

Fishing

Summary

The anthropology of fisheries is a core focus of maritime anthropology. Scholarship in this field is multifaceted, exploring fishing ways of life, fishing knowledge, marine tenures and economies, the gendered nature of fishing, how people cope with danger and risk, and the specificities of how this particular watery nature is manifested in social, political, and cultural systems. Fishing can be defined as a productive activity that takes place in a multidimensional space, depending more on natural or wild processes than manufactured processes. The idea of fishing being closer to nature is an analytical thread, giving the anthropology of fisheries a particular edge on the multispecies and more than human ethnographic turn in contemporary anthropology. Research in fisheries anthropology has long held the connections between fisher and fish to be of central concern. Significant too, however, is the thesis that the construction of commodity fisheries as a natural domain, of which fishers are atomistic extractors to be managed, is a highly politicized process involving the bioeconomic creation of fish stock and broader political economies. Anthropological research on fisheries engages critically with neoliberalizations, the extension of privatizations, and the proliferation of industrial aquaculture, thus challenging Blue Economy attempts to reconfigure nature–culture relationships and reposition the marine environment as a locus for the enactment and perpetuation of inequality.

Keywords

fisheries, marine tenure, nature–culture relationships, fisheries management.

The Field of Fisheries Anthropology

The anthropological study of fisheries is a diverse and complex topic that has yielded a substantial body of literature providing rich ethnographic insights into distinctive marine ways of life and has intervened theoretically in major debates in the discipline. Maritime anthropology, the broader framing for fisheries anthropology, has been concerned historically with the lives of people who live by, off, and with the sea. It includes detailed studies of fishing communities, explores the tension between individualism and communalism, the gendered nature of work, and the prevalence of risk, danger, rites, and rituals in fishing ways of life. Key research themes include local and indigenous marine environmental knowledge and practices, the existence of territoriality and sea tenure, as well as nuanced accounts of the changes occasioned by the imposition of new fisheries management regimes and technologies. Since at least the beginning of the 21st century, a great deal of research in this field reflects the broader focus of environmental anthropology and the growing interconnection between the sciences of conservation and management and the social sciences (McCay 2001). Increasingly, anthropologists working in marine environments tend to do so as part of an interdisciplinary team.

Theoretically, the anthropology of fisheries has advanced understandings of property rights and relations, neoliberalization, financialization, governmentality, as well as nature–culture relations, positing, for instance, the existence of a “saltwater sociality” (Schneider 2012). Fisheries are critical sites for the study of interconnections linking social and ecological processes (Moore 2012). Conceived as closer to nature, fisheries anthropology has an analytic tradition “explicitly or implicitly concerned with what there is about a wet and fishy productive regime that defines the social, cultural, and economic life of fishing communities” (McCay 1978, 397). A crucial insight is that human interaction with the sea environment is mutually constitutive, that the sea is a place lived in and created by people, and that the boundaries that

constitute ecosystems, fishing grounds, marine zones, and human and non-human species are dynamic and permeable (King and Robinson 2019).

Much of the early scholarship on fisheries focused on addressing a gap in the anthropological record and an inherent bias in fieldwork toward terrestrially based study. Smith highlights the neglect of maritime communities in the anthropological literature, noting that “even societies which depend on marine exploitation for a major portion of their annual subsistence often have this focus noted only in a footnote” (1977, 2). Blount (2005) links the historic marginal status of fishing in anthropology with the marginal status of fishing as a subsistence strategy, while Pálsson argues that evolutionary classificatory labels, such as hunter-gatherers, agriculturalists, and pastoralists, are still with us, rendering fishing a curious taxonomic misfit (1991, 23). Indeed, Langdon’s (1979) comparison of Tlingit and Haida adaptations to the Northwest Coast of North America importantly critiqued hunter-gatherer typologies of the time. Langdon convincingly argues against conventional assumptions connecting salmon abundance to cultural uniformity and simple technology in Northwest Coast groups. Instead, he emphasizes the importance of local cultural variations, including the species of Pacific salmon available and the potential consequences of this for food production and population size within what appears to be similar natural settings.

That fisheries and ocean environments are gaining greater traction in contemporary anthropology is tied to the acceleration of property rights and commodifications in this “last frontier”—privatized fishing rights, marine protected areas, aquaculture sites, deep-sea mining permits, biotechnological enterprises, and so on—and an increasing theoretical interest in exploring human–non-human relations and the connectedness of all life forms that has arisen in the context of the Anthropocene (Harraway 2015; Tsing et al. 2017). This emergent interest rearticulates with an historic focus in fisheries anthropology on the relationship between people and fish.

The earliest ethnographic studies, focused on “primitive” fishing tools, mythologies, and other exotica, were primarily concerned with recording a presumed to be disappearing way of life (see, e.g., Firth [1946] 2006; Fraser 1960; Norbeck 1954). Smith’s edited collection was an important intervention, calling for a focus on human interactions with the sea environment, the exploited biomass, and macroeconomic political systems (1977, 12). Her understanding of tradition, unlike earlier salvage accounts, was premised on the dynamic nature of culture such that innovations may soon be incorporated as deeply held cultural traits or alternatively rejected as incommensurable with existing values, a dynamism illustrated by Johannes’ (1981) depiction of the adoption of underwater flashlights by Palauan spear fishers to expand their night-time marine world, although also in McCormack’s research with Māori wherein an expert commercial fisherman, eschewing the prevalence of modern fish finding technology, insisted on relying on his embodied knowledge to locate his ocean harvest.

Acheson, in an annual review of the field (1981), points out that fishing poses similarly unusual constraints and problems the world over and that anthropologists studying fishing have contributed significantly by focusing on the way that people have adapted to earning a living in an uncertain and risky environment. The anthropology of fisheries is particularly concerned with the lives of small-scale fishers, indigenous fishers, and other often marginalized coastal and sea dwellers who make their livings, however tenuous, from the oceans. It is responsive to the impacts on these groups of broader changes in the political economy of fisheries management as well as the imposition of development goals and, thus, has an important applied and public value. Magnus Course, for instance, highlights the distress marine-protected area enclosures cause for Scottish Gaelic fishermen; these generational fishermen have little other employment options and care passionately about the health of their “fathers’ sea” (Course 2018; see “Links to Digital Materials”).

Dangerous Nature

The sea is often conceived as a nature fundamentally beyond human control. Indeed, fishing is demonstrably one of the most precarious livelihoods undertaken by humans (Andersen and Wadel 1972; Fricke 1973; Smith 1977). Weather forecasting, for instance, is a much more tenuous activity for fishers than for those engaged in land-based economic activities. While this danger is related to the very ontology of ocean environments, it also has a social origin. Modern vessels and technologies have changed the hunting nature of fishing, mitigated against sudden changes in weather conditions, and made visible underwater worlds. These materialities are, however, unequally distributed between small- and large-scale sectors, subsistence, customary, recreational, and commercial fishers and the Global North and South. And, irrespective of these developments, boats still sink, founder, and crash; indeed, deep-sea fishing remains the most dangerous of occupations. That this risk is also human-made is apparent from reports on poor safety standards, old and decrepit vessels, unscrupulous owners, blacklisted flag registries, piracy, and near slavery on-board vessels (Couper, Smith, and Ciceri 2015; Stringer et al. 2014). Klepp's (2011) work on the attempts by fishermen to rescue migrants and refugees crossing the Mediterranean Sea provides an insight into an additional emergent risk.

The danger inherent in ocean environments may be symbolically condensed in the species of great white sharks, and in Australia, this is most spectacularly the case. Considered representative of nature in its most aggressive and destructive form, great whites, as conceived by fishers, are emblematic of a violent and brutish nature. Fishers, as competitors in an ocean environment, have negligible room for romanticism, not only losing catch to these predators but sometimes their lives as well (Peace 2009, 2015). Dismissing the discourse of environmentalists on sentient non-human beings and positioning themselves as experts, Australian commercial fishers and abalone divers have called for the reintroduction of a cull of great whites. Integral to this narrative is a speciesism "remorselessly targeted at the great

white” (Peace 2015, 6). Explicit also is the construction of great whites as a primordial creature, unaffected by the extinctions suffered by other mammoth beasts, with its size, intelligence, and demonstrable killing capacity accounting for its exemption from evolutionary progression.

Perhaps as a consequence of the danger inherent in fishing, it emerges as a highly ritualized productive activity with attempts to manage the environment being, in many cases, mediated through ritual rather than technology (Ram-Bidesi 1991). Such rituals are directed at controlling nature (McGoodwin 2001) as a means of assuaging the anxiety associated with the uncertainty of catch (Malinowski 1922; Pollnac, Poggie, and VanDusen 1995; van Ginkel 2007) and may arise as community affairs to ensure the fertility and safety of the ocean on which members depend (Bavinck 2015). Malinowski, comparing the lack of magic associated with Trobriander lagoon fishing with its extensive use in open sea fishing, suggests that humans cope with irreducible risk through ritual and magic to secure safety and good results (1922). Meanwhile, Bavinck identifies “religious fervour” as a prominent feature of fishers’ lives (2015, 89). Rituals may take on a gendered purity and pollution distinction such that women are prevented from having contact with boats or boat construction in Pulawat (Gladwin 1970) and Galilee (Poggie and Gersuny 1974) or with men before fishing trips in Ifaluk (Burrows and Spiro 1953) and Ulithi (Lessa 1966). Similarly in Aotearoa (New Zealand), Forde finds that menstruating Māori women are discouraged from fishing, gathering seafood, or being below the high tide mark on the beach. In Tonga, Johannes (1981) reports that the sea is thought to be a jealous woman, one who does not like the presence of other women.

Perceived as a liminal space, the sea requires rituals to be performed before entrance and on exit. The Mataw fishers of Batanes, the northernmost islands of the Philippines archipelago, start their summer seasonal fishing with a rite involving the distribution of the meat of a sacrificial pig (Mangahas 2010). This ritual is carried out by a particular vanua, where vanua refers to a spatial port as well as a social grouping of people headed by a lead fisher. The vanua

is perceived as apart, a sacred or sensitive place, “supercharged by taboos,” where “careless” behavior is deemed inappropriate (Mangahas 2010, 88). At the end of the fishing season, the vanua is dismantled, the concluding ritual emphasizing that the fisher is now on his own.

Certain species of fish may attract heightened ritual attention as well as ceremonies to conclude the liminality associated with catch. In Palau, shark fishing in the open ocean is confined to a few prestigious specialists who fish at the behest of chiefs, their prestige relating to the romance and danger associated with capture. Such fishers are distinguished by a special tattoo on their wrists (Johannes 1981). Sharks are lured close to canoes where, once their snout reaches the fisherman’s tattoo, they are captured by a hibiscus fiber noose. The completion of shark catching trips are ritually marked and include the construction of an almond shark sculpture up to three feet high and eight feet in length.

Helmreich highlights the analytical pitfalls in constructing the sea as universally dangerous. He argues that threaded throughout the “sea as dangerous” literature is a separation of land and sea, nature and culture, such that as wild nature, the sea requires humans to exercise ritual control. The idea that the sea is unbounded and fluid prior to its enclosure in culture is, he argues, a historically particular view unshared by, for instance, Oceanic peoples. As described in Hau’ofa’s (1993) canonical essay, people in Oceania experience “a sea of islands” and the “ocean in us.” Helmreich also critiques the influence of Malinowski’s functionalist canon in these accounts: “oceanic vagaries produce urgency, which in turn produce a certain kind of ritual engagement” (2011, 11).

Individualism and Communism, Globalization, and Class

As a way of life, fishing communities as well as individual fishers have been described as exhibiting both strongly communal and individualistic tendencies, a contradiction theorized as

inherent to the nature of their work, which requires people to cooperate and, simultaneously, to compete against each other. Mauss and Beuchat's classic work, *Seasonal Variations of the Eskimo: A Study in Social Morphology* ([1979] 2013), describes how Eskimo [sic] society disperses and concentrates according to the hunting and fishing season. In the summer, Eskimo are isolated and scattered, acting individualistically, keeping their kill and having no obligation to share with others outside the immediate family. In the winter, however, when the area available for hunting is much more than in summer, a collective conscience in a Durkheimian sense reasserts itself. Strict rules come into play concerning the distribution of food so that it is shared on a collective basis within a community. This thesis on Inuit society is, however, critiqued as deterministic in its foregrounding of material and technical constraints and as reductive in its modeling of fishing as something that takes place in nature, that is, outside society (Pálsson 1991, 39).

Other authors emphasize the characteristics of fishers as people who are deeply proud of their fishing identity, value self-reliance, independence, freedom from regimentation, and who welcome a sense of challenge (McGoodwin 1995). This self-sufficiency is seen as especially vital for seafaring fishers who must be able to make critical decisions without assistance, as situations demand (Poggie and Gersuny 1974; Poggie and Pollnac 1988). Conversely, Nightingale (2011), in her work on Scottish inshore fishermen, shows that cooperation is crucial and that this is embedded in alternative rationalities such as emotional attachments to communities and sea, that is, rationalities not entirely subsumed by competitive individual forces. Gentlemen's agreements exist, for instance, whereby fishers divide up fishing grounds in order to share the resources, and information about weather conditions is communicated widely among fishermen, enabling a collective run for the shore if conditions deteriorate. Further, this cooperation exists irrespective of popular local beliefs that fishermen do not cooperate (Nightingale 2013). Acheson's research on the lobster fishermen of Maine similarly

emphasizes the social dimension of fishing. He writes, “ties with fellow lobstermen, the ability to negotiate with lobster dealers, and the sharing of certain skills” are as crucial to survival as any technical skills (1988, 1). This communality, however, is in a complex interactive dance with competition, secrecy, and self-interest.

For fishermen who are unattached to natal communities and participate in a global fishing industry, a different sociality pertains. Derks’ (2010) work on Cambodian migrant workers in the Thai fishing industry challenges the egalitarian relations among fishers that anthropologists tend to find elsewhere. Thailand, having emerged as a key player in the global fishing industry, utilizes a labor-intensive mode of commercial fishing in which, while captains may well be Thai, the crew are invariably migrants from neighboring countries who endure harsh labor regimes with lock-in effects. Derks argues that Cambodian migrant workers in the Thai fishing industry are essentially “immobilized at the place of destination” (2010, 916). The experience of foreign fishing workers, of global inequality made local, of increased exploitation, and of class divisions alongside the potential profit of owners is also documented by Allen and Gough (2006) in the case of Hawaii, and by Simmonds and Stringer (2014) in the case of Aotearoa (New Zealand).

Arguing that a class analysis is particularly relevant in maritime settings, McCall Howard (2012) examines fishers’ experience of class relations as they struggle to maintain a livelihood in a globalized industry. In Scottish fishing communities, many people combine work in offshore oil with work in shellfish fisheries. Since 2006, a rapid cosmopolitanization of crew has occurred and experienced seafarers are increasingly hired from the Philippines through labor agencies that supply low-waged crew. While Scottish crew are paid on a share system related to the value of catch, the wages of Filipino crew members are calculated differently and are significantly lower. This gives rise to vast gulfs on boats, accusations of slave labor, and disrupted village life. McCall-Howard (2012), however, identifies a persistent solidarity

between ethnically diverse crew members based on similar experiences with owners and skippers and similar relations of production.

Gender and the Specificities of Nature and Culture

In fishing communities, labor is often kin-based; fishing is seasonal and most often gendered. The division of labor is such that women typically work on land (making and mending nets, in fish processing plants and fish shops, keeping books, handling the business of fishing, and so on) and in inshore waters while men fish at sea. These dichotomies of women and land, men and sea, and private and public are pervasive in early anthropological studies of fisheries, though they are somewhat mitigated by an emphasis on how the lives of women are being shaped by their relationship with men and the nature of their work at sea (Davis and Nadel-Klein 1992). Increasingly, however, scholars have foregrounded a relational approach to gender, treating gender as a continuous rather than a discrete phenomenon and finding multiple points of power and value in particular contexts as well as cross-culturally (Davis and Nadel-Klein 1997). Anthropological work on fisheries in Oceania and Island Southeast Asia is a notable contributor in this regard.

In indigenous Oceanic societies, women, together with children, are often shoreline fishers and gatherers of shellfish and seaweed. In addition to providing a vital subsistence protein, women contribute economically to households by becoming vendors of these products, and also the catch of their husbands and male kin, in the marketplace (Bataille-Benguigui 1988; Ram-Bidesi 1994; Rohe, Schlüter and Ferse 2018), at stalls on the side of roads, to local fish shops, and door to door. Some of the catch is taken for household consumption, some for gifts, and the remainder is marketed (McGoodwin 1995). The fluidity of this economic system, combining market and gift exchange, is crucially recognized in contemporary Hawaiian

fisheries management as “customary exchange.” This is understood as a particular type of “fish flow,” qualitatively different from barter, trade, or sale, even though cash can be involved, and which operates to maintain social ties and culture (Severance 2014). Seafood is extensively gifted in Hawaii and sharing is a deeply valued practice as well as an important organizing element of local society in general (Glazier et al. 2013). It plays a similar role in Māori kinship relations. Forde’s doctoral research finds that the exchange of seafood and the generosity shown by hosts at ceremonial occasions is a public display of tribal *mana* (prestige, authority, effectiveness). Certain foods hold *mana*, and being able to gather, catch, and present that food to guests is a reflection of the *mana* held by the autochthons.

While women may be absent on boats, their sociality on land is linked to activities at sea. The success of fishing ventures in Tonga is related to the maintenance of harmonious relationships among kin in villages while the transgression of taboos or deaths in the extended family plays out in failure at sea (Bataille-Benguigui 1988). Conversely, the absence of fishermen from shores means that they are often underrepresented in the political arena and are dependent on middlemen and ship owners who, due to power differentials, are often in a position to exploit them (Acheson 1988; Firth 1946). Peterson (2015), writing of stakeholder consultations to establish a Marine Protected Area in Loreto, Mexico, highlights the marginal position of fishermen thus: they sat huddled around a table, disarmed by a two-hundred-page plan, its formal Spanish likely beyond their school educational levels, conscious of the loss of income from attending the meeting, and the fact that their narratives were dismissed as unscientific.

In a search for potential universals and surmising that marine econiches affect the structure of sociocultural systems, Smith proposes that a distinctive gender role configuration exists in fishing communities (1977). Fishing people require both land and sea for subsistence. As women procure land-based production and negotiate public culture and kinship networks, their

activity leads to greater role independence for men and women as well as economic independence for women (Smith 1977). The wives of fishers, particularly deep-sea fishers, occupy an important social position, being the partners that usually stay on shore, their lives differing markedly from women of non-fishing families within the same community. For the Mukkuvar—a poor, low-status, Tamil-speaking Roman Catholic sea-fisher caste in the Tamilnadu district of India—women are, contrary to their seclusion in high-status Hindu peasant castes, empowered through their involvement in fishing (Ram-Bidesi 1991). The Mukkuvars rely upon their wives and sisters to carry out most of the important business of daily life while they fish at sea. Women informally raise most of the money and credit necessary for fishing gear, assemble the wealth required for dowry settlements, and mediate between the Mukkuvars and members of the Hindu caste outside of their beachfront zone. Although women are excluded from fishing and beach work, Ram-Bidesi shows how they achieve complementary power through their management of money and the extension of domestic duties into wider realms of interaction with Tamil society (1991). The idea of complementarity between land and sea and women and men's worlds is also emphasized by Levine (1987) in her study of a small New Zealand fishing village, Nadel-Klein (2003) in her findings of the indispensability of women to fishing in east coast Scottish villages, and Cruz-Torres' (2000) research on the gendered division of labor in shrimp farming in Vietnam's Mekong Delta.

In the context of an extreme occupation, the gendered nature of fisheries may, however, have particular psychological consequences. For the wives of Nova Scotian offshore trawlermen, anxiety arises from the necessity to adopt an oscillating double-role strategy, from reluctant matriarch to dutiful wife, to accommodate men's time at sea. This adds considerable stress and affects marital relationships, the stability of the family, and overall health (Binkley and Thiessen 1988). There is also a darker side to the sexual division of labor in fisheries. In

her ethnography of a fishing community in Kerala, India, Busby suggests that this division is tied to the nature of the activity and the unpredictability of the sea itself. She writes of her fieldwork site: “domestic violence is commonplace. . . . For the majority of adult women in the community, routine beatings from their husbands . . . is considered simply an inevitable part of married life” (1999, 227–228). Here men are perceived to be “of the sea” and women “of the land.” Men’s reputation for being violent and quarrelsome, an identity consciously cultivated, is attributed to the qualities required to struggle with the sea each day and come back alive. The danger inherent in sea fishing leaves no room, it is said, to be polite.

Despite the pervasiveness of the spatial aspect of gender tying women to shores, they are not universally excluded from sea fishing. For the Bun people of Papua New Guinea, fishing is neither gender specific nor gender stratified (McDowell 1984). For Chambri people, also of Papua New Guinea, women are responsible for fishing as part of their nurturing, reproductive natures. Here dominance is enacted not so much between genders as within genders (Errington and Gewertz 1987). Women also participate in commercial fishing on trawlers. Willson shows how Icelandic sea women have been a discernible part of the fishing fleet from medieval times and that this labor is not necessarily performed as part of a kin-organized crew (2016). Indeed, since the 1990s, women have worked independently on trawlers and larger deep-sea fishing vessels in Iceland. Their social world, working in deep-sea vessels that hunt at sea for extended periods of time, is vastly different from their counterparts in inshore kin-based fisheries and is an active political choice. The need for these women to “prove themselves” necessitates transforming their “unacceptable women at sea” gender role into one that rises above gender classifications.

Writing in 1988, Davis and Nadel-Klein note that maritime studies was highly androcentric, both in terms of the gender of scholars and the focus of research. This observation is less true today, and many of the leading scholars in the anthropology of fisheries are women.

Cross-culturally, however, only 20 percent of ocean harvesters are women, suggesting that the knowledge and creativity gained from this particular engagement with nature accumulates through men, a disparity the fishing women of Petty Harbour, Newfoundland, are working to address (Oakey and Maher 2018; see “Links to Digital Materials”).

Fishing Knowledge, Fish, and Fisher

The exploitation of marine spaces and resources is predicated upon specialized knowledge of species and environments, irrespective of a discourse of luck and misfortune that may permeate the narratives of fishers. Technology also plays a significant role. In a series of articles published through the 1980s, Pálsson and Durrenberger identify the “skipper effect” in Icelandic fisheries as an instance of a “folk theory of production,” that is, differences in success in Icelandic fisheries are statistically explained more by technical and ecological factors than by the personal qualities of fishers (1982, 1983, 1986, 1990). Fishing is underpinned by a long history of lore but also, and increasingly, a multimillion-dollar information industry (Pannell 2014). In the case of indigenous fishers, traditional ecological knowledge is highly sophisticated, having developed over generations (Akimichi 1978; Berkes 1987; Cordell 1989; Hvding 1996; Johannes 1981).

Johannes (1981), a marine biologist with a keen anthropological sensibility, recognized that the deep ecological knowledge held by indigenous fishermen, including knowledge of fish behavior and environmental factors that help determine and predict it, is consistently overlooked by scientists. In their study of the historical ecology of Alaskan herring fisheries, Thornton and Hebert (2015) refer to the invisibility of Tlingit, Haida, and Tsimshian knowledge in the management of fisheries. Similarly, in New Zealand, there is a distinct absence of Māori knowledge in commercial fisheries management (McCarthy et al. 2014;

McCormack 2017a). Johannes characterizes this misrecognition as a “manifestation of elitism and ethnocentrism” (1981, ix) and actively addressed it in his research and scholarship. In *Words of the Lagoon*, for instance, he writes of his key informant: “he knew the lunar spawning cycles of several times as many species of fish as had been described in the scientific literature for the entire world” (1981, 7).

Palauans have specific names for more than three hundred species of fish and distinguish easily between species differing only subtly (Johannes 1981). This knowledge is reflected in fishing technologies and strategies, such as hook, net, trap, and spear techniques, which take into account differences in anatomy, behaviour, and habitat. It is also reflected in knowledge of seabird behavior and their role as fish finders, as well as in the construction of a lunar calendar to forecast the behavior of fish and

. . .where, when, how and for what to fish. Its phases accurately foretell not just the timing and approximate height of the tides, the strength and direction of the tidal currents, the brightness of the night, and the accessibility of different fishing areas, but also the locations, behaviour, and vulnerability to capture of many species of fish. (Johannes 1981, 32)

Lunar rhythms occur and fish run at certain stages of the lunar cycle (typically a day or two before spawning), creating aggregations which are the major source of big catches around new and full moons. This lunar spawning aggregation is also observed by artisanal fishermen in coastal Brazil. Cordell (1989) describes how a lunar-tide system of determining fishing strategy has been perfected as a consequence of spawning periodicity. For Palauans, learning and committing to memory the timing and location of these aggregations is an essential part of becoming a good fisherman and, in Palau, there is no higher accolade than to be called a real fisherman. Similarly, in Hawai'i, McCormack was emphatically told by a young Hawaiian from Molokai island that “to be a fisherman is to be Hawaiian,” and an older Hawaiian *kupuna*

(elder) from Hawaii island characterized fishing (alongside taro growing and hunting) as “real culture” (McCormack 2015).

Helmreich (2011) proposes that seawater has operated as a “theory machine” for generating insights about human cultural organization. In many Oceanic societies, people live in symbiosis with the sea (Bataille-Benguigui and Pawelko 2001; D’Arcy 2006; Hau’ofa 1993) and fishing is an act of socialization. Sharks have particular symbolic significance, acting as a social partner, mediator, judge, god, or ancestor, according to different Oceanic traditions (Bataille-Benguigui Pawelko 2001; Goldberg-Hiller and Silva 2011), and in New Ireland, Papua New Guinea, shark callers sing to attract the species (Messner 1990). The mutuality between fisher and fish is also examined by Krause, who argues that empathy is key to fishing success on the Kemi River in Finland (2014). Here people do not see fish as merely the animal itself, but include in their empathetic relationship the behavior and environment of the fish.

For Māori, fish are seen as tūpuna (ancestors) and their whakapapa (geneology) is traced from Ikatere, the son of Tangaroa (god of the sea) to Papatūānuku (earth mother) and Ranginui (sky father), where all life originates (Roberts 2013; Best 1982; Orbell 1985). The interconnections expressed in this genealogical weaving informs the relationships Māori have with their ocean environments. Diver (2019) refers to these as reciprocal in which “the language of mutuality reflects deeply held beliefs that shape human thinking and behaviour towards nature” (2019, 402). Respect and reciprocity are key; the first catch, for instance, is returned to Tangaroa to communicate reverence as well as to ensure continued fishing success. Similarly in Hawai’i, “fisher men and women respect the species they harvest by letting some go and not wasting their catch” (Diver 2019, 407) and, as is the case with Māori, surplus is shared with kin and friends.

The cultural value placed on respect is also relevant for Yup’ik people in Alaska who believe that if a fish is shown proper respect, it will continue to supply the fisher with food and

allow itself to be caught. Conversely, if the fish is disrespected, it becomes very difficult to catch. The Yup'ik see animals as sharing personhood with humans, a conception that extends moral relations to the non-human inhabitants in their environment (Fienup-Riordan 1990). The agency attributed to fish and other animals is also evident for Anishnaabe and Haudenosaunee in Canada who, like many indigenous peoples, understand the natural world as interrelated and interconnected with humans; no rigid divisions exist wherein humans are separated from nature; instead, all living things have “spirit” which in turn gives all living things agency (Watts 2013). Todd (2014) explains that for the Unuvialuit of Paulatuqq, “fish have agency, as evidenced by the fact that they can choose when to be caught,” much like the Yup'ik, and in order to be a successful fisherman in Paulatuq, “one must understand the behavior and agency of fish, and must be cognizant of their ability to ‘know’ when someone acts with or without respect” (2014, 225).

The social relationship between human and non-human beings can be understood as kin-like. Menzies' (2016) illustrates this in reference to Gitxaala oral history which warns people not to disrespect the gifts of their non-human relations: The princess of the Salmon People married Txemsum and thereafter, having a steady supply of salmon, they never went hungry. Txemsum, however, growing jealous of his wife, began to distrust her:

His wife became very angry. “I’ll go away back to my own people as I am afraid you will do me injury.” So she went out of the house and called out as she went out, “Come my children, come with me.” She went down into the stream, into the water and disappeared and all of the dried salmon now became alive and all jumped into the water and became live salmon and swam away after the woman, who was the Princess of the Salmon. Txemsum’s supply of salmon was all gone. . . .He was now very hungry with nothing to eat. (Menzies 2016, 88)

Salmon as kin is echoed in the sacred journey made by Winnemem Wintu people from the McCloud River in California to New Zealand's South Island, travel undertaken to make amends with their chinook ancestors. The New Zealand chinook, genetic descendants of the now extinct McCloud River species, were first introduced into New Zealand tributaries in 1901. The Winnemem Wintu connect their tribal history of loss, population decline, and suffering to that of their chinook kin, whose seasonal salmon run was prevented by the construction of the Shasta dam in the 1940s (McKinley 2010). In New Zealand, twenty-eight Winnemem Wintu met with Ngāi Tahu, whose tribal territory encompasses the South Island, and performed a four-day ceremony to repair the broken relationship with their ancestors as well as to let the salmon know of their intentions to relocate them back to their ancestral home. That salmon are not just a food source, but rather an integral part of the dynamic relationships between humans and the natural world, is evident in the words of Winnemem Wintu chief Caleen Sisk, "when the salmon comes home, whatever happens to salmon, happens to us. If we can replenish the salmon, maybe we get to grow in population too" (Maclean 2018).

Fisheries Management and Science

While the notable lack of local and indigenous knowledge informing fisheries management may be related to the ethnocentrism of scientists, it may also be the case that scientific models in fisheries are unable to comprehend other epistemologies. St. Martin points out that numerical modeling in fisheries science, under the logic of bioeconomics, limits the basis of information by rendering local knowledge incompatible and irrelevant due to its finer scale (2001). In this regard, anthropologists and other social scientists are casting a critical lens on the culture of fisheries science as well as the technologies through which oceans are governed. Jentoft (2000), for instance, calls for an emphasis on communities, arguing that, as practiced in most countries,

attention in fisheries management is almost exclusively placed on the relationship between a government agency and individual users.

The definition of “fishery,” despite being a concrete object of management, is difficult to capture (Moore 2012). It encompasses one or more of the following: the work of catching fish, the organized industry of catching fish, the season for catching certain species, the place for catching fish, a fishing establishment, the legal right to take fish in a certain place, and the technology used to catch certain fish. Moore observes that what is striking in these definitions is “a fishery is decidedly not a ‘natural object’” (2012, 672). Fisheries management is in fact a highly politicized process, one in which a culturally particular vision of nature is imposed along with a prescription for human participants: who should control it, how it should be used, and who should benefit (Mansfield 2011). This construction entangles fishers in a creative and political exercise involving the historical and social process of calling fisheries into being and of naturalizing and externalizing what is said to be cultural (Moore 2012, 673). In terms of modern industrial fisheries, management narrowly refers to optimizing the harvest of commercially available fish stocks (Thornton and Hebert 2015). And fishers are created as atomistic extractors.

While the scientific study of fisheries is commonly held to be distinct from the messy realm of management, this division, albeit having analytic merit, is hard to maintain in practice. Science is directed toward management goals and these necessarily operate within a wider political economy. Fisheries science is popularly framed as a closed, somewhat depoliticized bureaucratic regime concerned with technical issues surrounding biomass levels, stock assessments, theory, sampling, and quantitative analytical procedures (McCormack 2017b; Miller et al. 2004). Findings are presented as objectivist science, divorced from human social processes (Draper 2018). Within this framing, oceans are constructed as bounded spaces into which scientific assessments of fish productivity, maximum sustainable yields (MSY), are held

to reflect the reality of nature and enable the managerial setting of fishing limits, that is, total allowable catches (TAC). TAC and MSY, having been developed out of a combination of administrative concerns and scientific assessments of species boundaries and species productivity, signify powerful management instruments, a definitive point of intervention, and construct an environment in waiting for capitalist infusion (McCormack 2017b).

MSY is a foundation of both the 1982 convention on the Law of the Sea and the 1995 Food and Agricultural Organization (FAO) Code of Conduct for Responsible Fisheries. MSY implies that no stock may be reduced beyond the point at which it cannot be renewed: hence, a sufficient spawning biomass must be conserved to maintain the stock's capacity to reproduce. Finley and Oreskes, in a historic review of the MSY measurement and the political context of its uptake, comment: "Once MSY had been adopted, it became necessary to develop techniques to try to calculate the parameters it required: the number of spawners, the maximum yield from each cohort, and the maximum total harvest for each year" (2013, 248). Lalancette, in her research on MSY governance in indigenous Torres Strait fisheries, notes that the tool has been heavily criticized. There is, for instance, high uncertainty surrounding the estimation of many of its parameters. It is a single-species approach that obscures wider ecosystem considerations and impacts and ignores the size and age of harvested animals and social, cultural, political, and economic factors and objectives (2017, 10).

Producing MSY for a highly mobile schooling fish like herring, for instance, requires "spatial and temporal considerations of where to draw boundaries around production and conservation areas and against what historical baseline to measure productivity yields and sustainability success" (Thornton and Hebert 2015, 3). A lack of historic depth is of concern, leading to "generational amnesia," "fallacious notions of steady states," and "serious misreadings of landscape and seascape conditions" (2014, 3). This implies the existence of a "shifting baseline syndrome" and the acceptance of the degraded condition of the sea as the

norm. For the Sitka people of Alaska, herring are a tribe of non-human persons, their houses are under the sea, and their annual return to particular spawning grounds is voluntary as well as responsive to human behavior within a moral ecology of respectful relations (Thornton and Kitka 2010). The baseline estimates framing MSY calculations are dramatically different from what they regard as a healthy spawning population such that herring are sustained at a depleted status. In contrast to the biomass framing of fisheries scientists, the Sitka conceive of a healthy spawning population to be characterized by its broad distribution in time (the length of spawning) and space (the areas associated with spawning over generations).

Political economic systems are influential in generating an epistemological incommensurability between fisheries science measurements and indigenous knowledge. The neoliberal privatization of Alaskan fisheries, for instance, has led to the alienation of indigenous peoples from fisheries (Langdon 2017). Tlingit and Haida tribes, however, observe numerous cases of unharvested surplus salmon at stream mouths, which the permitted commercial purse seine fishery, under the auspices of biological management, have failed to capture. These indigenous fishers have advanced small-scale community fisheries plans to harvest this invisibilized stock, but have remained locked out by an impregnable assemblage of interests (Langdon 2017).

MSY calculations are an instance of technical framing (Heidegger 1977), constructing a monoculture bounding of fish species as singular stock, having ontological consequences not only for particular species, but for all other participants in the marine ecosystem. For instance, it downplays the fluidity and agency of fish populations; genetic mixing takes place in marine environments more so than in other biological habitats because of a high degree of larval drift resulting from constant current flows and temperature changes (Maguire 2014). And it discounts the role of other dynamic, ecological constraints on species productivity, such as predator–prey relations, climate change, and habitat conditions. These broader ecological

factors are linked to the status of fish populations in any given year as well as the resilience of socioecological systems over time (Berkes 2003; Thornton and Hebert 2015).

Property

In comparison to territorial spaces, saltwater environments seem particularly antithetical to boundary-making. The fluidity of water, unpredictability of waves, storms, and rising oceans, as well as the existence of non-human inhabitants whose migrations span across oceans, into rivers, and onto land, suggests the complexity of enclosing this four-dimensional space; the sea has length, breadth, depth, and mobility. Nevertheless, property is a defining theme in fisheries economics, social science scholarship, and the anthropology of fisheries, though it is differently conceptualized in each. In fisheries economics, for instance, the sea is a zone to be brought under containment, leading to what Pálsson (1998), drawing on Foucault, terms “the birth of the aquarium,” the rise of management regimes that imagine the sea as an enormous aquarium to be brought within enclosure. This enclosure is predicated on a separation of nature and culture, with the sea conceived of as a hypernature existing until now outside culture (Helmreich 2011). In anthropological conceptions of seascapes, conversely, the sea is intrinsically part of culture, a space of fishing, fish, and biographically meaningful stories of seafaring (Walley 2004). Fishers also establish a diversity of sea tenures—whether informally or formally, legally or illicitly—through which inshore fishing groups own, partition, and manage local fishing grounds (Cordell 1989). Territorialization in fisheries has been conceptualized by anthropologists in terms of customary marine tenure, the commons, and privatization, as exemplified by Individual Transferable Quota (ITQ) fisheries.

Customary Marine Tenure

The traditional ecological knowledge associated with indigenous fishing people is often conceptualized as part of a wider system of customary marine tenure, particularly in the context of native title claims in Australia (Peterson and Rigsby 2014), though marine tenure has also been observed elsewhere. In his research on the Melanesian South Pacific, Hvding points out that the region is notable for the ways “that social institutions and processes of customary marine tenure co-evolve as core relationships among people” (1998, 253). Hvding argues that customary marine tenure systems have proved resilient as dynamic regimes sociopolitically linking humans to marine environments. Importantly, the claim of local guardians to specified entitlements over marine spaces and resources is supported by the general privileges of customary law being recognized in Melanesian statute law.

As a concept, customary marine tenure became popular in the literature from the 1970s as a response to the failure of fisheries management regimes and the perception that an answer lay in revitalizing local, indigenous-based ownership and stewardship. Its emergence is also entwined with the “paradoxical crucible” of Hardin’s tragedy of the commons (Pannell 2014, 380). While customary marine tenures are idiosyncratic, they generally involve a relation of ownership to a sea area. In the case of coastal Māori tribes and subtribes, or *iwi* and *hapū*, this is expressed as a mutual belonging, the sea in us, with rights to sea resources and fishing grounds being dependent on membership in cognatic kin groups. Māori mutuality with a seascape is also expressed in genealogical webs linking people with gods, the sea, and fish, as well as in shapeshifting ancestors who materialize as guardian sea creatures such as sharks, eels, and stingray. Boundaries to these seascapes (*rohe moana*), traditionally marked by rocks, natural inlets, or implanted poles (*pou*), receive formal recognition under Customary Fisheries Regulations 1998 in New Zealand (McCormack 2017a). Customary marine tenure is also gaining heightened attention as part of the process of Māori groups claiming cultural rights and title under the Marine and Coastal Area Act 2011.

Customary marine tenures can be generalized as a community-based or bottom-up limited-entry system directed, explicitly or implicitly, toward sustainability goals (Peterson and Rigsby 2014). However, whether tenure and taboos evolved as cultural adaptations to prevent overharvesting, that is, they derive from a conservation ethic (Johannes 2002; Ruddle 1998) or out of non-ecological concerns in adjacent communities, is a matter for debate. Challenging the generalization that customary marine tenure and taboos arise as means to prevent overharvesting, and critiquing the theoretical influence of functionalism in such analyses, Foale et al. (2011) posit a non-ecological explanation for the existence of these phenomena. They argue that, in relation to Melanesia at least, tenure and taboos evolved primarily as a means to manage social relationships between groups as opposed to being rooted in a conservational ethic. They point to Firth's (1965) account of Tikopia, a site of high population density, in which rituals are used to attract fish to coastal waters and the hooks and lines of fishermen, and yet there exists a distinct lack of ownership practices over marine spaces. Most Melanesian fishing taboos, they argue, typically follow social cycles and have no obvious connection to the population dynamics of fisheries (Foale et al. 2011, 362).

Taboos are enacted, for instance, to close a reef on the death of a clan member to signal respect and promote abundance; the distribution of this ocean wealth at funerary feasts is a political act, crucially tied up with prestige. In Polynesia, the institution of *rahui* functions similarly (McCormack 2011). Competitions over prestige and status may also be the motivator for restrictions on fishing gear and fish species (Carrier 1987; Malinowski 1918). Fish stock abundance in Milne Bay in Papua New Guinea, rather than being dependent on an indigenous system of ownership, is perceived by most fishers to be ultimately controlled by God (Foale 2005). When territoriality does emerge in Melanesia, Foale et al. (2011) assert, it is during the postcolonial era as a response to the development of commodity fisheries.

Pannell identifies an additional host of problems associated with anthropological conceptions of customary tenure, which she describes as a “rapidly emergent artefact of the discipline” (2014, 370) while acknowledging its diffusion into other fields of study. Difficulties include the lack of an agreed understanding of what constitutes customary tenure, an incongruity between emic and etic descriptions, and a paucity of historical accounts at the same time as an assumption of empirical and universal existence. Further, she argues that the association of traditional resource management with customary marine tenure and the proliferation of accounts of “‘decline,’ ‘breakdown,’ ‘disappearance,’ and ‘loss’” (2014, 385) as a result of commercialization lends itself to a form of salvage anthropology. In these accounts, customary marine tenure inquiries may resemble early anthropological interventions in fishing worlds or otherwise familiar narratives in anthropology, “the case of the ‘pure products . . . going crazy’” (Clifford 1988, 5) as a result of contact with an immoral modernism. The most worrying aspect of this trend, she argues, is the rendering of a dichotomy between peoples and cultures to be relegated to museum pieces and those to be deigned as active, intact, coeval societies and practices. This distinction is based largely on the redemptive work of anthropologists (Pannell 2014, 386) and is rooted in a perception of the fragility and passivity of indigenous cultures and peoples. Pannell concludes her critique by suggesting that the most progressive pathway for customary marine tenure is not in terms of an analytical category, but rather based on its political potential in galvanizing social equity outcomes between indigenous and non-indigenous interests in fisheries.

As a politically charged concept, customary marine tenure aligns with indigenous movements for decolonization. In the colonial settler states of Australia and Aotearoa (New Zealand), claims to marine tenure are interwoven with indigeneity, dispossession, ongoing claims to seascapes, and legal advances in aboriginal title. Their relatively late recognition, in comparison to aboriginal title claims over land, is associated with the dominant European

conception, pronounced after the enclosures of English commons, that the seas are open to all. This ideology was transported to the Australian and New Zealand colonies where seascapes became newly construed as *mare nullius* (Peterson and Rigsby 2014). The historic invisibility of marine tenures is also related to the perceived difficulty in propertizing oceans and the European propensity to draw a border demarking land and sea, a categorization antithetical to the epistemology of many indigenous coastal peoples (Cordell 1993, 163). Formal recognition of indigenous rights in this context is fraught. The specific cultural form that the expression of ownership takes is translated into rules, concepts of boundedness, and exclusivity, tending to alienate indigenous people from their own experiences and practices at the same time as making these recognizable by the state (McCormack 2010, 2016a, 2017; Peterson and Rigsby 2014). There is also an issue of sovereignty over these ocean spaces, a lack of resources to monitor waters (Bavinck 2015), and a recurring livelihood problem arising from the designation of fishing rights within customary seascapes as non-commercial or purely ceremonial in nature (McCormack 2010).

The Commons

The commons is a property concept significantly theorized in the anthropology of fisheries. It emerged in the 1980s in response to the growing propertization of ocean environments and against the dominance of Hardin's 1968 tragedy thesis in fisheries economics and management, particularly the troubling misrecognition of the commons as open access. In terms of generating applied knowledge, commons scholarship hinges on addressing a crucial question: Under what conditions will people overexploit or conserve critical resources?

Hardin's tragedy paradigm, while initially modeled on the assumed maximizing behaviors of commons herdsman, which, he asserts, inevitably leads to tragedy as each adds "one more animal" to his herd, found its most axiomatic expression in overcapitalized fishermen chasing

too few fish. Indeed, Hardin's tragedy was predated by the work of fisheries economists who cast the commons as a market failure (see Gordon 1954). In this synopsis, the overexploitation of fisheries, which, on a global scale, was obvious by the 1980s, could simply be resolved by privatizing and enclosing ocean fisheries. While much has been written on the fallacy of Hardin's thesis, it has nonetheless continued to influence the management of marine ecosystems (Longo, Clausen, and Clark 2015), is implicated in the introduction of rights-based fisheries spurring new enclosures, as well as in directing the science of fish stock sustainability toward management goals (McCormack 2017b).

Challenging the idea that the commons is the ultimate cause of resource degradation, fisheries anthropologists as well as scholars from geography, institutional economics, and others garnered empirical evidence from around the world showcasing flourishing local fisheries. Communities were shown to manage common pool resources successfully using a combination of explicit and implicit rules, informal governance, and cultural norms to sustain resources, control access to fisheries, and distribute rights and catch (Berkes et al. 1989; Bromley 1992; Durrenberger and King 2000; Dyer and McGoodwin 1994). In this scholarship, the commons, rooted as it is in cooperative resource management, is offered as a potential solution to the crisis in world fisheries (McGoodwin 1995).

A key theme in the fisheries as commons literature is concerned with the link between social relations and property-making. Acheson's work on the inshore trap lobster fishermen of Maine emphasizes that social worlds are constitutive of territoriality in seascapes and fishing success. Lobster fishing is contingent on becoming a member of a harbor gang, and only with this identification can one fish in the territory claimed by that gang (1988). Commons may also operate exclusively or in such a way that the social networks, friendships, and obligations binding fishing communities extend to a rigorous defense of sea territories (McCormack 2010). While these territorial rights receive no formal recognition in the lobster fishery of Maine

(1988), they exist relatively smoothly alongside state and federal laws as well as rules devised by fishermen to conserve the resource (Acheson 2003).

More recent work on commoning has critiqued the tendency in the commons literature to assert an argument through a series of “cascading binaries, such as individual and collective, private and public, basic subsistence and profit” (Blaser and de la Cadena 2017, 186), with the end result being an analytical convergence. This convergence is implicated in the interchangeability of commons literature with the “tragedy of the commons” paradigm such that “once common property theorists replaced the ‘tragedy of the commons’ with the ‘tragedy of open access’ the differences between what seemed like quite opposed positions are no longer so great” (Mansfield, 2004, 319). Scholarship on commoning asserts that attention needs to be redirected to the web of social relations in commons, including those linking human and non-human actors, and that these cannot be confined to property. Commoning scholarship is also a critical response to the reduction inherent in the work of Elinor Ostrom, who centered the commons debate on the need for defined property rights, though these were based, ironically, on an individual, rational choice model. Legal definitions do not determine the commons and people cooperate for many reasons, not just when it is considered rational to do so. Nightingale’s (2013) work, for instance, on inshore Scottish fishermen identifies emotion as an undertheorized *raison d’être* for commoning. The powerful pull of obligation, crucial in Māori fisheries, is also incommensurable with a commons delineated in terms of property criteria (McCormack 2018a).

Individual Transferable Quota Fisheries

Anthropologists working on Individual Transferable Quota (ITQ) fisheries have produced rich ethnographic accounts of particular fishing localities in addition to having established a global comparative framework for assessing the socioeconomic impacts of their operation. That ITQs

are a global system is illustrated by the fact that, while introduced in Iceland, New Zealand, and the Netherlands in the 1970s and 1980s, by 2010 there were at least 150 programs worldwide (Costello et al. 2010) in countries as spatially and culturally distinct as South Africa, Mexico, and the Cook Islands.

ITQs emerged as a fisheries panacea within the broader neoliberal reorganization of the global political economy (Young et al. 2018) and, more specifically, the reconfiguration of human–environmental relationships that have transpired under market environmentalism (McCormack 2018b). They are associated with the rise of the discourse of sustainability in local and global political agendas and the enmeshment of this with neoliberal institutional reforms designed to save nature by commodifying it (McAfee and Shapiro 2010; McCormack 2017b). ITQs work to deconstruct nature by slicing up fishing rights into competing units of transferable property: Individual quotas are created from dividing the total allowable catch (TAC) from each fish stock into quota shares, which, while initially freely gifted to existent participants in fisheries or those who make a capital investment, are then rendered transferable. Quota can be bought, sold, and (increasingly) leased via “the market” with the help of quota brokers and online trading systems, and often few restrictions exist concerning market participants (Pinkerton and Davis 2015).

Anthropologists researching ITQ systems have theorized the relationship between the environment and neoliberalization, deployed Foucauldian understandings of governmentality to interrogate marine privatizations, explored the socioeconomic consequences of privatizing crucial resources, investigated the emergence of a new marine class system, and identified a link between natural asset trading and financialization.

A diversity of neoliberalizations is understood to exist in nature, a consequence of differing biophysical characteristics and behaviors, and the co-constitution of these with labor and consumption practices (Bakker 2010). In her review of neoliberal economic theory in

fisheries management, Mansfield (2004, 2007) argues that a concern with property has been a central feature since the 1950s, a period marking the infiltration of neoclassical economic thought into fisheries policy and a pre-Hardin articulation of the tragedy of the commons thesis. This orientation toward property rights as a means to regulate the profit motive of individuals is fundamental to neoliberal attempts to rationalize fisheries. ITQ systems do so by harnessing individual decision making to assumed economic and ecological realities

Carothers and Chambers, ethnographers of ITQ fisheries in Alaska and Iceland respectively, explore how discourses of neoliberalization, drawing on neoclassical economics, combine with those linking the ecological health of the world's oceans to the widespread implementation of private property. The resultant discursive formation has enrolled a broad set of vocal and powerful proponents to "make these logics appear natural, defining features of human society" (2012, 41). ITQs then become truthlike, naturalized beyond critique, making it difficult "to imagine how things could have been ordered differently" (Carothers 2000, 59), an argument also made by Bonnie McCay (2008) in the case of "catch shares" in the United States. Steven Langdon (2018), in his analysis of salmon quota fisheries in southeast Alaskan communities, shows how powerful interests operate to secure ITQ endurance as well as alienate indigenous Alaskan fishers. He identifies six sectors, together forming an assemblage he describes as Leviathan: legal practitioners (politicians and lawyers), resource managers (biologists), commercial fishing permit holders (producers), processing firms (capitalists), financiers (bankers), and policing agents (enforcement personnel).

In a historic review of fishing villages in northeast Scotland, Nadel-Klein describes how capitalism can create and then dismiss a way of life (2003). ITQs have been consistently found to consolidate quota ownership, transfer this to non-fishers and investors, increase processor control, remodel vibrant fishing communities into ghost towns, alienate indigenous peoples, and prevent new entrants (Bodwitch 2017; Cardwell 2015; Carothers 2010; Carothers and

Chambers 2017; Delaney 2016; Dwyer, King, and Minnegal 2008; Einarsson 2011; Helgason and Pálsson 1997; Langdon 2018; McCormack 2017a; Pálsson 1998; Pinkerton and Edwards 2009; Wingard 2000). Class systems have become entrenched as fishermen transform into a subordinated class of quota lessees, skippering or crewing on boats owned by non-fishing quota holders and processing companies and bearing the brunt of increased safety and compliance costs (Bodwitch 2017; McCormack 2017a; Pinkerton 2017; Pálsson 1988). Quota crimes, fishing more of a stock than your quota entitlement or dumping and discarding stock for which no quota is held, are integral components of ITQ systems, fines for which fall most heavily on quota-leasing fishers (McCormack 2017b).

Holm and Nielsen (2007), however, show how the truthlike nature of neoliberal environmentalism assembled in ITQ systems is never totalizing, being subject to disruption, dissolution, and even failure to remake the world according to its own logic. In their work on changes in fisheries management in Norway, the authors point out that the textbook economic theories informing ITQs do not simply translate to a transformation of the “real economy”; the move from theory to reality is contingent and complex, and the heterogeneous networks that enact economic and social change are fragile, precarious, and in need of constant maintenance. They also hit against all kinds of “obdurate matter” (Hébert 2014, 13), that is, the historical context, the limits to which market devices can transform fishy matter, and the resistance of harvesters to new economic ways of being. Similarly, Jentoft and Chuenpagdee (2009) argue that fisheries are confronted with “wicked problems” (problems that are difficult to define and delineate and tend to reappear) and that a governability issue is recognizing that there are limits to how rational and effective fisheries governance can actually be.

Helgason and Pálsson liken the Icelandic ITQ system to a process of commoditization whereby fish have become “fictitious commodities” (1997, 455). This recreation of what were formerly common goods, a “disembedding” in Polanyian terms, evokes a local discourse

loaded with feudal descriptors of quota owners as lordships of the sea, or sealords, whose fief is the sea and whose tenants are fishermen. This counter response draws heavily on a moral economy in which boat owners are labeled immoral profiteers. It is the profit-oriented monetary exchange characteristic of ITQs that is particularly condemned. The process of commoditization, the authors argue, the movement of social things to a more central position, seems to engender particular discontent when commodities are fictitious, when they have been removed from a radically different construct of ownership. Articulating a moral economy as a trope of resistance is also identified in other work on fishers challenging ITQ enclosures (see Chambers and Carothers 2017; Lalancette 2017; McCormack 2010; Pinkerton 2015).

In coastal communities of Victoria, Australia, fishers reshape identity as tradition to counter ITQs. This appeal to tradition is couched in genealogical time, affiliation with place, and specialized knowledge and practices (Minnegal et al. 2003). While seemingly paradoxical (established fishers in Victoria are first or second generation), this discourse is rendered coherent when it is taken into account that the identity of fishers arises not only from an environment not familiar to outsiders but that it may also emerge to counter outside threats. In Ireland, nostalgia can also operate to challenge quota alienation (McCormack 2017a).

The transferability quality of ITQs is of particular concern to commentators, leading, for instance, to an intense focus on the future, a rejection of historical context and awareness, and a disavowal of productive activities. Maguire (2014) identifies a future fetish in the attention paid to virtual fish, those that come alive in electronic marketplaces (Maguire 2014), generating a rift between work and value creation; wealth can be created simply by owning and exchanging quota and no longer requires direct engagement with fishing (Einarsson 2011). When quota is constructed as individual and freely transferable, more money may be made from leasing quota than chasing fish in the sea. In the halibut fishery of British Columbia, Canada, 76 percent of quota is leased (Pinkerton and Edwards 2009), a phenomenon Pinkerton

and Edwards call “the elephant in the room.” In halibut quota markets, the financial value of quota has risen as well as the price paid for leasing quota, while the port price of fish (the ex-vessel price that fishermen receive) has remained stable. For fishermen, leasing quota is their largest annual cost and those who lease the majority of the quota they fish find that their profits are marginal at best.

The implications of privatizing a public good, such as fishing rights, and making these tradable on international markets are extensive. Anthropologists have theorized a link between the incorporation of nature as an exchange value and the financialization of quota. Under neoliberalism, national and international speculative finance has become the focal point of profit in fisheries, subsuming concerns about production, sustainable management, and communities (Pinkerton 2017). In Iceland, among the largest seafood nations in the world in terms of volume of catch as well as value, ITQs are associated with the nation’s spectacular economic crash in 2008 (Benediktsson and Karlsdóttir 2011; Einarsson 2011; Flaaten 2010; Maguire 2014).

Aquaculture and the Blue Economy

Aquaculture is a crucial research area, particularly in the context of anthropogenic pressures in marine environments and global food security issues. It is also tied up with the increasing attention directed toward sustainable growth in marine ecologies and economies, an innovation endorsed by the World Bank as a “blue revolution” to match the “green revolution” that occurred in agriculture in the 20th century (Stonich and Bailey 2000). The closely aligned concept of the Blue Economy emerged out of the Rio +20 conference in 2012 and the United Nations’ Food and Agricultural Organization (FAO); it solidified the idea with the launching of its Blue Growth Initiative (BGI) in 2013. Blue Growth is defined as “the sustainable growth

and development emanating from economic activities in the oceans, wetlands and coastal zones, that minimize environmental degradation, biodiversity loss and unsustainable use of living aquatic resources, and maximize economic and social benefits” (FAO, 2015, 8). The initiative addresses four key components: capture fisheries, aquaculture, livelihood and food systems (i.e., access to markets and value chains), and economic growth from ecosystem services. Both ITQ systems and aquaculture are considered “good” Blue Economy initiatives.

More critically, the Blue Economy accentuates the centuries long process of enclosures in the world’s fisheries by identifying a new wave of growth opportunities in marine and coastal ecosystems. The ideology informing the Blue Economy is aligned with the extension of market mechanisms in environmental governance; it implies propertization but also a massive speculation-driven trade through newly created markets and the incentivization of entrepreneurial actors not formerly predisposed to engage with the wealth potential of marine environments (Barbesgaard 2018). Pitchon (2015) finds that commercial aquaculture development in a coastal resource-dependent community in Chile threatens access to common pool harvests and promotes social and economic change within an existing largely egalitarian way of life. Stonich and Bailey (2010) note that the explosive growth of shrimp farming has excited the interests of entrepreneurs, national leaders, and international donors. Cultured shrimp, 99 percent of which are raised in the Global South, are destined for markets in industrial countries, principally the United States, Europe, and Japan. This poses serious questions concerning the claims of aquaculture enthusiasts to end world hunger (Stonich and Bailey 2010).

Neoliberalization is also associated with the intensification of aquaculture. Phyne’s (2010) comparative work on the political economy of aquaculture in Norway, Chile, and Ireland finds that salmon underwent industrialization under the auspices of social democracy in Norway whereas in Ireland and Chile, it did so through the influences of neoliberalism. Phyne shows

how social democracy uses salmon aquaculture to foster the redistribution of benefits, whereas neoliberalism uses salmon aquaculture to foster economic growth. In Chile and Ireland, the industrialization of salmon is tied to foreign direct investment, economies of scale, and the geographic concentration of capital. Knott and Neis (2017), exploring ITQed herring fisheries and intensive salmon farming in New Brunswick, argue that neoliberal processes have interacted to reshape fisheries from mixed small-scale family-based petty commodity fisheries toward vertically integrated, corporate, financialized fisheries characterized by ocean grabbing.

Salmonoids (salmon and rainbow trout), along with carp, are the most industrialized fish. Farmed salmon is a contested symbol; it implicates the privileging of cultivation over wild harvesting and the intensification of production processes. It pits wild salmon fishers against industrialized entrapment of fish and generates conflict in coastal communities, now emptied of fishing quota, about the social benefits of transnational capital. It is associated with environmental degradation, the pollution of wild stock, and signifies the transformation of wondrous mythical creatures into a monster species. The AquAdvantage salmon, poised to become the world's first genetically engineered animal for human consumption, has been genetically altered so that the fundamental traits and characteristics of the Atlantic salmon are blended with the eel-like ocean pout and the Chinook salmon, native to the Pacific Ocean (Clausen and Longo 2012).

The development of AquAdvantage salmon, which grows twice as fast as Atlantic salmon, involves capital accumulation processes, a continuing need to increase the economic efficiency of production, affecting aquatic ecosystems and marginalizing fishing communities (Clausen and Longo 2012). This technology is a sociohistorical product. It concerns “the expansion of global seafood markets, the establishment of salmon aquaculture, and the pursuit of profit in cultivating wealthy sectors of salmon consumption in the Global North” (Clausen, Longo, and

Clark 2016, 159). These conditions facilitate the rapid growth of industrial salmon farming techniques, prompting attempts to genetically modify the species.

An alternative interpretation of aquaculture is offered by Lien (2015) who adopts a more than human ethnographic approach in her work on salmon farming in Norway, the leading producer of farmed salmon. Employing the toolkit of material semiotics, she focuses on boundaries (physical and conceptual, fixed and transgressed) that structure what salmon and humans are up to in the industrialization process. Her particular analytical lens is not concerned with industrial capital, but rather the uniqueness of the encounter between salmon and Norwegians. Norway, where salmon were first confined in the 1950s, is noted for its policies on long-term salmon management and an animal welfare law that recognizes salmon sentience. Lien challenges “the general assumption that industrial farming and affective relationality don’t go well together” by exploring “the limits and extent of affect, sentience and relationality across contexts and practices” (2015, 16).

Domestication, in Lien’s conceptualization, is a productive relationship involving mutually embodied responses between humans and fish. In the process, fish *become* while also come to be enacted by people across different theaters of practice or “salmon domus.” Peace (2009, 2015), meanwhile, conceives the resistance of great white sharks to domestication as key to their exceptionalism as well as their ability to transgress boundaries demarcating us and them. Great whites have not as yet been subjected to the enclosure and commodification experienced by most wild creatures, nor are they incarcerated in zoos or watery tourist worlds or intensively farmed in aquaculture developments; even their carcasses have little value. In this sense, great whites are not only non-human but emphatically beyond humans.

Arguably, understanding industrial capital and its articulation with social divisions is critical in any exploration of human–non-human relations. By examining how fishing grounds are established and developed in Scottish fisheries, McCall Howard calls attention to the

propensity in multispecies ethnography and cognate approaches “to reduce the scope of human intentionality and therefore elide the effects of alienation and class divisions *within* human society” (2018, 64).

Anthropological Fisheries Scholarship

Fisheries anthropologists are well placed to engage with crucial contemporary concerns in the Anthropocene, having developed a body of literature and research findings pertaining to living with, by, and on a particularly dynamic nature. Research on the socioecological connections between people and the sea has given rise to a rich body of literature concerning ecosystem knowledge and sea tenures, as well as the strategies people use to cope with danger and risk. It documents the contradictions of globally conceived fisheries science and management regimes, framed as the sustainable management of nature, describes the impact of these on local people, and highlights the existence of alternative commons, commonings, and resistances. It challenges Blue Economy attempts to reconfigure nature–culture relations and reposition the marine environment as a locus for the enactment and perpetuation of patterns of inequality, historicizing blue growth as a continuation of ocean enclosures that enable the opening up of a frontier for national and international speculative finance. Critically, it offers a material intervention into scholarship concerned with human–animal and nature–culture relations by highlighting that social inequalities form part of any human–non-human engagement. Exploring the particular and devastating shape of these divisions within contemporary neoliberal capitalism is critical for understanding relations with non-humans and nature as well as theorizing a platform for change.

Links to Digital Materials

Muir ar n-athraichean [Our Fathers’ Sea]

<https://my.pcloud.com/publink/show?code=XZtY2s7ZluBvPjV93WhiUa7KyAOqufc9KiRy>

↓

A short documentary charting the intimate relationship between fishing and the Gaelic language. Filmed in Benbecula and South Uist, Scottish isles in the Outer Hebrides, the film shows how the sea is not a blank slate, but rather is constituted through intricate webs of inherited knowledge handed down over generations, with each fishing ground, each technique, each creature accorded its place within the Gaelic language. The specter of ever-tightening marine regulations threatens not only fishing, but the language and culture of the isles themselves. Courtesy of Magnus Course.

Girls Who Fish

https://youtu.be/vRX_19StjRk

In 2014, Kimberly Orren and Leo Hearn founded Fishing For Success in Petty Harbour, Newfoundland—a non-profit venture dedicated to sharing traditional Newfoundland fishing knowledge and culture. This short film challenges gender stereotypes in commercial fishing and shows the importance of proactively encouraging women to take on fishing roles. Courtesy of Kimberly Orren.

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