate the portions of the bear among members of the human community. From an Inuit standpoint, accepting the Western-style right to alienation implies accepting the notion that the objects in the commons are passive and not involved in the relationships relevant to either common property considerations or collective-choice decisions. In the case of sport hunting tags, objections to releasing oneself from relationship obligations through the sale of tags or through exclusions based on the quota system reveals that polar bears are considered by the Inuit as active non-human participants in decisions regarding common pool resources and in authorizing rights regarding resource allocation.

Conclusion

The active social relationships that exist between human and non-human persons in Inuit communities raise unique difficulties in applying Western notions common-pool resource theory to wildlife management. In addition, problematizing the latent passivity of categories such as “common-property” and “common-pool resources” requires attending to the different ways in which knowledge regarding particular aspects of complex systems is produced. In short: whether we speak of “common property” or “resource units” in delineating claims to the commons we must do so by applying assumptions that transform the Earth's complex social and ecological systems into the world of social and ecological relationships of which we are a part. As a result, understanding how both quantitative and qualitative data regarding (in this case) polar bear populations articulates with policies for wildlife management presents an opportunity for learning how best to situate different types of knowledge within *both* the social and the ecological systems that acting on such knowledge will subsequently affect. In this instance, at the juncture between polar bears and wildlife managers are the Inuit themselves, whose perspective we believe offers the best opportunity for adapting common-pool resource theory to the difficulties we have identified.

From the Western perspective, biologists and managers can only offer their expertise on population models and the sustainable yield forecasts they derive from them. However, there is a pressing need to come to decisions that meet conservation demands while incorporating culturally identified reasons for harvesting and the socio-economic systems in which they are embedded. One aspect of meeting this need is to take seriously the human-bear relationships that exist in Inuit communities. This requires fostering an attitude of respectful appreciation of the active role of bears in collective choice decisions. *Prima facie* consideration of culture, however, is not enough. And numerous critiques of co-management systems across North America illustrate the difficulties of incorporating Aboriginal worldviews into Western wildlife management frameworks (Nadasdy 1999; Peters 2003; White 2006).

A second, and more concrete, modification of current systems is necessary to reach a compromise between resource conservation and non-Western cultures. In the case at hand, the system must allow hunters and polar bears more leeway to make hunting decisions instead of restricting the psychological aspects of the hunt to one-sided preparations by the hunter who has been assigned a bear through a quota system. In Nunavut Territory, a flexible quota system has been introduced which meets the conservation objective of controlling the number of animals harvested, but which differs in both spatial and temporal restrictions from conventional quotas (Dowsley and Wenzel 2008). The flexible system is based on the total allowable harvest from an ecologically defined population of polar bears over a given time period. The harvest quota is then divided among communities that hunt that population of bears (as opposed to being assigned to individual hunters as is the more conventional arrangement in Western wildlife management systems). The system allows communities to bank unused hunting tags and gives some flexibility in over-hunting the quota by allowing communities to ‘borrow’ unused tags from neighbouring communities in the same polar bear population area, or to ‘pay back’ some tags in the following year. This system encourages hunters to stay within the quota for the polar bear population area over the medium term (a 15 year cycle), but allows Inuit hunters to follow their belief systems in day-to-day practise, such as in the need to harvest a bear that presents itself regardless of how many tags were assigned for that community for that year. It also gives the communities authority over who hunts, which has the potential for allowing Inuit to address issues at the scale of the human-community/polar bear-community relationship.

In the authorization of rights, and in the production and allocation of common-pool resources, the modified quota system suggests there is room to extend the sphere of eligible participants in collective-choice decisions to

include non-human persons. We have argued that adapting and adjusting to polar bear actions and interpreting these actions as a relevant contribution to collective-choice decisions leads to several questions regarding assumptions in common-pool resource theory. However, as the flexible quota system described above indicates, the determination of which subjects contribute to decisions, and the institutions that evolve for managing resources held in common, are matters of empirical choice, not theoretical stipulation.

The longevity of the Inuit hunting relationship with polar bears is evidence that incorporating bears as active non-human participants in the socio-economic hunting system is possible. In terms of explaining such a system through Western theories of common-pool resources, or regulating it through common property regimes, the active role of polar bears in the Inuit hunting system raises several difficulties. In this paper we have discussed several issues regarding how conflicts between Western and Inuit views of polar bears may disrupt what has been a successful practice for generations. It appears inconsistent to us to argue for a new, revised version of common-pool resource theory in view of the preceding discussion. This is the case because the relationships between hunters, bears and their respective communities cannot, in good faith, be severed from the larger social, economic and cosmologic systems of which they are a part. Nonetheless, the argument implies that, in a manner perhaps parallel to the transition from “common property” to “common-pool resources,” there is a need to de-center the commons from its current reliance on Eurocentric categories of thought.

It is our opinion that the solutions to the issues raised should take two forms: The first is the call for closer attention to empirical work on common-pool resource systems, especially where the attempt is to employ a theory of management derived from Western ideas for categorizing non-Western interactions between humans, resources and the environment. As illustrated above, Inuit and their relationships with polar bears only partially fall under the Western categories. The second is to reconsider theories of common-pool resources, especially as they conceive of the divide between active versus passive relationships and individual versus community membership. From the evidence provided here, it is clear that the norms informing the choices of hunters and bears are conceived of as part of a larger community relationship—hence it is misleading to think that individual hunters, or bears, are operating as *individual* rational economizers, as many game-theoretic accounts of common-pool resources imply. For the Inuit, defining the commons is not done from a purely anthropocentric viewpoint and looks more like what Berry (1999) has described: a communion of subjects rather than a collection of objects.

Acknowledgements The authors acknowledge support for research and writing from the Social Sciences and Humanities Research Council of Canada, the Eben Hopson Fellowship in Arctic Studies at McGill University, the Government of Nunavut, the Northern Scientific Training Program, Arctic Net, and the Pierre Elliot Trudeau Foundation. The author’s also acknowledge the thoughtful insights of the anonymous reviewers.

References

- Agrawal, A. (2003). Sustainable Governance of Common-pool Resources: Context, Methods and Politics. *Annual Review of Anthropology* 32: 243–262.
- Berkes, F. (1999). *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Taylor and Francis, Philadelphia.
- Berry, T. (1999). *The Great Work: Our Way into the Future*. Bell Tower, New York.
- Bird-David, N. (1990). The Giving Environment: Another Perspective on the Economic System of Hunter-gatherers. *Current Anthropology* 31: 189–196.
- Bodenhorn, B. (1990). “I’m Not the Great Hunter, My Wife Is”: Inupiat and Anthropological Models of Gender. *Études/Inuit/Studies* 14(1–2): 55–74.
- Brightman, R. (1993). *Grateful Prey: Rock Cree Human–animal Relationships*. University of California Press, Berkeley.
- Bromley, D. (1991). *Environment and Economy: Property Rights and Public Policy*. Basil Blackwell Inc., Cambridge.
- Brown, P. G. (2004). Are There Any Natural Resources? *Politics and the life sciences* 23(1): 11–20.
- Brown, P. G. (2008). *The Commonwealth of Life: Economics for a Flourishing Earth*, 2nd ed. Blackrose Books, Montreal.
- Condon, R., Collings, P., and Wenzel, G. (1995). The Best Part of Life: Subsistence Hunting, Ethnicity, and Economic Adaptation Among Young Adult Inuit Males. *Arctic* 48(1): 31–46.
- Damas, D. (1968). The diversity of Eskimo societies. In Lee, R. B., and Devore, I. (eds.), *Man the Hunter*. Adline Publishing Company, Chicago, pp. 111–117.
- Damas, D. (1972). Central Eskimo Systems of Food Sharing. *Ethnology* 11(3): 220–240.
- Dowsley, M. (2007). Inuit Perspectives on Polar Bears (*Ursus maritimus*) and Climate Change in Baffin Bay, Nunavut, Canada. *Research and Practice* 2(2): 53–74.
- Dowsley, M. (2008). The development of multi-level governance for the management of Polar Bears in Nunavut Territory, Canada. Ph. D. McGill University, Montreal.
- Dowsley, M. (2010). The Value of a Polar Bear: Evaluating the Role of a Multiple Use Resource in the Nunavut Mixed Economy. *Arctic Anthropology* 47(1).
- Dowsley, M., and Taylor, M. K. (2006a). Community Consultations with Qikiqtarjuaq, Clyde River and Pond Inlet on Management Concerns for the Baffin Bay (BB) Polar Bear Population: A Summary of Inuit Knowledge and Community Consultations (Final Wildlife Report). Government of Nunavut, Department of Environment, Iqaluit.
- Dowsley, M., and Taylor, M. K. (2006b). Management Consultations for the Western Hudson Bay (WH) Polar Bear Population (01-02 December 2005) (Final Wildlife Report). Government of Nunavut, Department of Environment, Iqaluit.
- Dowsley, M., and Wenzel, G. (2008). “Time of the Most Polar Bears”: A Co-management Conflict in Nunavut. *Arctic* 61(2): 77–89.
- Dressler, W. H., Berkes, F., and Mathias, J. (2001). Beluga Hunters in a Mixed Economy: Managing the Impacts of Nature-based Tourism in the Canadian Western Arctic. *Polar Record* 37(200): 35–48.

- Fernandez-Gimenez, M. E., Hays, J., Huntington, H., Andrew, R., and Goodwin, W. (2008). Ambivalence Toward Formalizing Customary Resource Management Norms Among Alaska Native Beluga Whale Hunters and Tohono O'odham Livestock Owners. *Human Organization* 67(2): 137–150.
- Fienup-Riordan, A. (1988). Eye of the dance: spiritual life of Bering Sea Eskimo. In Fitzhugh, W. W., and Crowell, A. (eds.), *Crossroads of Continents: Cultures of Siberia and Alaska*. Smithsonian Institution, Washington, pp. 256–270.
- Fienup-Riordan, A. (1990). *Eskimo Essays: Yupik Lives and How We See Them*. Rutgers University Press, New Brunswick.
- Fienup-Riordan, A. (1999). Yaqluglet Gaillun Pilartat (What the Birds Do): Yup'ik Eskimo Understanding of Geese and Those Who Study Them. *Arctic* 52(1): 1–22.
- Freeman, M. M. R. (1976). Inuit Land Use and Occupancy Project (1). Department of Indian and Northern Affairs, Ottawa.
- Freeman, M. M. R. (1989). Graphs and gaffs: a cautionary tale in the common-property resources debate. In Berkes, F. (ed.), *Common Property Resources: Ecology and Community-based Sustainable Development*. Belhaven, Great Britain, pp. 92–109.
- George, J. (2008). New Bowhead Numbers Show Inuit are Right. *Nunatsiaq News*.
- Giffen, N. M. (1930). *The Roles of Men and Women in Eskimo Culture*. University of Chicago Press, Chicago.
- Glenn, H. P. (2007). *Legal Traditions of the World: Sustainable Diversity in Law*, 3rd ed. Oxford University Press, New York.
- Hallowell, I. (1926). Bear Ceremonialism in the Northern Hemisphere. *American Anthropologist* 28(1): 1–175.
- Hallowell, I. (1960). Ojibwa ontology, behavior, and worldview. In Diamond, S. (ed.), *Culture in History: Essays in Honor of Paul Radin*. Columbia University Press, New York, pp. 19–52.
- Hardin, G. (1968). The Tragedy of the Commons. *Science* 162(13): 1243–1248.
- Hess, C., and Meinzen-Dick, R. (2006). The Name Change; or, What Happened to the “P”? *The Commons Digest* 2: 1–4.
- Ingold, T. (1994). From trust to domination. In Manning, A., and Serpell, J. (eds.), *Animals and Human Societies: Changing Perspectives*. Routledge, New York, pp. 1–22.
- Ingold, T. (2000). *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*. Routledge, London.
- Kemp, W. B., Wenzel, G., Jensen, N., and Val, E. (1977). *The Communities of Resolute and Kuvialuk: A Social and Economic Baseline Study*. McGill University, Montreal.
- Locke, J. (1963). *Two Treatises of Government*. Cambridge University Press, New York.
- Metayer, M. (1972). *Tales from the Igloo*. Hurtig Publishers, Edmonton.
- Nadasdy, P. (1999). The Politics of TEK: Power and “Integration” of Knowledge. *Arctic Anthropology* 36(1): 1–18.
- Nadasdy, P. (2003). Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-state Relations in the Southwest Yukon. UBC, Vancouver.
- Nadasdy, P. (2007). The Gift in the Animal: The Ontology of Hunting and Human–animal Sociality. *American Ethnologist* 34(1): 25–43.
- NTI (2000). *Nunavut Land Claims Agreement*. Nunavut Tunngavik Incorporated (NTI), Iqaluit.
- Nutarakittuq, E. (1990). The Story of Papik and Ailaaq. *Inuktitut* 72: 42–45.
- Nuttall, M. (1992). *Arctic Homeland: Kinship, Community and Development in Northwest Greenland*. University of Toronto Press, Toronto.
- Nuttall, M. (2000). Becoming a Hunter in Greenland. *Études/Inuit/Studies* 24(2): 33–45.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, New York.
- Ostrom, E. (2003). How Types of Goods and Property Rights Jointly Affect Collective Action. *Journal of Theoretical Politics* 15(3): 239–270.
- Ostrom, E. (2005). *Understanding Institutional Diversity*. Princeton University Press, Princeton.
- Ostrom, E. (2007). A Diagnostic Approach for Going Beyond Panaceas. *Proceedings of the National Academy of Sciences* 104(39): 15181–15187.
- Peloquin, C., and Berkes, F. (2009). Local Knowledge, Subsistence Harvests, and Socio-ecological Complexity in James Bay. *Human Ecology* 37: 533–545.
- Peters, E. J. (2003). Views of Traditional Ecological Knowledge in Co-management Bodies in Nunavik, Quebec. *Polar Record* 39 (208): 49–60.
- Pinchot, G. (1998). *Breaking New Ground*. Island, Washington.
- Randa, V. (1986). Au croisement des espaces et des destins: *Nanuq*, «marginal exemplaire» Un cas de médiation animale dans l'Arctique central canadien. *Études/Inuit/Studies* 10(1): 159–169.
- Rasing, W. C. E. (1994). “Too Many People”, Order and Nonconformity in Iglulingmiut Social Process. *Katholieke Universiteit, Faculteit der Rechtsgeleerdheid*, Nijmegen.
- Riewe, R., and Gamble, L. (1988). *The Inuit and Wildlife Management Today*. IUCN Commission on Ecology and the Boreal Institute for Northern Studies, Edmonton.
- Robbe, P. (1994). *Les Inuit d'Ammassalik, chasseurs de l'Arctique*. Mémoires du Muséum National D'Histoire Naturelle (Tome 159). Paris: Editions du Muséum Paris.
- Salmón, E. (2000). Kincentric Ecology: Indigenous Perceptions of the Human-nature Relationship. *Ecological Applications* 10(5): 1327–1332.
- Sandberg, A. (2007). Property Rights and Ecosystem Properties. *Land Use Policy* 24: 613–623.
- Sandell, J., and Sandell, B. (1996). Polar Bear Hunting and Hunters in Ittoqqortoormiit/Scoresbysund, NE Greenland. *Arctic Anthropology* 33(2): 77–93.
- Schlager, E., and Ostrom, E. (1992). Property-rights Regimes and Natural Resources: A Conceptual Analysis. *Land Economics* 68 (3): 249–262.
- Schledermann, P. (1990). *Crossroads to Greenland: 3000 Years of Prehistory in the Eastern High Arctic*. The Arctic Institute of North America, University of Calgary, Calgary.
- Schweinsburg, R. E. (1981). A Brief History of Polar Bear Management in the N.W.T. Northwest Territories Wildlife Notes 2: 1–5.
- Scott, C. (1996). Science for the West, myth for the rest? The case of James Bay Cree knowledge production. In Nader, L. (ed.), *Naked Science: Anthropological Inquiry into Boundaries, Power and Knowledge*. Routledge, New York, pp. 69–86.
- Scott, C. (2006). Spirit and Practical Knowledge in the Person of the Bear Among Wemindji Cree Hunters. *Ethnos* 71(1): 51–66.
- Sejerson, F. (2001). Hunting and Management of Beluga Whales (*Delphinapterus leucas*) in Greenland: Changing Strategies to Cope with New National and Local Interests. *Arctic* 54(4): 431–443.
- Stairs, A., and Wenzel, G. (1992). “I am I and the Environment”: Inuit Hunting, Community, and Identity. *Journal of Indigenous Studies* 3(1): 1–12.
- Stoffle, R. W., and Arnold, R. (2003). Confronting the Angry Rock: American Indians' Situated Risks from Radioactivity. *Ethnos* 68 (2): 230–248.
- Stone, C. (1974). *Should Trees Have Standing? Towards Legal Rights for Natural Objects*. Avon, New York.
- Tanner, A. (1979). *Bringing Home Animals: Religious Ideology and Mode of Productions of the Mistassini Cree Hunters*. St. Martin's Press, New York.
- Trott, C. G. (2006). The Gender of the Bear. *Études/Inuit/Studies* 30 (1): 89–109.

- Tyrell, M. (2008). Nunavik Inuit Perspectives on Beluga Whale Management in the Canadian Arctic. *Human Organization* 67(3): 322–334.
- Tyrell, M. (2006). More Bears, Less Bears: Inuit and Scientific Perceptions of Polar Bear Populations on the West Coast of Hudson Bay. *Études/Inuit/Studies* 39(2): 191–208.
- Usher, P. J., and Bankes, N. D. (1986). Property, the Basis of Inuit Hunting Rights—A New Approach. Inuit Committee on National Issues, Ottawa.
- Wenzel, G. (1983). Inuit and Polar Bears: Cultural Observations from a Hunt Near Resolute Bay, NWT. *Arctic* 36(1): 90–94.
- Wenzel, G. (1991). *Animal Rights, Human Rights: Ecology, Economy and Ideology in the Canadian Arctic*. University of Toronto Press, Toronto.
- Wenzel, G. (1995). 'Ningiqtuq': Resource Sharing and Generalized Reciprocity in Clyde River, Nunavut. *Arctic Anthropology* 32(2): 43–60.
- Wenzel, G. (2004). From TEK to IQ: *Inuit Qaujimagatuqangit* and Inuit Cultural Ecology. *Arctic Anthropology* 41(2): 238–250.
- Wenzel, G. (2005). Nunavut Inuit and polar bear: the cultural politics of the sport hunt. In Kishigami, N., and Savelle, J. M. (eds.), *Indigenous Use and Management of Marine Resources*. National Museum of Ethnology, Osaka, pp. 363–388.
- Wenzel, G. (2008). Sometimes Hunting Can Seem Like Business: Polar Bear Sport Hunting in Nunavut. CCI, Edmonton.
- White, G. (2006). Cultures in Collision: Traditional Knowledge and Euro-Canadian Governance Processes in Northern Land-claim Boards. *Arctic* 59(4): 401–414.
- Zavaleta, E. (1999). The Emergence of Waterfowl Conservation Among Yup'ik Hunters in the Yukon-Kuskokwim Delta, Alaska. *Human Ecology* 27(2): 231–266.
- Zimmerman, E. (1933). *World Resources and Industries: A Functional Appraisal of the Availability of Agricultural and Industrial Materials*. Harper & Brothers, New York.