

Research

Social-ecological resilience in indigenous coastal edge contexts

Monica E. Mulrennan¹ and V eronique Bussi eres¹

ABSTRACT. Cultural edges, as sites of encounter and interaction between two or more cultural groups, tend to result in increased access to knowledge, skills, and material goods. First proposed more than a decade ago as an elaboration of the ecological edge concept, we suggest that cultural edges merit closer attention, particularly in relation to the complex histories and diverse processes of interaction indigenous communities have had with outsiders, including settlers and other indigenous groups. Our analysis is focused on the coastal Cree Nation of Wemindji, Eeyou Istchee, northern Qu ebec (Canada) where multiple ecological and cultural edges have provided increased access to harvesting resources as well as expanded opportunities for social interaction and partnerships, knowledge and technology transfer, and economic diversification. As the locus within indigenous social-ecological systems where strategies for resistance and adaptation to disturbance and change are applied, including active enhancement of edge benefits, the concept of edges contributes to our understanding of the social, cultural, and ecological processes that shape indigenous territories and contribute to enhanced social-ecological resilience.

Key Words: *cultural edge; ecological edge; indigenous; James Bay Cree; resilience; social-ecological systems*

INTRODUCTION

More than a decade ago, Turner et al. (2003), building on the long established concept of “ecological edges,” put forward “cultural edges” as a parallel concept. Similar to ecological edges, which are defined as zones of overlap and interaction between two adjacent ecosystems (Clement 1904), they proposed that cultural edges occur “where two or more cultures converge and interact” (Turner et al. 2003:439). This created “zones of social interaction, cross-fertilization, and synergy wherein people not only exchange material goods but also learn from one another” (Turner et al. 2003:440). They suggested that just as ecological edges are often associated with greater species diversity and biological richness, cultural edges are characterized by a wider variety of human interactions and opportunities. They further argued that human societies located in ecological and cultural edge settings benefit from enhanced access to resources and cultural knowledge that in turn supports greater livelihood flexibility and “an increased degree of resilience” (Turner et al. 2003:442).

Although Turner et al.’s paper has been widely cited, including several explicit references to the concept of cultural edges, only a handful of authors have taken up their invitation to further investigate the concept, and an extended critique or substantive interrogation of the concept is lacking. We suggest two reasons to account for the relatively limited attention and uptake the concept has received. First, despite its appeal at a metaphorical level, the notion of a cultural edge is more complex, dynamic, and intangible than an ecological edge. Turner et al. (2003:456) make it clear that the concept is not intended to define the limits or “boundedness” of a cultural group; the creation and maintenance of cultural boundaries has already received much attention (e.g., Spicer 1971, Barth 1998, Bashkow 2004). Instead the concept of cultural edge seeks “to explain the processes of interaction between social groups that promote the exchange of knowledge, technologies, and resources” (Turner et al. 2003:456). Unfortunately, these processes, informed as they are by shifting power dynamics across multiple spatial and temporal scales, are not readily revealed or understood.

Second, the concept of “edge effects,” as originally put forward, was understood as a positive and benign attribute of ecological systems, linked to increased vegetative diversity and biological density (Clement 1904, Leopold 1933). However, recent studies have raised concerns about the deleterious impact of increasing edge effects associated with habitat fragmentation on vulnerable wildlife species (Cronon 2014). Similarly, cultural edges can be sites of domination, injustice, and marginalization wherein one cultural group, particularly in settler-state contexts, overwhelms the other “to the detriment of the less dominant cultural system” (Turner et al. 2003:442). The history of indigenous-settler relations, defined as it is by often disturbing accounts of dispossession, relocation, and acts of “cultural genocide” (Truth and Reconciliation Commission 2015), has tended to support a widely held view that encounters between outsiders and indigenous communities were mostly harmful and negative, a perspective that may produce some ambivalence with the cultural edge concept.

We suggest that the cultural edge concept merits further consideration, particularly in the context of sites of encounter and interaction between indigenous communities and others. The former have been too often essentialized as intact, homogenized, and insular (Agrawal and Gibson 1999) while their encounters and interactions with outsiders are typically constructed as negative, marginalizing, and overwhelming (Adelson 2005, Alfred and Corntassel 2005, Coulthard 2007). White’s (1991, 2006) concept of “the middle ground” represents a departure from this characterization^[1]. Developed as an analytic tool for understanding French-Algonquian relations during the early to mid-1700s, the middle ground is defined as “the place in between: in between cultures, peoples, and in between empires and the nonstate world of villages” (White 1991:x). Its existence depended upon relations of mutual adaptation and cultural intervention rather than compromise and acculturation; that is, relations in which “whites could neither dictate to Indians nor ignore them” (White 1991:x). Unfortunately, this requirement of power equivalence has limited the portability of the middle ground as

¹Department of Geography, Planning and Environment, Concordia University, Montr al

an analytic tool (Deloria 2006). The cultural edge concept offers a revised theorization of these sites of encounter, with edges persisting in the absence of a balance of power. Following Turner et al. (2003:456), we propose that attention to “the processes of interaction between social groups” at these sites can assist us to better understand the complexity of past and ongoing entanglements that take place at the edge.

Indigenous people are not passive recipients of external agendas imposed by state and market forces. Indeed many are actively sustaining life projects (Blaser et al. 2004) embedded in local histories and grounded in distinct indigenous ontologies and epistemologies underpinned by notions of relationality (Ingold 2002). Values of respect and reciprocity are extended to all human and nonhuman entities, including outsiders, and inevitably define and shape the encounters many indigenous communities have with others. The interactions that ensue, which are of course power laden, complex, and often contradictory, warrant close attention. We suggest that the concept of cultural edges could be useful in this regard. It may have particular value in understanding and representing indigenous history as a series of encounters with neighboring and distant indigenous groups, settlers, and the state that involved interactions that were sometimes invited and welcome, but often imposed and resisted. As such, cultural edges take us beyond the middle ground to bring attention to the production of sites of contestation, dispossession, and resistance as well as sites of cooperation, assistance, and sharing, support greater consideration of local agency and, as Turner et al. (2003:456) have suggested, enrich our understanding of the “processes that impart temporal and spatial texture to peopled landscapes.”

We also find value in the compatibility of the edge concept with resilience thinking. According to Turner et al. (2003:457), “ecological and cultural edges are inextricably linked” and their presence enhances social-ecological resilience, defined “as the ability to absorb shocks and perturbations, the ability for self-organization, and the ability to learn and adapt” (456). Like others (Nadasdy 2007, Berkes et al. 2008, Cote and Nightingale 2012), we recognize that the direct transposition into social systems of a theory developed for ecological systems can be problematic, particularly in relation to issues of power and agency. For example, the ecological concept of resilience tends to be conservative and externally defined, supporting the maintenance of existing, often unjust and undesirable, systems (Nadasdy 2007, Cote and Nightingale 2012). Recent work has however highlighted that agency and self-organization is key to maintaining and managing resilience in the face of environmental and socioeconomic changes (Brown and Westaway 2011, Berkes and Ross 2013, Davidson-Hunt et al. 2017, Otsuki et al. 2018). In the context of cultural encounters, we suggest that edges, through the attention they bring to processes of interaction, e.g., exchange, competition, cooperation, conflict, and coercion, can uncover sites of agency, self-organization, negotiation, and adaptation (as well as dominance and stagnation), including differences in ecological epistemologies and attachments both within and between different cultural groups. In this context, and following Chapin et al. (2006), the focus of social-ecological resilience includes the ability of a particular group or community to sustain those attributes that are critical to the integrity of their social-ecological system in the face of change. This includes maintenance

of certain local institutions, cultural practices, knowledge, and livelihoods at the same time as being adaptive and open to the emergence, often at different scales, of new social-ecological configurations based on new institutions, resources, knowledge, and technology (Walker et al. 2004). Edges, as sites of encounter and interaction, thus become the locus within a social-ecological system for efforts to respond to disturbances and change. In resilient systems disturbances become opportunities to transform into more desired states, whereas vulnerable systems risk being overwhelmed by such events (Hughes et al. 2005).

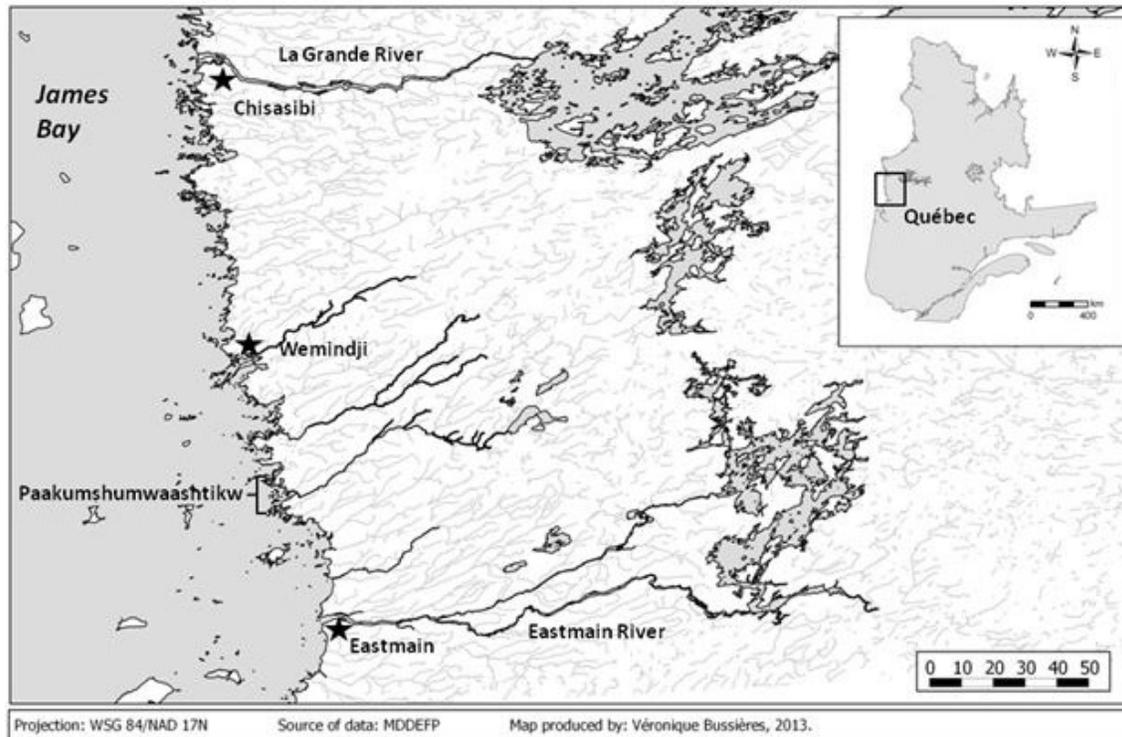
We seek to extend the analysis of Turner et al. (2003) by investigating the contribution of the edge concept in the context of one particular indigenous group’s interface with adjacent indigenous cultures as well as Euro-Canadian colonial encounters [2]. The James Bay Cree Nation of Wemindji is one of 10 communities of Eeyou Istchee, northern Quebec, Canada (Fig. 1). Located along the central eastern shoreline of James Bay, Wemindji Cree territory is distinguished by the juxtaposition of three primary ecological edges, including being on one of the most dynamic coastlines in the world. In response, Wemindji Crees have developed knowledge, local institutions, and cultural practices that have supported their exploitation of these edges, and in some cases their active maintenance of the benefits of an ecological edge, such as through landscape modifications and adaptive harvesting strategies. This in turn has supported the establishment of the coast as a “cultural edge” and locus for social interaction and exchange among neighboring Crees and Inuit, as well as other indigenous and nonindigenous groups (Morantz 1983, 1984). We suggest that the resulting enhanced access to a wider range of knowledge, technology, practices, and material goods conveyed upon the coast a particular importance and set of attachments that has defined the social-ecological character of the system over many generations.

We begin by identifying and describing the primary ecological edges that Wemindji Crees have availed of, and in some cases actively maintained and extended, to enhance their access to harvestable resources. We then examine some of the primary interactions and exchanges that have defined multiple cultural edges in the area. We describe how these provided increased access for Wemindji Crees, albeit to different degrees, to outside sources of knowledge, technology, and material goods, highlighting Cree agency in negotiating and shaping many of the associated interactions and exchanges. We conclude by reaffirming the potential of the edge concept. We believe it may have particular utility in the context of reconciliation efforts, by bringing greater and more informed attention to particular sites of encounter and negotiation that have shaped the history of indigenous-state relations in Canada and elsewhere.

ECOLOGICAL EDGES OF THE WEMINDJI COAST

Ecological edges represent “zones of transition from one ecosystem to another” and are of interest because their usually high productivity and biodiversity contribute to the resilience of the human communities associated with them (Turner et al. 2003: 440). Ecological edges not only result in increased species richness because of the presence of two ecosystems, but also affect ecological processes through enhanced species interactions (Fagan et al. 1999). Along the coast of eastern James Bay, numerous such edges occur at different scales and in relation to

Fig. 1. Map of eastern Eeyou Istchee, northern Québec, Canada.



different ecological characteristics^[3] (Cadenasso et al. 2003). We identify three primary ecological edges, the juxtaposition of which supports the cohabitation of species typical of arctic maritime, subarctic maritime, boreal, and tundra ecosystems within short distances of each other (see Table 1). The first of these represents a north-south edge, characterized on land by a transition from tundra to boreal forest and at sea by the juxtaposition of arctic with subarctic ecosystems. The former brings boreal species, such as moose, marten, and beaver into contact with caribou, a typically arctic species, while polar bears (*Ursus maritimus*) in the offshore display distinct adaptations to their presence on an Arctic-subarctic ecological edge, at the southern limit of their range (Jonkel et al. 1976). The latter edge is also evident among avian fauna with several arctic species co-occurring with bird species at the northern limit of their range (Bussi eres, Scott, Dolan, et al. 2008, *unpublished report* prepared for Parks Canada).

A second ecological edge occurs at the land/sea interface, characterized by a seaward transition from lichens, heaths, and white spruce (*Picea glauca*) forest, to salt marshes, eelgrass beds, coastal islands, and open water (Dignard et al. 1991). It supports the cohabitation of marine and terrestrial species, such as sea-dependent polar bears (also Arctic) and many marine bird species with forest-associated black bears (*Ursus americanus*; boreal, temperate) and passerine birds. Caribou (*Rangifer tarandus*), red foxes (*Vulpes vulpes*), and grey wolves (*Canis lupus*) are also found, including on some of the many offshore islands (Bussi eres, Scott, Dolan, et al. 2008, *unpublished report* prepared for Parks Canada). River estuaries constitute a third ecological edge from fresh water

to salt water environments. Both marine and freshwater species of fish are found along the east coast of James Bay, including anadromous populations of whitefish and cisco, species that are only associated with freshwater in the rest of their distribution range (Bernatchez and Giroux 2000).

Table 1. Ecological and cultural edges of the Wemindji coast.

	Ecological edges	Cultural edges
Location	Arctic/subarctic Marine/terrestrial Saline/fresh	Inland/coastal Crees Crees/Inuit Crees/Euro-Canadians
Benefits	Increased species diversity Species at limits of their distribution range Distinct species adaptation to environment Creation of distinct environments	Increased social interaction Increased access to knowledge Increased access to technology Increased access to exchange/products

There is strong evidence that human populations have for a long time taken advantage of the local increase in biodiversity created by these intersecting ecological edges. Not surprisingly the long-term human history of this rapidly changing coastal environment has been complex. Previous assessments that early boreal forest hunters lived in low population densities and were very mobile (Martijn 1969, Wright 1972) have been reconsidered based on archaeological studies elsewhere (Vaneckhout et al. 2012). Recent findings from an archaeological excavation of what was

originally a beach within a large sheltered inlet of the Wemindji shoreline suggest a similar pattern with greater population densities and lower than expected mobility during at least some periods in the past (Pendea et al. 2011). The long-term occupational history of this site, extending over 5600 years (Pendea et al. 2011), during which shoreline displacement gradually left it stranded 100 km upstream, speaks to the resilience of its occupants and their capacity to extend the benefits of an edge effect.

Active maintenance of the benefits of an ecological edge occurs through landscape modification and adaptive harvesting strategies, many of which are documented elsewhere (e.g., Scott 1986, 1988, Berkes and Folke 1998, Péroquin 2007). For example, some limited burning is used to enhance the productivity of berry patches while the construction of dykes can suppress or delay wetland succession along the emerging shoreline by creating an impoundment that supports plant species that are palatable to geese (Sayles and Mulrennan 2010). In doing so, hunters not only extend the beneficial effects of a particular ecological edge (in this case, the land-sea interface), but also maintain or at least prolong the use of established and familiar hunting sites as well as the relevance of associated place-specific knowledge and hunting strategies and other cultural commitments and attachments to those areas.

In sum, Wemindji Crees have acquired numerous benefits from their location at the juxtaposition of several ecological edges. Key among these is their access to an enhanced diversity of resources available at the intersection of multiple ecological gradients.

CULTURAL EDGES OF THE WEMINDJI COAST

Following Turner et al. (2003:440), we propose that Wemindji's diverse and dynamic coastal environment has also served as a cultural edge or zone "of social interaction, cross-fertilization, and synergy," which, similar to the resilience associated with ecological edges, has served "to promote a capital of knowledge, practice, and institutional organization that helps maintain flexibility" (Turner et al. 2003:442). Evidence for this can be found in the persistent cultural edge associated with the long-term occupation of the settlement site, mentioned above (Pendea et al. 2011). The diversity of artefacts excavated from the site, including high quality stone imported from Hudson Bay, suggests social contact and exchange in the area as early as 3000 years ago. Similarly, the presence of ceramics, decorated in a distinctive 17th century Huron pattern, indicates contact with Iroquois and Huron groups from the Great Lakes and St. Lawrence Valley while fragments of European red ware mixed with local pottery confirm that the site was still occupied after trade with Europeans began in the late 1600s (Pendea et al. 2011).

Local oral testimony, supplemented by archival records associated with former trading posts, confirms that the central east coast of James Bay was used mainly by Cree families who traded at the various coastal trading posts, including Old Factory (*Paakumshumwaashtikw*) but also Eastmain to the south and Fort George (present day Chisasibi) to the north (Ettenger 2002; see Fig. 1). During this period (late 1600s and 1700s, depending on when particular posts were established), the coast represented an active cultural edge between the three cultural groups present: Crees, Euro-Canadians, and Inuit (see Table 1).

A first edge existed for the Crees themselves, between inland and coastal families. Crees with inland hunting territories spent the winter upriver but came to the coast during the summer to trade and get provisions as well as to fish, gather marine bird eggs, and hunt waterfowl (Preston 1981). The long, narrow hunting territories of coastal Cree families gave them access to coastal and offshore resources while also allowing them to reach inland portions of their territory within three to four days of paddling. The gathering of inland and coastal families on the coast during the summer was thus a time eagerly anticipated by "coaster" and "inlander" families to exchange food and other goods, share stories and anecdotes, as well as celebrate marriages and spend time with relatives and friends (Preston 1981, Bussi eres 2005). It also supported enhanced resilience through the sharing of hunting opportunities.

Various activities linked to fur trading established a cultural edge between eastern James Bay Crees and Euro-Canadians. This relationship dates back to the early fur trading period of the late 1600s and early 1700s (Helm et al. 1981, Denton 2001), and is embedded in colonial dynamics of power, present in all exchanges between indigenous groups and Euro-Canadians during this period (Morantz 2002). For the Crees of Wemindji, *Paakumshumwaashtikw* (Fig. 1) became a hub of activities linked to fur trading between 1935 and 1958, with the establishment of two trading posts (one from the Hudson Bay Company [HBC] and the other run by an independent trader), an Anglican Church, and a Catholic mission house as well as a school. "[F]urs from the Indian for the products of Western technology" (Helm et al. 1981:146) formed the basis of this cultural edge. However, much more than pelts and material goods were exchanged; various cultural practices, knowledge, skills, and languages were shared, with significant implications for Cree society, culture, economy, and spirituality (Helm et al. 1981, Francis and Morantz 1983, Morantz 2002). According to Feit (2004:99), traders depended on Crees "for love and companionship," with "country wives" and families common while traders were in the region. Indeed, the expectation of reciprocity in relations was such that a rare outbreak of violence in 1832 in the south end of James Bay, known as the Hannah Bay massacre during which a party of Cree Indians murdered the occupants of the Rupert House outpost, occurred because of starvation and what Crees regarded as unsympathetic treatment by the postmaster (Francis and Morantz 1983).

Although the fur trade brought Crees into a sustained economic relationship with Western society, the resulting "nexus induced accommodations and adjustments in aboriginal patterns of man-to-man and man-to-nature relationships rather than an overthrow of them" (Helm et al. 1981:157). Exposure to edge effects varied from family to family, as well as along gender and generational lines. Some coastal families, particularly those whose hunting territories were adjacent to the post, chose to establish close ties to the trading post and thus had regular contact with European traders, carpenters, and missionaries. Others limited their connection to brief periods of labor for the HBC during the summer months (Helm et al. 1981). Similarly, men, because of their activities as hunters and trappers were in regular contact with traders while women, through their responsibilities of care for children, often had more sustained relations with the missionaries who supplied medication and taught their children at school. These differences in edge exposure within Cree society

produced often marked differences in opportunities to access enhanced levels of social interaction as well as new knowledge, skills, and goods. They also allowed some families and individuals to remain beyond the reach of outside forces for longer periods than others, with implications for the maintenance of language and tradition within Cree society.

During this period, the coast also functioned as a cultural edge between Crees and a number of Inuit families living on Cape Hope Islands, located southwest of *Paakumshumwaashtikw*. This edge was purposefully created (Turner et al. 2003) because Inuit usually inhabit more northern portions of Quebec but moved into the Wemindji area when they were hired by the HBC to perform certain jobs, such as making sealskin boots (Morantz 2002) and furniture for the Anglican Church (Freeman 1983). According to Freeman, relations between Crees and this Inuit community were harmonious, similar to the situation reported by Patrick (2003) in Fort George further to the north, and all Inuit spoke the Cree language^[4]. The former presence of Inuit in this area is reflected in several inukshuk and burial grounds on Cape Hope Islands, as well as in local oral history (Abbot 2013). More importantly, this edge, through the exchange of Cree and Inuit knowledge, skills, and technologies enhanced the resilience of both groups. Through invitations to join each other on hunting trips, Inuit learned how to trap beaver and harvest geese, while Crees adopted dog teams and learned from Inuit how to harvest the large quantities of seals, beluga, and cod required to feed them. This included the borrowing and copying of sleds, harnesses, sealskin boots, and other technology not previously known to Crees (Helm et al. 1981, Morantz 2002, Patrick 2003).

After three decades of intensive fur trading activities, *Paakumshumwaashtikw* lost its significance as a cultural edge in the 1950s. Several factors account for this, including increasingly difficult boat access due to coastal emergence, and unsanitary conditions (shortage of wood and drinking water as well as spread of diseases during the summer months; Morantz 2002). In the late 1950s, the federal Department of Northern Affairs gave Crees the option of joining Eastmain House, located 45 km to the south, which some did, while approximately 300 people elected to move to a new site, some 40 km to the north, at a sheltered location with a deep harbor on the shore of the Maquatua River (Morantz 2002). The HBC store, mission, and other facilities were relocated in 1958 establishing what is now the town of Wemindji. Two years later, the Inuit community at Cape Hope was forced by the federal government to relocate even further north to Kuujjuarapik (Great Whale River; Freeman 1983, Morantz 2002), effectively dissolving that particular cultural edge.

The establishment of the town of Wemindji represented a dramatic expansion of the cultural edge that had been maintained between Euro-Canadians and the Crees through the fur trade. This included the progressive integration of Wemindji Crees into the modern economy, requiring Crees to adopt a more sedentary lifestyle and resulting in a significant population increase, from about 350 people at the time of relocation (Morantz 2002) to a community of more than 1400 inhabitants currently (Cree Hunters and Trappers Income Security Board 2013). This could represent a regime shift, driven mostly by exogenous factors, both environmental (coastal uplift) and political (pressure from the federal government to settle down), but shaped by Cree agency

in their choice of where to relocate and what to prioritize. Although these changes impacted the traditional way of life, often undermining local knowledge and customary values, Crees also availed of a range of opportunities, presented by this newly established cultural edge, to rebuild and sustain their resilience in this new regime. This included the maintenance of certain cultural attributes (language, practices, etc.), organizational structures and institutions from the former regime they deemed fundamental to their identity as Cree people. This is consistent with Spicer's (1971) perspective on persistent cultural systems, wherein oppositional forces between smaller nations in the face of dominant (often colonial) states create a sense of internal solidarity that further supports the maintenance of such characteristics.

At the same time, access to new knowledge, skills, practices, and technologies facilitated the transition of Wemindji Cree to what John Lutz (2008) refers to as a "moditional economy." This included elements of modernity at the same time as allowing Crees to maintain aspects of their culture and customary way of life. For example, the adoption of motor boats and snow mobiles by most Cree hunters as they became more sedentary and more concentrated in a village settlement, provided access to the land for shorter periods thereby supporting a balance between engagements in the wage economy and spending time on the land. Here again, some individuals chose to remain in a more customary production mode, while others took on full time jobs, a decision sometimes based on personal preferences and other times based on available opportunities. New technology also provided the added benefit of facilitating regular access to more distant hunting territories and in so doing helped maintain customary institutions of management while spreading the harvesting effort of an increasing population over a wider region. This process of appropriating and adapting western commodities and relations to local indigenous modes of production and ways of life is consistent with Sahlins' idea of the "indigenization of modernity" (1999:x, xviii). It also highlights Cree agency in negotiating and shaping the exchanges that take place at this cultural edge, rather than being passive recipients of dominant neo-liberal and modernizing forces.

Not all aspects of this edge have been positive, however. Indeed many interactions at these sites of encounter have been negative, mixed, and/or difficult to fully assess; the degradation of Cree lands and loss of tradition linked to the James Bay hydroelectric project and the experience of the Residential School system being the most widely documented of these (Niezen 1993, Roué 2006, Truth and Reconciliation Commission of Canada 2012). Until recently, occupational and leadership roles have been grounded in life lived on the land with the greatest threat to Cree values and way of life coming "in the form of unparalleled pressures and inducements towards urbanized standards and styles of living" (Helm et al. 1981:157). Tensions between such threats as well as opportunities Crees might engage occur along increasingly complex and overlapping sets of cultural edges that Crees endeavor to manage often in partnership with members of non-Cree society. This includes responding to intrusions upon their traditional territory, such as those linked to development (mostly hydro-electric and mining) and resource harvesting by sports hunters (Scott 2001, Desbiens 2013). Their response draws upon a diverse "adaptive repertoire" (Turner et al. 2003:456) that

integrates fundamental elements of their customary system with a wider suite of contemporary mechanisms, including various strategies of resistance and accommodation, e.g., protected areas, language programs, and support for customary subsistence activities, as well as international discourses of environmental protection and indigenous and human rights.

Some recent encounters involving industrial scale developments and new political engagements with the state and global markets have undermined and at times overwhelmed the resilience of this social-ecological system, leaving Cree social order and sets of relations eclipsed and more constrained. However, Crees have adopted institutions and modalities of being in the colonizing system that have secured their position as a political nation and cultural group and given them a level of economic well-being, public infrastructure, and institutional flexibility at regional and local levels that in turn supports their capacity to mobilize, self-organize, and innovate (Feit 2004, Atkinson and Mulrennan 2009). The extent to which they can continue to defend and sustain land-based activities and ecological attachments that define the resilience of the social-ecological system remains to be seen.

DISCUSSION

We investigate the contribution of ecological and cultural edge concepts to our understanding of social-ecological resilience. We build upon the analysis of cultural edge effects provided by Turner et al. (2003), drawn from examples of convergence and interaction between indigenous groups from several regions of Canada. Focusing on the particular experience of one indigenous group, the coastal James Bay Cree Nation of Wemindji, northern Québec, we extend the cultural edge concept to include a consideration of settler-indigenous relations as well as relations with neighboring indigenous groups. Unlike Turner et al. (2003:442), who suggest that “[a] globalized industrial culture interfacing with a traditional indigenous community will probably subsume it, to the detriment of the less dominant cultural system”, our case demonstrates Cree agency in negotiating and shaping the interactions and exchanges that take place at the cultural edge, allowing them to maintain their cultural identity and the resilience of their social-ecological system.

Our analysis supports the application of the three fundamental propositions put forward by Turner et al (2003: 442):

1. The Cree community of Wemindji benefits from association with and exploitation of ecological edges. This is achieved through increased access to a diversity of subsistence resources, which results in greater flexibility and social-ecological resilience.
2. Similarly, cultural edges have provided greater opportunities for social interaction and exchange of knowledge, skills, and material goods, which in turn have supported an increased level of resilience.
3. Wemindji Crees have sought to expand their use of ecological and social edges. The former is achieved through landscape modifications and adaptive harvesting strategies, while the latter has involved subjugation and resistance, as well as appropriation and adaptation of outside knowledge, commodities and relations to Cree priorities and ways of life. Both sets of edges were found to be purposively created and maintained affirming the agency of Crees in upholding social-ecological resilience.

We acknowledge that cultural edges “may be more complex for us to understand than ecological edges” (Turner et al. 2003:457) and that a fuller account of their application requires a more fine-grained treatment than we have provided here. We also recognize that our case analysis precludes a demonstration of the comparative benefits of edge effects relative to cases where they are more or less prominent. Neither do we offer comparison of the relative degree of resilience of different communities because this would preclude “a deeper understanding of system dynamics needed to apply resilience thinking and navigate a turbulent world” (Folke 2016, para. 47). Given the complexity of local social-ecological contexts and histories of encounter, we are not convinced of the value of such comparisons. Instead we endorse the cultural edge concept as an alternative perspective for gaining insight into these histories and for appreciating the multiscale, cross-cutting sets of interactions and exchanges as they play out for different individuals, families, and groups within and beyond the community.

We believe that the cultural edge concept can contribute to and extend existing analytic frameworks for understanding indigenous-settler relations, as well as relations between indigenous groups. The earliest of these was Frederick Jackson Turner’s (1893) theory of the frontier, which was defined as a meeting point or cultural intersection and differed from borders and boundaries in being flexible, shifting, and contingent. According to historians Howard Lamar and Leonard Thompson (1981:7), “[a] frontier ‘opens’ ... when the first representatives of the intrusive society arrive; it ‘closes’ when a single political authority has established hegemony.” For them, the frontier is “a zone of cultural interpenetration” (1981:7), a region where indigenous peoples and intruders encountered one another and where one group eventually imposed political and economic dominance over the other. Examining the complex interactions between white settlers and Afro-Cuban slaves around tobacco and sugar production in Cuba in the early 20th century, Fernando Ortiz (1995, initially published in 1940) proposed “transculturation” to integrate the concept of acculturation, which is unidirectional, with deculturation and neoculturation or the production of new culture as a result of the “creativity of cultural unions” (Coronil as cited in Ortiz 1995:xxvi).

Decades later, Richard White (1991, 2006) introduced the concept of the middle ground, which shed further light on cross-cultural interactions. According to White, the middle ground was established during a specific period (early to mid-1700s) in which French traders and colonizers were in a relationship of interdependence with Algonquians of the Great Lakes. Because neither group could assert effective control or dominance over the other, both sides were required to negotiate, accommodate, and acknowledge new rules and rituals that were of mutual invention, with intermarriage as the primary means to reinforce trade and diplomatic alliances. White maintains that the existence of the middle ground depended on a balance of power that was sufficient to preclude the dominance of one group by the other. Despite the appeal of the middle ground concept and its value in drawing attention to the possibility of new cultural production within the frame of the encounter, the requirement of power equivalence has limited its portability (Deloria 2006). Others, such as Promislow (2012:46) based on her analysis of intersocietal norms that supported relations between traders and the Dene at Fort Good Hope, refutes the application of White’s middle

ground (citing the distortions of historical records) to suggest instead “that in trading contexts, indigenous legal and political systems were not just left intact, but provided the operative norms for indigenous-newcomer relations.” Interestingly, according to Valcárcel Rojas et al. (2013:23), transculturation allowed space for “change, loss and acquisition of new elements” in ways that “more recent categories of colonization [such as the middle ground] do not adequately describe.”

More recently, attention has shifted to the concept of “borderlands” in part for its ability to address the presumption of order and simplicity inherent in most frontier histories (Aron 2016). This includes countering naïve notions that a single indigenous group maintained exclusive possession and use of a clearly bounded territory rather than the highly contested and overlapping claims that migration, trade, and intermarriage between indigenous groups inevitably produced. Likewise, the portrayal of invaders as monolithic entities under the strict control of distant empires understated the different and often competing interests of the colonial powers, and the resulting complexity of the entanglements that defined indigenous-settler relations. Unfortunately, border scholars tend to have limited awareness of the subtlety of indigenous notions of territory, which diverge from official state constructions but remain a powerful part of lived realities of indigenous peoples (Tagliacozzo 2016).

We propose that the cultural edge offers several advantages over existing frameworks. First, its application is not limited to a particular place or time (unlike the frontier). Indeed, our analysis, which extends from the earliest human history to contemporary time, demonstrates that the cultural edge has broad application across multiple spatial and temporal scales and across a range of encounters, including relations with other indigenous groups as well as traders, explorers, and missionaries but also contemporary relations with the state, markets, and other external agents. Because the dispossession and marginalization of indigenous peoples, as well as their resistance and resurgence has not and does not occur evenly, completely, or at any single point in time, the flexibility of the cultural edge and its capacity to accommodate multiple overlapping encounters as they interact and play out over time and space for different individuals, families, and groups, is a valuable contribution.

Second, cultural edges are associated with a wide range of possible relations and can be positive or negative depending on the balance of power. Unlike the middle ground (White 1991, 2006) that erodes and ultimately dissolves under conditions of uneven power, cultural edges can persist even under uneven power dynamics. As such, the cultural edge concept offers the possibility of an alternative theorization of the workings of power in cross-cultural situations, one that goes beyond physical forces to take account of complex cultural and ideological dynamics (Deloria 2006). Moreover, the middle ground concept has suffered from misinterpretation and misreading, often being incorrectly characterized as a zone of compromise rather than adaptation and new cultural production. The edge concept includes the possibility of both. Indeed, our extension of the cultural edge concept to a settler-indigenous context, with multiple overlapping edges, confirms its robustness.

Third, the cultural edge shifts our thinking away from the tendency to consider the indigenous world as a traditional world endeavoring to maintain itself unchanged or eroding under the influence of outside pressures (Griffiths 2017, *unpublished manuscript*). Too many historical accounts relegate indigenous peoples to the margins, a distortion supported by overreliance on text-based records. Additionally, several other approaches, including Spicer’s (1971) on persistent cultural systems and Barth’s (1998, originally published in 1969) on ethnic groups and boundaries, have focused on the traditional aspects of cultural groups, precluding opportunities for adaptation, reorganization, and new cultural production. Cultural edges can thus address a need to historicize the past (Butler 2006) while also privileging indigenous peoples’ actions and agency. Developing analytical approaches that highlight indigenous agency, adaptive capacity, and self-organization in maintaining cultural and social-ecological resilience in the face of colonization is essential. We suggest that social-ecological resilience is not simply an outcome of particular political structures and processes, but rather that it is actively sought, enhanced and nurtured. One locus of such action are cultural edges, and over time, the superposition of several ecological edges with multiple cultural edges has contributed to increased social-ecological resilience.

Finally, in contrast to existing frameworks developed mainly by historians and anthropologists that take limited account of the ecological context, the cultural edge concept interacts with the parallel concept of ecological edges and aligns well with social-ecological systems thinking. Edge effects by taking account of ecological dynamics and linkages as well as agency and relationality, can bring attention to connections, including to nonhuman worlds, that are fundamental to indigenous ontologies.

CONCLUSION

In conclusion, we affirm the contribution of the cultural edge concept to resilience thinking, specifically to the continuity and integrity of indigenous social-ecological systems. Colonial histories throughout the world have created marked cultural edges between indigenous peoples and settler societies, often defined by decades and sometimes centuries of conflict, resistance, adaptation, and change. For indigenous peoples, being resilient can mean protecting aspects of their social-ecological systems that they consider fundamental to their worldview, identity, and livelihood, while also availing of the benefits of modernity and various Western social, technological, and economic opportunities. As the locus within indigenous social-ecological systems where efforts to respond to disturbance and change take place, we believe the cultural edge holds some valuable analytic potential. It is where strategies for resistance are applied, it is where learning and adaptation of cultural practices occur, and it is where local agency is expressed, within a specific institutional system, to shape those responses.

[1] White’s concept of “the middle ground” was subsequently critiqued and elaborated by Bohaker (2006), Deloria (2006) and Sleeper-Smith (2006) in a collection dedicated to the concept.

[2] Although these encounters are loosely referred as indigenous-settler relations, it is important to note that colonialism in

northern Canada took the form of extractive rather than settler colonialism. In the James Bay context, the focus of the colonizers was on acquiring beaver fur. Extractive colonialism, which typically did not involve large scale settlement of colonizers, was characterized by a greater dependency of colonizers on indigenous inhabitants and frequently involved intermarriage between the two (Shoemaker 2015).

^[3] Although almost all indigenous communities are situated along major ecological edges (such as rivers, lakes, and oceans), Wemindji is distinctive in being located at the nexus of three primary ecological edges.

^[4] Although conflicts between Inuit and First Nations have been documented elsewhere (e.g., Fienup-Riordan 1986) and earlier on in eastern James Bay, there is much evidence that by the late 19th and early 20th century, Crees and Inuit lived as peaceful neighbors (Patrick 2003, Bussi eres 2005).

Responses to this article can be read online at:
<http://www.ecologyandsociety.org/issues/responses.php/10341>

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