



Fluid Scalability; Frontiers and Commons in Salmon Waterworlds

Marianne Elisabeth Lien

To cite this article: Marianne Elisabeth Lien (11 Jul 2023): Fluid Scalability; Frontiers and Commons in Salmon Waterworlds, *Ethnos*, DOI: [10.1080/00141844.2023.2213851](https://doi.org/10.1080/00141844.2023.2213851)

To link to this article: <https://doi.org/10.1080/00141844.2023.2213851>



© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 11 Jul 2023.



Submit your article to this journal [↗](#)



Article views: 1367



View related articles [↗](#)



View Crossmark data [↗](#)

Fluid Scalability; Frontiers and Commons in Salmon Waterworlds

Marianne Elisabeth Lien

Department of Social Anthropology, University of Oslo, Oslo, Norway

ABSTRACT


The fluid qualities of water include its propensity to yield, to dissolve, and to accommodate intrusive structures and projects. The possibilities for aquacultural expansion appear limitless, yet the presence of aquaculture excludes and transforms other life-forms. While terrestrial expansions mark their presence through infrastructure such as fences and walls, aquatic infrastructures are more elusive. This article takes the current capitalist scenarios of aquacultural expansion as a starting point for reflecting on the scalability of plantation economies in coastal waters. Assessing the possibilities and limitations of ocean-as-infrastructure for aquatic frontiers, it explores water as a means of production, a medium, and an externality, and asks: How might more than economic forms of fluid dispossession follow in the wake of marine extractive industries? Engaging the notion of ocean frontiers and aquatic commons, the article draws on ethnographic research on Norwegian salmon aquaculture and Sámi river entanglements.

ARTICLE HISTORY Received 3 February 2022; Accepted 9 May 2023

KEYWORDS Fluid dispossession; aquatic frontiers; scalability; salmon; commons

In 2015, The Norwegian Ministry of Trade, Industry and Fisheries published a White Paper,¹ proposing a growth in Norwegian aquaculture by 6% every year for the next 35 years, or, as it was more elegantly presented for the public: a five-fold increase in salmon farming by 2050. The vision of a five-fold increase was not entirely out of the blue: Norwegian salmon farming had grown exponentially since the 1990s, spearheading salmon aquaculture worldwide. According to the white paper, the value created by Norwegian aquaculture grew more than tenfold between 1995 and 2012, far outpacing that of any other economic sector (Lien and Law 2019).

Not surprisingly, the projection was embraced by former, conservative Prime Minister Erna Solberg who, upon launching the White Paper in March 2015, told the press

CONTACT Marianne Elisabeth  m.e.lien@sai.uio.no

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

that she ‘loves’ both salmon and salmon farmers. ‘Salmon’, she continued ‘is Norway’s Ikea’. Indeed, as the oil revenue is expected to drop with current strategies to reduce global carbon emissions, Norway needs to look elsewhere for an iconic industry, and the unsurpassed growth in salmon aquaculture lent itself easily to both hope and hype. Aquaculture was cast as the ‘new oil’, and industrial growth was the order of the day, on the conditions that certain specified criteria of sustainability were met. In this way, the so-called ‘blue-revolution’ was by the same token imagined as part of a ‘green revolution’. This involved an anticipated shift from the dependency on the offshore oil and gas industry that had made Norway one of the richest countries in the world, to a range of more sustainable and (allegedly) renewable industries, such as marine aquaculture. No wonder the Prime Minister loved salmon!

However, the marine entanglements of salmon farming are in fact far more complicated and, according to critics, incompatible with the projected five-fold growth. Around the time when the white paper was published, the industry met multiple challenges, suggesting quite significant ecological limits to growth. For example, an explosive prevalence of sea-lice at salmon grow-out sites, and the way the parasites turned resistant to most pharmaceutical treatments, remained a serious threat not only to the salmon industry, but also to the Atlantic Salmon that spawns in Norwegian rivers. This population constitutes about a third of the remaining wild Atlantic Salmon worldwide, which places a significant global responsibility on Norwegian regulatory authorities (Lien 2015, 2017).

This paper explores the possibilities and limitations of ocean-as-infrastructure for marine plantation economies, asking: What is it about maritime spaces (specifically coastal waters) that allow the scenario that an industry *already* in ‘deep waters’ in relation to sustainability can undertake a five-fold increase within a generation? What sorts of imaginaries do oceans permit? To illuminate these questions, I turn to the qualities of water, asking how its intrinsic and relational affordances make maritime spaces particularly attractive to visions of limitless growth, but at the same time unruly as objects of governance. I explore the notion of oceans as a shared resource, and its dual role as both ‘commons’ and ultimate ‘frontier’, as well as the limitations of both imageries. I then draw attention to the nationally protected salmon river *Deatnu* that runs across the Finnish-Norwegian border. This has long been a site of controversy about modes of management and care (Ween 2012; Joks 2015; Brattland and Mustonen 2018). In recent years, conflicts have intensified as traditional and Sámi fishing practices have been severely restricted, or even prohibited, while the tourist fishing industry has been promoted. But the conflict also indexes subtle forms of dis-possession concerning the right to know, define and predict *Deatnu* salmon and the river’s affordances. By way of conclusion, I reflect on the ripple effects of fluid dis-possession and ask what it might take to imagine aquatic sites as ‘future commons’ for humans as well as for other species in the Anthropocene.

Fluid Frontiers

Unlike on land, where most territory is marked as property, the possibilities for aquacultural expansion appear limitless. The ocean is repeatedly cast as a vast and untapped

resource ripe for development, and Norway is no exception. The most recent Norwegian white paper on aquaculture policy from 2021, titled ‘An Ocean of Possibilities’, affirms the above-mentioned strategy to facilitate sustainable growth in the marine sector (Norwegian Ministry of Industry and Fisheries 2021). The white paper is explicitly anchored in the recommendations by the international High Level Panel for a Sustainable Ocean Economy, also called ‘The Ocean Panel’. The Ocean Panel promotes ‘a sustainable ocean economy’ with a sixfold increase of sustainable seafood by 2050, hence affirming the vision of the ocean’s untapped potential for sustainable growth.² This is alongside dire warnings about overfishing, pollution, and plastic waste. According to the World Wildlife Fund, the past 40 years has seen a decrease of recorded marine species of 39% and overfishing remains one of the biggest threats to ocean health.³

The image of oceans as quintessential commons has been mobilised both as a promise of growth and an explanation of failure. On the one hand, its frontier-like quality resembles what is often associated with Terra Nullius: owned by no-one, unmapped and with a promise for future capitalist expansion. Referring to forests of Kalimantan, Indonesia, Anna Tsing describes frontiers as

an edge of space and time: a zone of not yet – not yet mapped, ‘not yet’ regulated. It is a zone of unmapping: even in its planning, a frontier is imagined as unplanned. ... On the resource frontier, the small and the great collaborate and collide in a climate of chaos and violence. They wrest landscape elements from previous livelihoods and ecologies to turn them into wild resources, available for the industries of the world. (Tsing 2003: 5100)

While this image of terrestrial frontiers echoes the current ‘blue revolution’ frontier at sea, the ocean was not always like that. In the era of maritime imperialist expansion, the sea was ‘less a frontier than a space *beyond* a frontier: a space that was best governed by an absence of enclosure’ (Steinberg 2018: 238). As Steinberg argues, it was in the interest of maritime powers to ensure that seas from distant lands were open to all. But the recognition of the resource potential of spatially fixed resources (oil and gas, and more recently seabed minerals) brought a shift to this, culminating in the codification of the EEZ (Exclusive Economic Zone) codified by the UN Convention of the Law of the Sea in 1982. This legal code extended sovereign states’ exclusive rights regarding exploration and use of marine resources (but not territorial sovereignty) by 200 nautical miles. As a result of what has been called ‘territorialisation of the ocean’ (Campling and Colás 2018: 790), the marine environment has increasingly been brought under state control, amenable to resource-making projects and imageries (Richardson and Veskalnys 2014). In short, the ocean has become a frontier, and is ‘beginning to look more like land: claimable, controllable, governable and ... amenable to infrastructural improvement’ (Steinberg 2018: 238).

On the other hand, and partly because of the ways in which the sea remains *different* from land-based frontiers, oceans and marine spaces are also associated with governance challenges that have been, often wrongly, attributed to the commons (Ostrom 1990; Mansfield 2004). Decline in fisheries, depletion of fish stocks and overfishing to the brink of species extinction have been attributed the absence of property rights

(e.g. Barbesgaard 2018). For some scholars, such environmental problems are attributed to the commons as such, suggesting that commons are bound to fail (e.g. Gordon 1954, but see Cox 1984⁴). For others it is rather a matter of finding collective ownership structures that ensure good community management (e.g. McCay 2001), while the environmental challenges are instead attributed to de facto open access and the absence of (any kind of) property rights. However, as Becky Mansfield has convincingly argued, the assumption that property rights (private, common or collective) ensure sustainable management, and that open access is the root of environmental destruction serves to sustain a massive change in marine political economy that ‘enclose for a few what was once the property of all’ (Mansfield 2004: 325). Justifying a neoliberal shift, this assumption is underpinned by the misguided perception of open access as inherently a problem, due to man’s inherent economic rationality. Referring to common property theorists, Mansfield writes:

As long as these theorists treat open access as a realm in which economic rationality prevails, rather than itself a social relation in which different sorts of institutions and power relations are at work, they are limiting their critique of orthodox economic approaches.. [and] do not offer completely different models that do not rely on economic rationality and market behavior. (ibid: 324)

Yet, the image of the ocean as a frontier still prevails, exploited as a hype for capitalist expansion. This is the case even in Norway where most aquacultural expansion still takes place close to the coastal shores, and thus remains largely unaffected by the territorialisation of the seas associated with EEZ. It is almost as if the oceanic hype spills over into coastal waters, justifying de facto enclosures of coastal waters in the name of a blue revolution that will allegedly bring welfare to all.⁵

Salmon aquaculture takes place along most of the Norwegian coastline, in aquatic spaces that have been managed as a kind of commons for hundreds of years. Rich in marine resources (fish, shellfish) these areas have been, and are still, important sources of local and national revenue. The ocean and the coastal shores have also been significant for their affordances as interstitial spaces of connection, weaving together sites and complementary livelihoods through maritime transport, trade, shipping and fisheries, and more recently containerships (Leivestad and Schober 2021). While the establishment of aquaculture facilities is based on conditional *long-term license*⁶ of specific marine sites rather than territorial property ownership, the mere presence of aquaculture facilities can affect, and sometimes even exclude other local life-forms (coastal fisheries, marine life) that are the backbone of coastal commons. This is partly because fishing is automatically banned within a 100-meter zone around marine salmon production facilities (which matters in narrow fjords), but also because of the impact of aquaculture on marine ecologies. As Norwegian aquaculture is an expansive and very profitable industry (Lien and Law 2019), the presence of these facilities has significant impact on coastal livelihoods and coastal practices.

The recent expansion of salmon aquaculture represents an opportunity to explore the specificities of ocean-as-infrastructure for what we might call ‘plantation economies’ in the maritime sector. How can we understand water as a means of production, a

medium, and an externality (regarding environmental impact) all at once? How do these dimensions challenge the notion of oceans as commons, and how do scaling projects such as aquaculture, (the so-called ‘blue revolution’), mobilise and exploit water’s relational qualities and affordances? Additionally, the Norwegian case invites reflections on what it might mean (politically, theoretically) that the object of analysis is inherently elusive and difficult both to describe and delineate (Hastrup and Hastrup 2015, see also Dewan and Nustad this issue).

Properties of Water

The elusiveness of water is both intrinsic and relational. This facilitates processes of fluid dispossession, which I shall elaborate below (see also Dewan and Nustad, this issue). But first, let us consider the relational properties of water as they unfold around marine infrastructures and aquacultural sites.

Firstly, *water yields*. As anyone who has dumped waste in the ocean knows: to place a solid object on the water surface usually implies that it is soon out of sight. Not necessarily forever, and not necessarily for everyone, but usually ‘for now’. Even if the water surface is translucent, water is a good ally for anyone trying to ‘cover things up’. Marine dumpsites can build up slowly. If the garbage patch of plastic waste in the Pacific has become a global scandal, it is because plastic does not immediately sink, i.e. the interface of water and plastic is a site that, somewhat atypically, exposes traces of anthropogenic waste. Most marine waste is different, most will disappear from view,⁷ or remain unnoticed for many years. This marine quality has made oceans a nearly ‘perfect’ global garbage dump for twentieth century consumption; a place where the effects of unsustainable lifestyles can be postponed into the future, and no one will be held accountable. Toxic sediments are typically revealed too late, such as when life-forms disappear, substances are spread by transoceanic currents, or a firm sediment on the bottom of an estuary is disturbed, exposing the dumpsite of a foregone era (Breivik *et al.* 2016; Geissler and Prince 2020⁸).

The image of the ocean as a global depository of human waste is, of course, a matter of perspective. Scale and visibility are relational qualities. Zooming in through a microscope, a second aqueous quality is revealed, namely the propensity of water to *decompose and dissolve*. Solid waste, including pollutants, get gradually broken down to smaller elements that can mix with marine microorganisms and form metabolites and molecular compounds, the effects of which are only partly understood (Catalá *et al.* 2021). Zooming out, we can trace water’s qualities along vast oceanic currents. Water takes the shape of currents and becomes mobile, and this is the third quality: *water flows*. Fish migrate and move with the currents, as do microorganisms, and this makes water unruly for authorities that approach oceans as if they could be zoned like parcels of land. Unlike terrestrial fences or walls that effectively enact ownership relations and the access to resources, marine infrastructures are much less ‘cooperative’ in the enactment of boundaries and offer less possibilities for keeping things apart.

Yet, the surface enacts a boundary on its own: Elsewhere, I have described how salmon farmers try to overcome the distance that water represents in domestication

facilities. To care for 100.000 salmon in a pen is difficult for many reasons, but also because the water surface represents a rather firm boundary between the lives of salmon and the lives of humans. Our lungs and their gills are differently adapted to air and water, making the crossing into the other species' preferred medium difficult (they gasp for water, we gasp for air). Hence, as a medium, water accommodates certain biological adaptations, while excluding others. A fourth quality of water emerges from this perspective, i.e. how *water enacts a kind of separation through the water surface*. We may say that water *separates* as it includes and excludes specific life-forms. This has practical implications for relations of domestication within, and the infrastructural facilities of, the domus.

Seeking to replace the intimate proximity that one can have with animals in terrestrial husbandry, aquaculture facilities often have monitoring devices to ensure that the salmon down below are doing alright (real-time video images, oxygen monitors). Salmon farmhands work *across* the water surface, mobilising the affordances of the surface itself as a translucent intermediary zone. This happens through repeated procedures referred to as 'checking the feeding', a practice that involves sprinkling a handful of pellets on the water surface while watching carefully how the salmon respond. Many ripples on the surface indicate that salmon are hungry and that things are going well, a quieter surface may be a cause for concern. This points towards a fifth quality, namely how *the water surface mediates*. The water surface may appear as a boundary, but it is also more than that: The shifting and shimmering texture of the water surface, (which represents as a *boundary* between the preferred medium sustaining salmon and human organisms), can also be enacted as a lively *interface* mediating between salmon below and human above (see Lien 2015 for details). Like other qualities discussed so far, this too is both relational and specific, while at the same time anchored in intrinsic propensities and potentials of water as such.

Other aquatic and riparian landscapes have other propensities and other challenges. Ethnographic studies show that far from being reducible to water as such, rivers, lakes, bogs and marshes constitute very specific environments, each with unique sets of multi-species relational assemblages (see e.g. Hastrup and Hastrup 2015). Mónica Amador notes, for example, how the *ciénaga* of the Colombian Magdalena River defies the properties associated with the English term 'wetlands'. She therefore proposes the term *ciénaga* to grasp the enactments that constitutes this specific waterworlds along the Magdalena river (Amador 2021). Camelia Dewan (2021) has addressed what she calls a misreading of the Bengal Delta as modernist development projects fail to recognise the dynamic and fluid character that constitutes the coastal region of Bangladesh, and ultimately risk exacerbated climatic threats as well as increased structural inequality as a result of such misreading. Often in common ownership and with complex distributions of user rights, these riparian landscapes are uniquely constituted by such more-than human relations practices (see also Barnes and Alatout 2012). Understanding water calls for ethnographic attention to the relational specificities of such fluid entanglements, and how they inform and shape relations of interdependence, from the foreshore of Bengal, to the *ciénaga* of the Magdalena river, from rivers in Sápmi,

to plastic waste in the Pacific. So how are fluid environments shared, and how are they disrupted?

Aquatic Commons

If commons are defined as a ‘resource shared by a group of people’ (Hess and Ostrom 2007: 4), then oceans represent the ultimate, iconic image of the commons for humanity at large. Vast, and traditionally without legal property arrangements, oceanic territory has typically been seen as ‘free for all’, lending itself to the overexploitation, pollution and environmental degradation conventionally attributed to commons (Gordon 1954), underpinning the critique of commons as an inefficient system of governance (cf Cox 1984, see also Mansfield 2004). Various attempts to establish international agreements have sought to address this problem, most importantly through the EEZ (see above), dividing oceanic territories into zones with exclusive rights to different nation states, and distributing quotas to prevent overfishing. However, international treaties have mostly been unable to prevent over-exploitation and the accumulation of waste and pollutants. Furthermore, as Fiona Mc Cormack (2017) and others have shown, privatisation of the oceans by capital enterprise (e.g. through the introduction of market principles and individually transferable quotas), seriously undermines the idea of the ocean as a sustainable resource for future generations. Hence, just as ancient legal rights of commons were illegally overturned, misread and misused by medieval landlords in England, leading up to the British Enclosure Acts of the late eighteenth and early nineteenth century, which effectively dispossessed smallholders of their access to pasture (Cox 1984⁹), contemporary ocean grabbing by global capitalism may be seen as yet another wave of enclosures of common resources (Campling and Colás 2018; Mc Cormack 2017).

So what is it about ocean-as-commons that lends itself so easily to further enclosures? And how might the vision of limitless expansion, (as articulated e.g. by Norway’s former Prime Minister) be critically modified? Such questions call for a critical rethinking of both commons and oceans. Oceans do not end where the land begins. While the distinction between terrestrial and oceanic spaces are deeply entrenched in global governance regimes, this perspective tends to ignore other-than-human species whose habitat spans geopolitical and national boundaries as well as the legal structures dividing land and sea. The Atlantic Salmon is a prime example of a being that crosses such boundaries, resisting human efforts to pin them down. Hatching in rivers, migrating to the ocean to grow and returning to the river to spawn, they belong at various locations, as they move in and out of different riparian and oceanic territories of jurisdiction, as well as national boundaries and EEZs. Without a territorial home base, they challenge conventional property agreements. According to Gro Ween and Heather Swanson, the management of ocean-based fisheries today ‘is largely structured around the idea that countries “own” the salmon that spawn in their rivers and that they should have the exclusive rights to harvest them’ (Ween and Swanson 2018: 207). Yet, aquatic worlds are intrinsically connected: water flows and species flow with them. Heather Swanson shows how anadromous fish like salmon also challenge

the notion of domestication as place based, forcing us to rethink the edges of the Domus. Pacific salmon, she maintains, are irreversibly shaped by salmon restoration efforts in Hokkaido, Japan. Sea-ranched chum salmon migrate from Hokkaido to various patches of the North Pacific and the Bering Sea. Here, they seem to ‘hang out in almost the same neighbourhoods’ as chum salmon from the Norton Sound in Alaska, and the consequences matter for everyone involved, including Alaskan fishers who harvest chum salmon of smaller size, with diminishing success in spawning (Swanson 2018: 148–149).

In order to understand both the pitfalls and potentials of maritime ‘plantations’ we need to go against the current of terrestrial thinking. Mindful of relational qualities of water, we may instead consider aquatic connections as multispecies commons, and ask what such a maritime perspective implies for processes of dispossession at sea and in marine and riparian environments.

Fluid Dispossessions

An article by anthropologist Harry Walker draws the attention to how European notions of individualism, equality and justice based on the ‘equivalence of individuals’ (2020: 148) has informed classic models of the commons. This allowed a specific kind of abstraction, underpinned by ideas of equality as sameness, that in turn led to a quite specific understanding of social justice. This understanding, he argues, ‘is part of a broader failure to imagine being-in-common except through the lens of private property, the market and the state’ (Walker 2020: 148).

While a model that sees individuals as inherently equal is clearly attractive for state governance, it can easily misread how people relate to their surroundings, be it forests, rivers, estuaries or oceans. Such relations are always specific and call for, as Walker maintains, new ways of understanding forms of being-in-common that refuse or exceed the logic of identity, state and subject (see Mansfield and Doyle 2017 for a similar critique of the failure to address foundational assumptions of individual private property). Walker offers examples from Amazonia, but many other examples could be mobilised to show that traditional rights to utilise environmental affordances are usually *not* distributed through abstract notions of individuals as inherently equal, but based on socially recognised competence, needs or abilities, and based in situated relations. Such qualities do not make people equal, rather they unfold through dynamic, collective relations of care and affect (see e.g. Amador 2021; Dewan 2021).

For local Sámi inhabitants along the river *Deatnu* runs along the Norwegian-Finnish border, salmon fishing calls for sensitivity to the dynamic changes in the river and the returning salmon. This can sometimes involve stepping back and fishing in mountain lakes instead, because, as anthropologist and Sámi scholar Solveig Joks puts it; ‘the salmon needs peace and quiet’ (Joks 2015). She describes a subtle and common form of colonial dispossession, as Sámi legal rights to fish along the *Deatnu*, a nationally protected salmon river and fjord in Norway¹⁰ have been steadily dismissed or ignored through legal resolutions throughout the twentieth Century, and further undermined by national agreements between Norway and Finland. Her

rich account reveals how a shift has taken place from a flexible subsistence way of life, combining small scale agriculture, hunting and various forms of fishing, towards a policy-enforced specialisation within which salmon fishing gets coded as a recreational sport of catch and release. Locals lamented that the *Deatnu* in summer was like a motorway, *čáhppadin*, or full of people. At the same time, fishing regulations prevent or significantly shorten the timespans available for traditional Sámi fishing gear, such as drift nets. Locally recognised rights to fish that were entrenched in vernacular understandings of the specificities of the river, its more-than-human assemblages and the river's seasonal affordances, are now increasingly replaced by scientific imagery of the *Deatnu* salmon as a scarce and threatened resource. As such, *Deatnu* salmon is inscribed within a global format of biodiversity, or a 'commons-writ-large' in which everyone has equal rights. Yet, for many locals along the river, caring for salmon is not accomplished through an indiscriminate distribution of scientifically determined allowable catch, but through practices that are mindful of interspecies relations and obligations. Such practices are based in situated knowledge that resists the abstraction currently undertaken by fish biologists.

As the number of salmon returning to spawn has dramatically decreased, local fishermen have criticised the imposed fishery management regime for ignoring the role of the rise of non-human predators, such as Northern pike, seatrout, and sea otter (the latter has peaked as a result of a ban on hunting). The new restrictions have been strongly criticised by local and Sámi fishers, and led to the occupation of an island in the Tana/*Deatnu* River by a group of Sámi activists who declared a 'moratorium' on salmon regulations in response to the 2016 agreement between Norway and Finland (Brattland and Mustonen 2018). In 2021, a complete ban on salmon fishing was imposed on the Norwegian part of the *Deatnu* to mitigate the crisis. Locals called it a scandal,¹¹ while the major in the *Deatnu* municipality, Helga Pederesen, called for an independent investigation of the failed management regime.¹²

Brattland and Mustonen maintain that in spite of deeply entrenched local relations of care for rivers and salmon, The Norwegian state does not recognise any specific Sámi right or priority in relation to salmon fisheries (Brattland and Mustonen 2018¹³). The case of *Deatnu* illustrates how a species singled out as under threat by conservation management regimes simultaneously gets disconnected from the local care practices that have sustained interspecies relations since time immemorial. These include not only human-salmon relations, but also caring for interspecies relations between in various parts of the river and at various stages of the salmon life-cycle, gesturing towards a dynamic and unpredictable riverine landscape. While upscaling takes place in the name of conservation, the moratorium on traditional modes of relating to the river and its species makes *Deatnu* a 'landscape of alienation' (Joks 2015: 131–132, see also Olwig 2005).

This story is not unique, nor is it specific to rivers. Indeed, it exemplifies a settler-colonial relationship described also from other salmon regions, such as Canada (Coulthard 2014¹⁴). I mobilise it here because it is another example of fluid dispossession, and because it alerts us to the different ontological meanings and practices of commons: The critique of current environmental strategies that are articulated by

indigenous scholars such as Solveig Joks and Camilla Brattland do not only concern the well-known argument about needing to take local ecological and traditional knowledge seriously. They can also be read as an implicit critique of the idea of egalitarian individualism underpinning environmental management practices more generally, one in which local vernacular and often non-formalized modes of caring and sharing are replaced by a kind of ‘free for all’, nationally regulated resource-making in which salmon is equally scarce for everyone involved. Salmon becomes an equally distributed resource, a new kind of ‘commons’ in which human individuals are rendered equal, and traditional knowledge is erased or made irrelevant or obsolete, while entanglements of social and natural worlds that defy universalising assumptions about people being equal are ignored.¹⁵ In addition to the moratorium on fishing, it is this ignorance of the ways in which *Deatnu* salmon assemblages are *not* scalable (see also Tsing 2000) that lead to what I refer to here as *fluid dispossession*.

To govern such rivers as if they were commons in the sense of being an equally shared pool of resources, is to overlook the embodied and specific local knowledge about multi-species relations that can *not* be universally shared. In this sense, it is relevant to problematise the very notion of commons for what it leaves out, and to ask what *other* terms might capture such relationships. The case at hand offers a few examples.

In Northern Sámi, a notion that has been much discussed is the term *meahcci* (plural: *meahcit*) which is repeatedly mis-translated into Norwegian as *utmark*, or outfields, but which is better described as a creative collection of practical places and relations, or a set of activity spaces (Rybråten 2013; Valkonen and Valkonen 2018; Joks *et al.* 2020). This is not unique to Sámi language, however: In vernacular Norwegian, terms like ‘bærmyra’ (the berry marsh), or ‘seiegrunnen’ (a shallow part of an estuary which lends itself to fishing pollock) index, in a similar way, the relational and seasonal affordances of certain activity spaces, (the latter currently appropriated for other purposes, including salmon aquaculture).

With reference to Amazonia, Harry Walker emphasises the role of the body as a bundle of habits and capacities, that ‘corresponds to, and indexes, a particular ecological niche: a common environment’ (2020: 158). In the Amazonian context he refers to, this common environment is the product of human action, and it is difficult, if not impossible, he argues, ‘for individuals or groups to establish anything like exclusive rights of ownership over them’ (158). Instead, there is a sense of ‘collective belonging to the land, and of the land as something for the benefit of everyone’ (ibid: 158). The reluctance to establish exclusive rights to such common environments, makes it easy for outsiders to (mis-)translate it as an egalitarian-individualised ‘commons’, overlooking that a radically different concept of the relation between humans and non-human species is thus undermined. Ironically, it is precisely through such mistranslations that measures of environmental protection are often justified, such as through implicit references to ‘our common future’, or ‘the blue planet’, terms that serve to further erase or conceal situated forms of fluid dispossession. And it is by ignoring the complex and dynamic relations inherent in vernacular concepts such as *meahcci* that the idea of limitless capitalist expansion can take hold. Thus, mistranslations enable and facilitate fluid dispossession. Let us return to aquaculture.

Aquaculture as Plantation? Scalability and Thresholds

Salmon aquaculture has lent itself extremely well to certain forms of growth. It has indeed spearheaded the maritime plantation economy's imagery of ocean-as-infrastructure for capital gains. Undertaking fieldwork among salmon farmers in West Norway between 2008 and 2012, John Law and I were often told about the tremendous changes that had happened during the past ten to twenty years (e.g. Lien and Law 2019). Rebecca, a middle-aged woman who had taken part in the salmon farming enterprise since the late 1980s, told us how when it all started, the wooden salmon cages were close to the shore, and about 6 × 6 metres, hexagon shaped. At this time salmon were still fed with fish scraps from the local fish landing facility. Since then, dry fish pellets have allowed feed to be stored, handled, and transported around the world, facilitating an expansion that few had imagined (Lien 2015). In the meantime, the facility she was in charge of has been purchased by a larger firm, and Rebecca was now the local operation manager, responding to the firm's incessant strategy for growth (both in overall size and in terms of economies of scale). Although Rebecca had sworn that her cages would never ever exceed 24 × 24 metres, she had eventually installed one that was 35 × 35 metres and held 80,000 fish (Lien 2015: 43–45). Compared with other facilities around 2010, however, her cages were not particularly large. What Rebecca and other successful salmon farmers had witnessed, was salmon aquaculture's scalability, i.e. the ability of something to expand without significantly altering the relation between its various parts (Tsing 2012). This, Tsing argues, is the hallmark achievement of the plantation, which later came to serve as a model for capitalist expansion worldwide. It is this model that turned out to work so well for the salmon domus, and which has appeared, until recently, as a recipe for limitless growth.

However, as Tsing (2013) has also noted, capitalist commodity value is created through tapping and transforming non-capitalist social relations. Aquaculture is no exception. Knowing how to handle boats and moorings in rough weather, for example, relies on such relations: sustained through social networks locally situated in a coastal landscape where navigating rough waters was essential for survival. Intimately connected to the ability to sense the wind, the waves as well as underwater cliffs, such local knowledge is intimately shaped by the many properties of water: to conceal, to flow, to yield and to mediate. They reflect water's intrinsic properties, but are also always specific, anchored in vernacular language, local seascapes and able bodies. Along the Norwegian coastline, this typically includes patterns of migration for different fish, their propensity to be caught with different gear, and the way that seasons and annual cycles vary. What was rarely discussed explicitly among the salmon-farm workers, but alluded to by some, was the way in which aquaculture facilities might undermine the viability of certain fish (e.g. pollock, cod, halibut, herring) and thus the local fisheries that this specific and situated knowledge was connected to. Might the future scenarios for aquaculture expansion undermine its own knowledge base? The question is rarely asked. For the authorities and in publicly funded research, the focus is rather on how salmon aquaculture might affect wild salmon populations in nearby rivers, through accidental escape-events, and through

the spread of sea-lice. Many resources seek to mitigate this, through various attempts at delousing, including the domestication of so-called cleaner fish, or wrasse (see Lien 2015 and 2017 for details).

What is at stake here is intimately connected to the fluid properties of water. As elaborated elsewhere, aquacultural infrastructure are devices for naturalising nature, protective measures to contain the domestic within the presumably untouched nature that surrounds it. Hence an aquacultural facility is a ‘world of nets, ropes, tanks, walls, pipes and filters, together with a lot of human effort’ (Law and Lien 2018). Good locations for salmon are those that have a good current, constantly supplying fresh oxygen, while transporting residue out of the pen. However, letting the water in means that microorganisms enter too. So a good current can also become a bad current, allowing sea-lice to move freely in and out of salmon cages, potentially infecting wild salmon as they make their way between the river and the distant ocean. The greater the density of salmon pens, and of fish in each pen, the greater the chance that migrating wild salmon get infected.

The multispecies entanglements of salmon, exposed by this intermediary parasite, is precisely what *prevents* salmon aquaculture to expand *ad infinitum*. Hence, the fluidity of water, the way it *flows*, prevents scalability in salmon aquaculture. While other relational properties are more ‘cooperative’ or can be overcome, the ubiquitous current is not. The combination of high levels of sea-lice, marine currents and permeable nets is only an example of scalability’s critical thresholds, effectively preventing the multispecies assemblage to multiply even more, at least for now. It should not come as a surprise. Ecological relations are like that (cf. Blanchette 2020). Yet, there is something more at stake concerning water, its depth and vastness, that permits the image of limitless expansion to take hold, concealing non-scalable relations (Tsing 2012).

Anthropocene Entanglements and Future Commons

The dual image of oceans as frontiers ‘up for grabs’, and aquatic spaces as a commons has not only facilitated projects of capitalist expansion, but also justified what is referred to here as fluid dispossessions. Some forms of dispossession involve intrinsic propensities of water, such as currents with far-reaching effects. Such mobilities can transform livelihoods on distant shores, as in Swanson’s (2018) account of Hokkaido sea ranching practices on Pacific salmon returns in Alaska. Other forms of dispossession are more contested, such as the interspecies relations along the *Deatnu*, where the protection of sea otter may constitute an underestimated threat to salmon, and partly explain the dramatically diminished returns. Both examples concern aquatic properties that make human practices of care a kind of guesswork, based on subtle cues and knowing from a distance.

Fluid dispossession may also concern misrecognition regarding how aquatic spaces are shared and cared for (Joks *et al.* 2020). The notion of egalitarian individualism underpinning the image of aquatic spaces as commons ‘free for all’, serves to conceal, or even undermine, local practices of care and ownership that are neither based on egalitarian individualism, nor legally formalised. This echoes the wide-

spread misinterpretations of the ancient regulations of commons in England, and the way such misinterpretations justified further dispossession (cf Cox 1984). As I have indicated, the fact that aquatic spaces and water bodies are not legally owned through private property arrangements, does not mean that they are not, in a more fluid sense of the term, 'owned' and cared for. As the distinction between property and ownership is ignored or misinterpreted, fluid dispossessions may result, as in the case of *Deatnu*.

Capitalist expansion is largely responsible for global climate change, and this in turn has introduced novel challenges to marine governance. Increased atmospheric CO₂ is expected to increase ocean acidity with unforeseen effects on oceanic micro-organisms, and hence the entire marine food chain. From melting Arctic ice to marine species extinctions, it is becoming increasingly clear that the ocean and its affordances can no longer be taken for granted. Similar challenges concern rivers, lakes, estuaries and fjords. This represents governance challenges at an unprecedented magnitude and scale. How then, might we imagine aquatic sites as future commons for humans as well as for other species in the Anthropocene?

In this article I have pointed to some dimensions to take into consideration, related to the intrinsic and relational qualities of water, qualities that tend to be ignored by terra-oriented governance regimes. I have shown how fluid dispossession involves more-than-economic relations, and more-than-human relations of dependency and care. Most importantly, I have indicated that while the ocean-as-infrastructure invites capitalist imaginary of endless expansion, aquatic resources have limits too. Scalability is in the eyes of the beholder, and social and biological thresholds may well operate 'under the surface'. Imagining aquatic spaces as future commons calls for a closer attention to all these relations, including modes of caring and sharing amongst human and non-human entities that are only partly known.

Ethics Declaration

I confirm that research has been conducted in accordance with the Guidelines for Research Ethics in the Social Sciences, Humanities, Law and Theology, and the Norwegian Data Act. The University of Oslo has an agreement with the Norwegian Center for Research Data (NSD), to assist in fulfilling the duties relating to internal control and quality assurance of the research produced at the University of Oslo. Informed consent procedures and data storage platforms have been assessed and approved by NSD. Informed consent has been obtained from all aquaculture research participants, both individually from selected interlocutors, and from the aquaculture firm where fieldwork was conducted.

Notes

1. Forutsigbar og miljømessig bærekraftig vekst i norsk lakse- og ørrettoppdrett [Predictable and environmentally sustainable growth in Norwegian salmon and trout aquaculture]. Det Kongelige Nærings og Fiskeridepartement [Ministry of Trade Industry and Fisheries] (2015: 24).

2. Source Home | High Level Panel for a Sustainable Ocean Economy (oceanpanel.org).
3. Source: WWF: Facts & Figures: The cold hard facts about overfishing – Fish Forward (WWF).
4. Historian Susan Cox wrote, with reference to the widespread misinterpretation of medieval commons in England as inherently inefficient and bound to fail: ‘there is a general impression among most people today that the tragedy was a regular occurrence on the common lands of the villages in medieval and post-medieval England – a belief which, despite its wide acceptance as fact, is historically false’ (Cox 1984:33).
5. For a discussion of Welfare Frontiers, see Hastrup and Lien (2020).
6. Issued by state authorities in relation to municipal areal and environmental strategies. Source: Lov om akvakultur (akvakulturloven) – Lovdata.
7. 1.15 to 2.41 million metric tonnes of plastic are entering the ocean each year according to the ‘Ocean Cleanup’. Source: <https://theoceancleanup.com/great-pacific-garbage-patch/>.
8. Referring to the passive global transport of human-made toxicants around the world through currents of air and sea, Geissler and Prince (2020) write: ‘a crucial challenge to toxic politics is the invisibility and indeed imperceptibility of many harmful substances, and the resulting problem of evidence: what compounds are found in a given environment, where do they hail from, how do they enter and accumulate in human and non-human bodies and materials, and what are their effects?’ (ibid: 4).
9. Incidentally, the Enclosure Acts also gave rise to the very notions of commons, according to Hess and Ostrom (2007).
10. This implies that the fjord is seen as being of great value for the Atlantic Salmon, and salmon farming along the fjord is prohibited.
11. Historian and local fisherman Steinar Pedersen laments that a six thousand year old practice has come to an end due to the authorities’ failed management regime and their ignorance of local ecological knowledge Source: <https://www.nordnorskdebatt.no/lakseforvaltninga-i-nord-er-en-skandale/o/5-124-115973>.
12. Source: https://www.nrk.no/tromsogfinnmark/stopp-i-laksefisket-i-tanavassdraget_-_overfiskefar-skylda-1.15446565.
13. As Brattland and Mustonen (2018:381) note, the fishery is Tana (*Deatnu*) Act of 2014 extended the fishing right limited to rod fishing only, ‘to the general population in the Tana Valley, and upheld the previously acknowledged right to fish with any gear, including nets and weirs traditionally used by the Sámi, of inhabitants settled close to the river and annual producers of 2000 kg of hay’.
14. Glenn Coulthard defines a settler-colonial relations as one

characterized by a particular form of *domination*, that is, it is a relationship where power – in this case, interrelated discursive and nondiscursive facets of economic, gendered, racial, and state power – has been structured into a relatively secure or sedimented set of hierarchical social relations that continue to facilitate the *dispossession* of Indigenous peoples of their lands and self-determining authority. (Coulthard 2014: 6–7).
15. For the role of traditional ecological knowledge in the Finnish and Norwegian governance of salmon, see Brattland and Mustonen (2018).

Acknowledgements

An early draft of this paper was presented for the panel Contested Waters and Fluid Properties in Capitalist Natures, at the Third Biennial Conference of the Political Ecology Network (POLLEN 20), entitled Contested Natures: Power, Possibility, Prefiguration. I thank the session organisers and Special Issue editors, Camelia Dewan and Knut G. Nustad for fruitful discussions and suggestions, and Pierre du Plessis and Tirza Meyer for alerting me to specific literature on oceans and commons. I am indebted to John Law for our collaborative fieldwork, and to Gro B. Ween and Kristin Asdal for

contributions to the project. At the Department of Social Anthropology, University of Oslo, in my indebted to my colleagues Elisabeth Schober, Thomas Hylland Eriksen, and Ingjerd Hoem for our collaborative insights and inquiries around the notion of Future Commons. Finally, I wish to thank the Oslo School of Environmental Humanities, University of Oslo, for inspiration and support through the writing process.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

The article draws on the research project Newcomers to the farm, Salmon Aquaculture between the Wild and the Industrial, funded by the Research Council of Norway (project no. 183352/S30).

References

- Amador, Mónica J. 2021. *Making Ciénaga: Amphibious Entanglements in a Body of Water in Colombia*. (PhD Dissertation). Department of Social Anthropology. University of Oslo, Oslo.
- Barbesgaard, Mads. 2018. Blue Growth: Savior or Ocean Grabbing? Forum on Climate Smart Agriculture. *The Journal of Peasant Studies*, 45(1):130–149.
- Barnes, Jessica & Samer Alatur. 2012. Water Worlds: Introduction to the Special Issue of *Social Studies of Science*. *Social Studies of Science*, 42(4):483–448.
- Blanchette, Alex. 2020. *Porkopolis: American Animality, Standardized Life, and the Factory Farm*. Durham: Duke University Press.
- Brattland, Camilla & Tero Mustonen. 2018. How Traditional Knowledge Comes to Matter in Atlantic Salmon Governance in Norway and Finland. *Arctic*, 71(4):375–392.
- Breivik, K., J. M. Armitage, Frank Wania, Andrew J. Sweetman & Kevin C. Jones. 2016. Tracking the Global Distribution of Persistent Organic Pollutants Accounting for E-Waste Exports to Developing Regions. *Environmental Science & Technology*, 50(2):798–805.
- Campling, Liam & Alejandro Colás. 2018. Capitalism and the Sea: Sovereignty, Territory and Appropriation in the Global Ocean. *Environment and Planning D: Society and Space* 36(4):776–794.
- Catalá, Teresa S., Spencer Shorte & Thorsten Dittmar. 2021. Marine Dissolved Organic Matter: A Vast and Unexplored Molecular Space. *Applied Microbiology and Biotechnology*, 105:7225–7239.
- Coulthard, Glen. 2014. *Red Skin, White Masks*. Minneapolis: University Minnesota Press.
- Cox, Susan Jane Buck. 1984. No Tragedy on the Commons. *Environmental Ethics*, 7(1):49–61.
- Dewan, Camelia. 2021. *Misreading the Bengal Delta: Climate Change, Development and Livelihoods in Coastal Bangladesh*. Seattle: University Washington Press.
- Geissler, Wenzel & Ruth Prince. 2020. ‘Toxic Worldings’: Introduction to Toxic Flows. *Anthropology Today*, 36(6):3–4.
- Gordon, H. S. 1954. The Economic Theory of a Common-property Resource: The Fishery. *Journal of Political Economy*, 62(2):124–142.
- Hastrup, Kirsten & Frida Hastруп. 2015. *Waterworlds. Anthropology in Fluid Environments*. Oxford: Berghahn.
- Hastrup, Frida & Marianne E. Lien. 2020. Welfare Frontiers? Resource Practices in the Nordic Arctic Anthropocene. *Anthropological Journal of European Cultures*, 29(1):v–xxi.
- Hess, Charlotte & Ellinor Ostrom. 2007. *Understanding Knowledge as a Commons: from Theory to Practice*. Cambridge: MIT Press.

- Joks, Solveig. 2015. "Laksen trenger ro" Tilnærming til tradisjonelle kunnskaper gjennom praksiser, begreper og fortellinger fra Sirbmá-området. Avhandling levert for graden Philosophiae Doctor – desember 2015. UiT Norges Arktiske Universitet.
- Joks, Solveig, Liv Østmo & J. Law. 2020. Verbing meahcci: Living Sámi lands. *The Sociological Review*, 68(2):305–321.
- Law, John & Marianne E. Lien. 2018. Denaturalizing Nature. In *A World of Many Worlds*, edited by Marisol de la Cadena and Mario Blaser, 131–172. Durham: Duke University Press. Chapter 5.
- Leivestad, Hege H. & Elisabeth Schober. 2021. Politics of Scale: Colossal Containerships and the Crisis in Global Shipping. *Anthropology Today*, 37(3):3–7.
- Lien, Marianne. 2015. *Becoming Salmon. Aquaculture and the Domestication of a Fish*. Oakland: University California Press.
- . 2017. Unruly Appetites: Salmon Domestication 'All the Way Down'. In *Arts of Living on a Damaged Planet; Monsters of the Anthropocene*, edited by A. Tsing, H. Swanson, E. Gan and N. Bubandt. Minneapolis: University Minnesota Press.
- Lien, Marianne & John Law. 2019. The Ghost at the Banquet. In *Anthropos and the Material*, edited by P. Harvey, K. Nustad and C. Krohn-Hansen. Durham: Duke University Press.
- Mansfield, Becky. 2004. Neoliberalism in the Oceans: "Rationalization," Property Rights, and the Commons Question. *Geoforum*, 35:313–326.
- Mansfield, Becky & Martin Doyle. 2017. Annals of the American Association of Geographers. *Nature: A Conversation in Three Parts*, 107(1):22–27.
- McCay, Bonnie J. 2001. Community-based and Cooperative Fisheries: Solutions to Fishermen's Problems. In *Protecting the Commons: A Framework for Resource Management in the Americas*, edited by J. Burger, E. Ostrom, R.B. Norgaard, D. Policansky and B.D. Goldstein, 175–194. Washington, DC: Island Press.
- Mc Cormack, Fiona. 2017. *Private Oceans; The Enclosure and Marketisation of the Seas*. London: Pluto Press.
- Norwegian Ministry of Industry and Fisheries [Nærings- og Fiskeridepartementet]. 2021. *Et hav av muligheter* [An Ocean of Possibilities]. Oslo: Nærings- og Fiskeridepartementet. Et hav av muligheter – regjeringens havbruksstrategi.
- Olwig, Kenneth R. 2005. Representation and Alienation in the Political Land-scape. *Cultural Geographies*, 12(1):19–40.
- Ostrom, Ellinor. 1990. *Governing the Commons*. Cambridge: Cambridge University Press.
- Richardson, Tanya & Gisa Veskalnys. 2014. Introduction: Resource Materialities. 87(1):5–30.
- Rybråten, Stine. 2013. "This is Not a Wilderness. This is Where We Live." *Enacting Nature in Unjårga-Nesseby, Northern Norway*. (PhD thesis). Department of Social Anthropology, University of Oslo, Oslo.
- Steinberg, Philip E. 2018. The Ocean as Frontier. *International Social Science Journal (Special Issue: Ocean Frontiers: An interdisciplinary examination of the changing contours of marine knowledge, governance and economic activity)*. September-December 2018. 68:237–240.
- Swanson, Heather. 2018. Domestication Gone Wild; Pacific Salmon and the Disruption of the Domus. In *Domestication gone wild; Politics and Practices of Multispecies Relations*, edited by H.A. Swanson, G.B. Ween and M.E. Lien, 141–159. Durham: Duke University Press. Chapter 6.
- Tsing, Anna. 2000. The Global Situation. *Cultural Anthropology*, 15(3):327–360.
- . 2003. Natural Resources and Capitalist Frontiers. *Economic and Political Weekly*, Nov. 29–Dec. 5, 2003, Vol. 38, No. 48 (Nov. 29–Dec. 5, 2003), pp. 5100–5106.
- . 2012. On Nonscalability: The Living World is not Amenable to Precision-Nested Scales. *Common Knowledge*, 18(3):505–524.
- . 2013. Sorting Out Commodities: How Capitalist Value is Made Through Gifts. *HAU: Journal of Ethnographic Theory*, 3(1):21–43.
- Valkonen, J. & S. Valkonen. 2018. On Local Knowledge. In *Knowing from the Indigenous North: Sámi Approaches to History, Politics and Belonging*, edited by T.H. Eriksen, S. Valkonen and J. Valkonen, 12–26. Routledge.

- Walker, Harry. 2020. Equality Without Equivalence: An Anthropology of the Common. *JRAI*, 26:146–166.
- Ween, Gro Birgit. 2012. Resisting the Imminent Death of Wild Salmon: Local Knowledge of Tana Fishermen in Arctic Norway. I Johnsen, Jahn Petter; Carothers, Courtney; Criddle, Keith R.; Chambers, Catherine P.; Cullenberg, Paula J.; Fall, James A.; Himes-Cornell, Amber H.; Kimball, Nicole S.; Menzies, Charles R. & Springer, Emilie S. (Red.), *Fishing People of the North; Cultures, Economies, and Management Responding to Change*. Alaska Sea Grant. 153–71.
- Ween, Gro B. & Heather A. Swanson. 2018. How the Salmon Found Its Way Home. In *Domestication Gone Wild; Politics and Practices of Multispecies Relations*, edited by H.A. Swanson, G.B. Ween and M.E. Lien, 196–215. Durham: Duke University Press. Chapter 9.