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Journal of Anthropology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/retn20

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To cite this article: Camelia Dewan (11 Jul 2023): Toxic Residues in Fluid Commons: More-Than-Economic Dispossession and Shipbreaking in Coastal Bangladesh, Ethnos, DOI: 10.1080/00141844.2023.2208309

To link to this article: https://doi.org/10.1080/00141844.2023.2208309

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Published online: 11 Jul 2023.

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ETHNOS
https://doi.org/10.1080/00141844.2023.2208309

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Toxic Residues in Fluid Commons: More-Than-Economic Dispossession and Shipbreaking in Coastal Bangladesh

Camelia Dewan

University of Oslo, Norway

ABSTRACT

This article examines processes of 'more-than-economic dispossession' arising from pollution in the interconnected forests, tides, canals, rivers and humid airs – the fluid commons – of the shipbreaking region Sitakunda. It ethnographically explores how minority Zele fishermen and shipbreaking workers are experiencing three interrelated forms of 'more-than-economic' dispossession. First, extra-economic means of accumulating profits by dismantling ships in cheaper countries enables dispossession by pollution in coastal ecologies. Second, more-than-economic points to the structures of political power inequalities making marginalised Bangladeshis exposed to toxics in ways that cannot be economically compensated. Lastly, more-than-economic draws on 'more-than-human' ethnographies: affective experiences of sensing, tasting, hearing and smelling pollution reveal how toxic residues biophysically damage the health of both human and more-than-human, resulting in the loss of ability to 'sustain life'. It thus joins the growing body of anthropological scholarship that expands on pollution as 'matter out of place' by taking its materiality seriously.

ARTICLE HISTORY Received 29 December 2021; Accepted 25 April 2023

KEYWORDS Toxicity; accumulation by dispossession; Bangladesh; environmental justice; development

Introduction

Shipbreaking, the breaking up of ships into steel plates, is one of the most dangerous occupations in the world. For more than two decades, NGOs have used images of bare-footed labourers wading through the muddy beaches of the Global South to put pressure on maritime corporations and the governments of ship-owning nations to improve precarious labour conditions (A Greenpeace-FIDH-YPSA Collaboration 2005; National Geographic 2014; Vidal 2017; NGO Shipbreaking Platform 2017).

CONTACT Camelia Dewan camelia.dewan@sai.uio.no

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These vessels range from container and cargo ships to fuel tankers, whereas Bangladeshi shipbreakers specialise in dismantling large oil tankers – the most toxic of ships (Abdullah *et al.* 2013). Thus, in addition to lethal maiming accidents, shipbreaking workers are also exposed to significant toxic hazards when ships are taken apart: from asbestos and radioactive wastes to heavy metals and crude oil that contain persistent organic pollutants (POPs) like polychlorinated biphenyls (PCBs) and dioxins (Hossain, Sharifuzzaman & Rahman Chowdhury 2016).

Shipbreaking in southeast coastal Bangladesh is done on intertidal beaches. Tides carry hazardous materials far away from the confines of land-based shipbreaking yards. Crude oil [*kalo tel*, black oil] with its POPs and PCBs travel with the tides to nearby mangroves, canals, rivers and agricultural soils while carcinogenic smoke arising from shipbreaking and steel processing industries intermingle with air pollution from the heavily trafficked Dhaka-Chittagong highway to blend with these waters through heavy rains. These entangled ecologies of interconnected forests, tides, canals, rivers and humid airs constitute a coastal 'fluid commons'. This article explores how dispossession here is more than one of the loss of access to common lands – but related to the more-than-economic forms of loss by people living in, and off of, a wetlands ecology materially transformed by pollution (Figures 1–4).

One of my main local field assistants was 'Rahim', a young shipbreaking worker living close to the yards who took me to see the dwellings of shipbreaking workers and their families, to abandoned yards with their oiled and dirty beaches and the villages of Hindu Zele fishermen caste located in-between Sitakunda's shipbreaking yards.[1] Nikhil Kaka, a 60-year-old Zele elder lived in a cramped village located near a black and pinkish canal that polluted domestic ponds. It comprised homesteads of cracked mud and sheds made out of cement bags and sticks, with powders and fibres scattered along the village, some of which were asbestos and glass wool.

Figure 1. Shows the coastline of Sitakunda, and the oil spillage surrounding yards. Photo credit: Google Maps, February 2020.

Figure 2. Abandoned yard, Sitakunda district. Photo credit: Author, February 2020.

Nikhil kaka explained that these substances cause fever and cough. In addition, crude oils and other pollutants in the water harmed the fish they continue to depend on for their living as Zele are not hired in any industries.

Figure 3. Image of a signboard marking a plot of land to be developed into a shipbreaking yard. Photo credit: Author, February 2020.

Figure 4. Unidentified substances in the canal of a Zele village

Sitakunda is an agrarian area seeing ongoing processes of accumulation and dispossession as it is being made into a state-designated special economic zone, following familiar patterns of state-led development-induced dispossession in South Asia (Fairbairn *et al.* 2014; Levien 2012) that fails to provide meaningful employment for all sections of the rural population despite promises of 'economic growth' (Levien 2013). The Zele are landless and are not being dispossessed by the land they live on. Rather, they are being dispossessed from 'the possibilities to sustain life' (Ojeda 2021: 86) as shipbreaking activities through beaching and pollution negatively affect their social reproduction, that is, 'the social and ecological structures, relations and institutions that sustain life at the individual, communitarian, local and planetary level' (Ojeda 2021: 87).

This article argues that the circulation of toxic residues materially transforms the fluid commons that sustain life and provide means of social reproduction. Dispossession here is not limited to the denial of access and use rights to land. As Nikhil kaka points out, their lives are impacted by pollution that travel far from the boundaries of land-based industrial facilities. While moving waters evade the fixity of property and the regulations that apply to land (Strang 2011), toxic residues are also transgressive and disobey boundaries (Boudia *et al.* 2018, 167) as they 'leak, ooze and persist' (Packer 2021). Unlike the reversible salinisation of arable lands from shrimp farming that diminish rural people's capacity to socially reproduce through 'in situ displacement' (Feldman and Geisler 2012: 974), persistent organic pollutants from industries are 'forever chemicals' that bioaccumulate in the environment, food and bodies.

The concept of 'more-than-economic' dispossession draws attention to how pollution affect more-than-human co-habitation, and causes the loss of health for both human and more-than-human (fish, waters), over time and across generations. This focus on the materiality of *polluted* waters expands on the usage of more-than-economic dispossession in the introduction to this special issue on 'fluid dispossessions', where it is described as the disruption of existing affective, symbolic or spiritual relations with water (Dewan and Nustad, this issue). I use 'more-than-economic' to denote three different interlinked things (1) *extra-economic* means of accumulation result in pollution; (2) How capitalist *social* relations permits uneven toxic exposure; (3) how pollution disrupts human and more-than-human health. It thus joins the growing body of ethnographies that take the material properties of pollution seriously (Fisher *et al.* 2021; Dietrich 2021), departing from Douglas's (1966) classic suggestion that pollution constitute socially-constructed ideas of 'matter out of place'.

The article explores three aspects of more-than-economic dispossession. First, 'more-than-economic' dispossession includes the *extra-economic means* of shifting dismantling to cheaper locations that allow for profit accumulation by contamination (Demaria 2016). The 2009 'Hong Kong Convention for Safe and Environmentally Sound Ship Recycling' (HKC) results in ship owners transferring liability for handling hazardous wastes to poorer countries in ways that increase rates of enclosure for polluting shipbreaking. Second, more-than-economic dispossession emphasises the importance of capitalist *social* relations in perpetuating structures of political power inequalities shaping uneven toxic exposure. Lastly, more-than-economic dispossession draws attention to the 'more-than-human', where affective experiences of sensing, tasting, hearing and smelling pollution reveal how toxic residues damage the health of both human and more-than-human, resulting in the loss of ability to 'sustain life'.

More-Than-Economic Dispossession in Fluid Commons

In *Dispossession and the Environment*, Paige West asks whether anthropologists draw theory out of our evidence, or read our evidence through European social theory and Western philosophy (West 2016). Admittedly, centring this paper on a standardised set of analytic lenses such as Marxist accumulation and dispossession risks falling into the latter. I am, however, attempting to use my empirical findings to reconstruct processes of accumulation and dispossession through locally articulated capitalisms (Fairbairn *et al.* 2014). By focusing on '*fluid* commons' and '*more-than-economic*' dispossession as an affective critique, this article attempts to draw theory out of ethnography and make sense of my interlocutors seeing, smelling, tasting, hearing and sensing different forms of loss, change and embodied experiences of industrial pollution and its material transformation of the fluid commons they live on, and from.

In deltaic ecologies, waters are inseparable from airs or soils, these are entangled ecologies, fluid commons where natural resources are not clearly delineated or defined. The use of 'fluid' draws from a growing critical scholarship that points out the colonial construction of artificial boundaries of solid (land) and liquid (flowing waters) in South Asia (Mukherjee & Ghosh 2020) where waters and silt are entwined

and ever-shifting (D'Souza 2006; Lahiri-Dutt & Samanta 2013; Bhattacharyya 2018; da Cunha 2018; Mukhopadhyay 2017; Dewan 2021).

The inseparability of land and water comes to the fore with the polluted transformations of fluid commons. Ethnographies of 'living with' chemicals highlight the generative possibilities of toxicity: from how affective experiences of injurious chemicals may be feared or desired (Chen 2012), 'chemosociality' from collective exposures to chemicals (Shapiro & Kirksey 2017; Kirksey 2020) to 'chemical kinship' (Balayannis & Garnett 2020). We may all live in a permanently polluted world where 'the pollution of the water has joined the molecular fabric of our bodies' (Murphy 2013: 495), but dumping toxic vessels on the Global South illustrates how people are not equally exposed or protected. While focusing on 'damage' may pathologise already dispossessed communities, making them 'less than fully human' (Murphy 2017) and stigmatise 'polluted bodies' (Theriault & Kang 2021), the use of more-than-economic dispossession is an attempt to emphasise that political structures enable uneven toxic exposure, necessitating *acting* in a permanently polluted world (Liboiron, Tironi & Calvillo 2018).

Extra-Economic Cost-Shifting and Toxic Liability

Marx's concept of primitive accumulation refers to processes where 'peasants enjoyed the right to exploit the common land, which gave pasture to their cattle, and furnished them with timber, fire-wood, turf etc', and where enclosure entails expulsing the peasantry from the land using extra-economic force (Marx 1976, 1:877). Harvey's (2005) concept of Accumulation by Dispossession (ABD) further extends Marx's primitive accumulation by incorporating global capitalist financial processes since 1973 where over-accumulated capital finds new outlets and appropriated nature is converted into financial investment and speculation. Levien further suggests that ADB includes the use of extra-economic coercion to expropriate means of production, subsistence or common social wealth (Levien 2012: 940). Viewing pollution as a form of extra-economic coercion, 'accumulation by contamination' can be seen as chemical warfare (Picard and Beigi 2022) with the 'incentive to contaminate' (Ofrias 2017: 436–437).

One aspect of *more-than* economic draws on ecological economic ideas of 'extra-economic means' as cost-shifting – the socialisation of costs that may endanger the means of subsistence of humans (Demaria 2017: 83–84; 164–165). Demaria argues that there are systematic tendencies of cost-shifting environmental damages to the Global South through a system of [profit] 'accumulation by contamination' maintained by those in power – ship owners, ship breakers and authorities' (Demaria 2016: 300). Furthermore, the implementation of the Hong Kong Convention for Safe and Environmentally Sound Ship Recycling – despite promises of environmentally safe practices – continues an evasion of liability from pollution. Notably, the HKC is much less stringent with its environmental regulations than the 2018 EU Ship Recycling Rules. The global maritime industry, the shipping economy that prioritises the profits of ship owners and large multinational shipping conglomerates, externalise the costs of toxic waste disposal outside their own borders (Demaria 2010: 2).

Shipbreaking in Bangladesh thus reproduces a racial capitalist system that devalues non-white bodies so that they are more exposed to harmful chemical agents than white bodies (See Pulido 2016). This can be interpreted as an example of modern imperialism (Packer 2021) where the Global North knowingly pollutes 'the Global South as its receptable of waste for unrestricted capitalist accumulation' (Stein & Luna 2021: 100). This inequality of *who* lives with *what* toxins is also seen in the environmental racism against black communities in the US (Pulido 2016; Murphy 2013; Davies 2018) and as settler colonial violence in North America (Hoover 2017; Liboiron 2021; Gross 2021; Voyles 2015; Murphy 2017). More-than-economic dispossession through the extra-economic means of cost-shifting as 'accumulation by contamination' thus illustrates how global inequalities underpin the unequal distribution of toxic exposure (Liboiron, Tironi & Calvillo 2018).

Capitalist Social Relations

The agrarian coastal district of Sitakunda has in the past decade been designated a special economic zone by the state, seeing a rapid transformation into a peri-urban industrial zone with increased class divides. This is captured by the speeding trucks loaded with shipping containers carrying goods from ships and local factories on the Dhaka–Chattogram highway that runs alongside the shipbreaking facilities. The route is paved with various factories and shops selling items recycled from ships and illustrates the importance of ship recycling in providing consumer goods to Bangladeshi middle classes (Gregson *et al.* 2010) – indeed, the processing 'waste' from ships into economic goods creates 'industrial symbiosis' (Gregson *et al.* 2012). This highway symbolises how Bangladesh's shipbreaking industry is intimately tied to both the global and national economies.

Wealthy national conglomerates have capitalist relations, the ability to mobilise capital and land (Li 2014), to benefit from lucrative shipbreaking, while Sitakunda landowners able to sell their plots to businesses accumulate the funds to set up shops selling recycled goods from the ships – or move elsewhere. These capitalist relations are not only material and based on land and capital (Li 2014), but social in the sense that these actors have the social (often kinship) networks to benefit from development (Dewan 2020). Shipbreaking yard owners are able to solicit the support from a variety of actors from large sections of society through a near-consensus over the idea that capitalist growth generates local jobs, similar to that of Tata in West Bengal (Nielsen 2010).

Zele, however, do not gain employment as they lack both capitalist and social relations to partake in *unnayan* [development] that is essentially toxic, nor do they have allies to fight their dispossession (Dewan 2020). This illustrates Rosa Luxemburg's point that capitalist processes set up social and political barrier between workers who are made to feel like their industries and interests are different from those of people living in rural places (Luxemburg 1951: 369–371). As this article will come to discuss, shipbreaking workers themselves are unwilling to see the industries end, no

matter the health complications that may arise for themselves and their families living in this formerly agrarian, rapidly industrialising special economic zone.

Affect and More-Than-Human Health

The third aspect of 'more-than-economic' draws on environmental anthropology's work on 'more-than-human' ethnographies that go beyond particular species to underscore how industrial pollution results in a loss of ecological relations and health. More-than-economic dispossession helps to bring forth how these fluid commons in this coastal region – its interconnected forests, tides, canals, rivers and humid airs – are not only 'means of subsistence' and resources for social reproduction. When they become polluted, they are materially transformed in ways that result in the loss of a thriving ecology with rich biodiversity that provides sustenance, including the 'fish and rice that make a Bengali' (old Bengali proverb). Such a focus on pollution and health builds on and expands anthropological work on 'embodied ecologies' where humans are inseparable from their surrounding environments (Ford 2019) through the porosity of our bodies that intermingle with food and our chemically-laden surroundings (Solomon 2016; Agard-Jones 2014, 2013).

Nature's materiality tends to be undertheorised in processes of [primitive] accumulation, but it is the materiality of nature becoming contaminated that creates livelihood dispossession (Perreault 2013: 1055). This article expands on this attention to the materiality of polluted waters on human livelihoods by taking into account the more-than-human effects of the ecological ruptures caused by industrial contamination. Following Ojeda, social reproduction is about sustaining life – and what is life without health? Here, health is not only limited to humans but also extends to the more-than-human. More-than-economic dispossession pays attention to the affective experiences of pollution and its impact on more-than-human life. Fish and rice make a Bengali, but what if that fish is poisonous?

The link between polluted fish and health is a global concern as harmful chemicals bioaccumulate along the food chain (Mansfield 2012). Carcinogenic POPs contaminate fish and result in the loss of health of those living in polluted waters (Camargo 2021; Camacho 2017; Hoover 2017: 15). Eating toxic fish does not only affect the individual but has environmental epigenetic effects (Guthman & Mansfield 2013; Hoover 2017: 261), resulting in a shift from 'you are what you eat' to 'you are what your mother, or your grandmother, ate' (Lamoreaux 2016). In Bangladesh, the lack of evidence of establishing causality between pollution, ill health and reduced fish populations result in a lack of liability – highlighting how pollution is tied to equity, politics and environmental justice (Gross 2021; Liboiron 2021). Focusing on the lived experiences of pollution of rural people in an industrialising zone is an attempt to make visible local stories of contamination from the Global South, a 'guerrilla narrative' that politicises bodies made ill of exposure (Iengo & Armiero 2017).

Toxic Liability: From the Basel Convention to the Hong Kong Convention

A ship is both a good and fixed capital where shipbreaking, by removing ships from the maritime market, helps to reproduce global capital on an expanding scale (Sibilia 2018). Ship recycling is thus essential in keeping maritime capitalism afloat. In 2015, China – the most popular destination for 'ethical' and 'responsible' ship recycling for actors like the Danish shipping line Maersk – tightened its environmental regulations and stopped dismantling non-Chinese ships due to concerns over environmental pollution. Global shipping companies concerned with corporate social responsibility, therefore, had to find other sites for recycling their ships in ways that would be viewed as ethical. This accelerated the demand for 'green yards' that comply with the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) (Dan Watch 2016). Ship *recycling* under the HKC requires technical expertise, infrastructure and downstream waste management and is thus an improvement from shipbreaking directly on intertidal beaches of the Global South.

'John' is a maritime researcher based in the Global North. During our meeting, he was sceptical against the 'green recycling' agenda in Bangladesh. He pointed out that prior to the HKC, exporting toxic ships to third countries fell under the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes:

> The Basel Convention states that if you generate toxic waste you are liable and in charge of disposing it – or you must justify that you do not have the capacity to do so. With the Hong Kong Convention, in contrast, the shipowners have no such burden. They only decide what yard [shipbreaking facility] to sell it [the ship containing hazardous materials] to. The HKC was tailormade to protect ship owners. India reacted to this and it is now having to assume the burden of disposing of hazardous waste.

Under the HKC, countries receiving polluting ships must create and pay for waste management infrastructure to properly dispose of hazardous waste Bangladesh's aim to ratify the 2009 HKC thus entails accepting a considerable transfer of liability of waste management. Bangladeshi ship recycling facilities must now bear the costs to 'pre-clean' ships from the ship owner. This means that Bangladesh must be able to handle hazardous and toxic waste that now, under the HKC, can be legitimately dumped into the Global South. Polluting waters, soils and airs are no longer the legal problems of foreign shipowners. Not only is this an example of cost-shifting as an extra-economic means to accumulate profits by saved expenses on safe disposal (Demaria 2016), it shows also how this becomes a legal way of avoiding any liability from such contamination.

Demaria's study of Indian shipbreaking yards in the 2010s is a scathing critique of dismantling ships in the Global South. Since then, India ratified the Hong Kong Convention in 2019 and most of its ship recycling facilities are now compliant with the HKC. Unlike Bangladeshi shipbreaking yards, Indian ship recycling facilities in Alang have access to high-temperature incinerators, a wastewater treatment plant that can separate and purify oily waters, and state-of-the-art asbestos removal technologies – all managed by a private company and much of the waste infrastructure was funded by Japanese actors. In order to compete with India's HKC yards, the

Government of Bangladesh decided in 2018 that it would ratify the HKC by 2023 and upgrade its existing shipbreaking yards into high-tech, ship recycling facilities and establish infrastructure for hazardous industrial waste. Bangladesh's work to incentivise yard owners to make their facilities 'green' (i.e. HKC-compliant) was further supported by donors like Norwegian Norad and the International Maritime Organization.

Several of the most well-known shipbreaking yards in Sitakunda are owned by wealthy Bangladeshi businessmen part of family-based industrial conglomerates. They were spending millions of US dollars to hire foreign consultants to redesign their shipbreaking yards into state-of-the-art ship recycling facilities abiding by international labour and environmental standards. They repeatedly told me they wished that they could receive state-subsidised loans for this reform work. Yet there is a limit to how much work the individual yards can do. During my fieldwork in 2020, the Government of Bangladesh had yet to establish a Treatment, Storage and Disposal Facility (TSDF) with a high-temperature incinerator to handle hazardous waste. By 2022 there is still no TSDF. One consultant pointed out: 'the yard itself becomes a landfill as it is storing these materials from the ships on its own premises while waiting for the Government of Bangladesh to construct a TSDF'. Another argued that without a TSDF it is odd that any Bangladeshi yard is certified as 'HKC-compliant'.

In a similar vein, stated compliance with environmental regulations was often perceived to be a 'theatre' [*natok*] rather than actually addressing existing concerns regarding toxic risks. Whenever I met shipbreaking workers – independently or in the company of NGO staff – they laughed about the 'inspections' carried out by government authorities [after emphasising how they want ship recycling to continue in Bangladesh]. They suggested that this was a performance to tick off boxes in a checklist more than it was to ensure the safety of workers and the environment. For example, most of the oily-water separators that shipbreaking yards are supposed to have do not actually work. One of them stated:

> The most common ship type to arrive to Bangladesh are oil tankers because they are made out of high-quality steel. However, it is impossible to remove all the traces of oil from the drums of these tankers. The oil is washed away with the high tide – rather than purified in an oily-water separator.[2]

Shipbreaking workers were mostly concerned with *kalo tel* (black oil, crude oil) as well as asbestos, glass wool and the smoke from cutting toxic paint-laden steel with a hand-held gas torch. When I asked them what a solution could be to truly make shipbreaking 'green' and less polluting, they replied that they wish that ships should be cleaned from poisonous substances *before* entering Bangladesh. Arguably, the standards of the Basel Convention banning the transboundary movement of hazardous waste would be preferable for Bangladeshi shipbreaking workers over the HKC that transfers this liability on the receiving nation lacking proper enforcement of environmental regulations. Under both conventions, more-than-economic cost-shifting enables profit accumulation by contamination (Demaria 2017) in ways that reinforce racial capitalism (Pulido 2016) and waste colonialism (Liboiron 2018). With the HKC, however, a toxic liability occurs where this dumping is now green-washed and made more legitimate and acceptable.

Capitalist Social Relations: Enclosing Khas Mangroves and Embankments

The ongoing efforts to make shipbreaking into 'sustainable ship recycling' has ironically resulted in a larger area of coastal belt becoming enclosed and polluted – interspersed with active and inactive shipbreaking yards. Active shipbreaking yards are hidden from outside view through concrete walls watched by armed guards in uniforms policing entry – barring local fishing and non-fishing communities from enjoying the view of the ocean. In contrast, abandoned and inactive yards have become derelict ruins and are easily accessed. Many of these abandoned facilities are littered with waste, rusting machinery as well as abandoned and half-broken ships with their broken parts peeking through the water's edge with black oily waters visibly marking the surface.

The farther north one walks, one comes to an eroding embankment. Here, company names are listed on signboards placed on green plots of land devoid of any shipbreaking infrastructure. The inactive yards and the signboards of yards to be established illustrate a wider process of enclosing coastal land for shipbreaking since the 1990s.

My rural interlocutors suggested that shipbreaking took off due to the 1991 Bangladesh cyclone when hundreds of families vacated sea-facing lands. In addition, international factors such as the global push to find a new dismantling market as Taiwan stopped recycling ships in the late 1980s (Demaria 2010) and favourable bank loans awarded to those establishing shipbreaking yards (Sibilia 2019) may also have contributed. By 2020, more than 200 shipbreaking yards have been formally registered with the authorities, yet in practice only between 50 and 70 yards are considered 'active'. This illustrates the low barrier to entry in shipbreaking which was completely unregulated until 2011 when the High Court of Bangladesh closed all shipbreaking yards, set up environmental and labour standards and transferred the responsibility of overseeing shipbreaking from the Ministry of Environment to the Ministry of Industry (Abdullah *et al.* 2013).

Stakeholders involved in the HKC process suggested that signboards with the company names on them are a symptom of unserious actors pretending to start shipbreaking operations in order to obtain affordable loans. They expressed a belief that the pressure to invest millions of U.S. dollars to upgrade existing yards to comply with the HKC would weed out unserious actors and result in fewer and higher standard ship recycling facilities. Still, ever since ship recycling became recognised as an industry and subject to regulations and controls, the area where ships are broken apart has actually doubled. A researcher at a local university shared that the area was only three kilometres long in 1988. By 2005 this area had expanded to 7 kilometres, 11 kilometres by 2009, 15 kilometres by 2014 and to approximately 22 kilometres by 2020. The push to create 'green yards' thus coincides with global maritime capitalist demands to replace China as a recycling site.

To understand how shipbreaking expansion happened on the ground, one must also understand the ways in which state-owned embankments, state-planted forests and private arable land came to become enclosed and converted into shipbreaking yards. Unlike the Sundarbans mangroves of southwest Bangladesh and West Bengal with the iconic Bengal tiger, the mangrove trees in Sitakunda were planted from 1968 to 2011 by the Bangladesh Forest Department as part of state afforestation efforts to

stop coastal erosion (Mamun *et al.* 2021). The 'common lands', *khas jomi*, that is, public and state-owned land, enclosed in this context comprised of a mix of *khas* mangrove forests [*keowra bon,* lat. *Sonneratia apetala*], and a *khas* flood-protection embankment. People are entitled to access rights on all *khas* lands, sea-facing embankments on *khas jomi* provide unlimited coastal access to the sea, with landless or poor peasant households able to occupy (squat) on such lands (Adnan 2013, 2016).

Mostafa is a Bengali Muslim man in his 30s who grew up in Sitakunda with his large extended kinship network of families that once lived close to the coast. He recalled how they, the villagers, were complicit in cutting down the mangroves:

> I was part of cutting down trees many years ago as a child. I got 1000 taka to just bind and hold down a forest guard in ropes. I didn't understand then what this meant. We cut down the forests and they are now gone.

Mostafa also added that businessmen buy up much of the agricultural land from brokers who know the community and when land might be up for sale. These brokers pressure locals into selling their land, often by sending intermediary agents that the seller might like and trust to convince them.[3]

The Zele, a migrant group of Hindu fishermen caste squatters arriving in Sitakunda from Sandeep in the 1970s, never owned land here. Runa Kaki, a Hindu Zele woman in her late 50s admitted that Zele was also complicit in helping shipbreaking yard owners cut down the mangrove trees 'in order to cut [*kata*, dismantle] ships'. She also described how shipbreaking negatively affects the Zele who are fully dependent on coastal waters and access to the ocean. Their expensive fishing nets are torn apart by incoming vessels and the black oil that leaks out from shipbreaking negatively affects their ability to sustain their livelihoods.

The removal of the mangroves and the poor state of the flood-protection embankment allows saline tidal water to breach into their village and their homestead ponds. The high tide brings in not only fish but also polluted water that contaminates local homestead ponds with black oil as well as the Zele's expensive (paid for via loans) fishing nets so that the fish they catch end up smelling like oil. 'We cannot sell it [the fish], we cannot eat it', Runa Kaki stated as a matter of fact.

> Now we are without trees. We have to buy firewood for cooking that costs 250 taka for 40 kg. Zele do not cultivate food. We keep some goats, ducks, chicken but they die suddenly after drinking water the contaminated with black oil from the ships.

The Zele are not employed by the factories or shipbreaking yards and desperately want shipbreaking to end in contrast to shipbreaking workers who are adamant that ships continue to come to Bangladesh. The Zele not only lack the ability to mobilise capital and land (Li 2014), to benefit from lucrative shipbreaking but also the social relations and kinship networks to be able to partake in Sitakunda's transformation as an industrialising economic zone. Without allies, the Zele is an example of the barrier between those living in rural places and the workers employed in capitalist industries (Luxemburg 1951: 369–371).

Affect and the Loss of More-Than-Human Health

While sitting with Nikhil kaka in a Zele village, we could see the nearby shipbreaking yard emitting a thick black smoke – a common sight, he explained. When asked about the environmental changes he had witnessed, Nikhil kaka replied that the trees are dying while the number of birds has decreased in the area:

> with no trees, where will all the birds go? There's no fish we can easily catch, and no land for cows to graze on. Here we now only have crows and cats. It feels good to wake up to the sound of birds, but we only hear industrial noises instead. Without birds, human illnesses increase.

This sensory evocation illustrates how a healthy ecology for more-than-humans is essential for healthy humans.

The loss of fish and cultivated foods as a result of polluted fluid commons is a case in point. Zele fishermen in different villages were concerned over the reduction of fish in coastal waters. Neel Kaka describes the black oil leaking from the shipbreaking process as toxic, so much so that many small fish and fingerlings die from 'eating black oil'. The asbestos and glass wool that have for a long time been dumped into the waters have also contributed to the death of fish spawn according to the Zele elders I spoke with. Prasad Kaka stated that before the yards, there were *bata mach*, *gora mach*, *boil mach*. *Lakwa mach*, almost two metres long, is one that he has not seen for over a decade. Chittagong's popular *laitta mach* [lat. *harpadon nehereus*] is included among the fish that are less abundant compared to the past, along with very large fishes like *hriska mach*, *kaj puti*, *para chan* and *lajua mach* 'filled with taste'. 'There is less *chandana hilsha*, *koral mach*, *bhetki*, none of them are found here, *Sagarer mach* (ocean fish) still have lots of taste', Prasad Kaka said. The Bengali proverb Maach-e Bhaat-e Bangali (Fish and rice make a Bengali) captures the importance of these fish for Bengali identity and how material changes to fish bodies are experienced as the loss of taste.

Similar to the Zele, Muslim families who have resided in Sitakunda for decades also mourned the loss of taste in food, particularly locally grown tomato, pumpkins, *seem* (flat beans) and *lao* (gourd). Mostafa's aunt recounted how there were cows, rice fields, *jhum* (shifting) cultivation, vegetables that tasted wonderfully, fresh coriander, fresh onions as recent as 2005: 'we used to have everything here, dates and date juice. Now this is an industrial zone'. The fruit trees (jackfruit, guava, pineapple, betel nut, pomegranate, *safeda*, *kalo jam* and *jamrul*) are covered with a red metallic dust from heavy air pollution and do not bear fruit. Residents can no longer eat locally available foods they must buy everything.

> If it is unhealthy or not, poisonous or not, we have to eat regardless. This food we buy from the market *tastes* less than it used to. There's less nutrition in this food. But what can we do? We have to eat it.

This reflection of how the taste, the material quality of the fish and different cultivated foods was different highlights toxic sensorium (Stein & Luna 2021), how one can taste toxicity (Senanayake 2019) or that chemicals may reduce the taste in foods (Dewan 2021). Similar to my interlocutors in southwest coastal Bangladesh living in saline tiger-prawn cultivating villages, this mourning of locally cultivated foods and

how they tasted, is an effective critique of environmental change (Dewan 2021: 16; Sultana 2015) that reflects the 'ghosts' of lost species in the Anthropocene (Gan *et al.* 2017). The loss of locally available foods as well as the loss of more-than-human biodiversity with its affective and sensory effects constitutes more-than-economic dispossession – this comes to the fore with the changed quantity and quality of fish so integral to deltaic Bengali identity.

The loss of taste and the changing quality of food are enmeshed with pollution, where air pollution settles on trees, soils and in people's lungs. Throughout my fieldwork, locals complained over industrial air pollution, breathing difficulties and that the number of illnesses is increasing. Another interlocutor pointed out: 'there is always a much longer line to the pharmacy than to the general store nowadays'.

Externally-funded studies have found carcinogenic air pollution in the areas surrounding shipbreaking yards (Nøst *et al.* 2015) as well as asbestos among shipbreaking workers (Courtice *et al.* 2011; Muralidhar, Ahasan & Khan 2017). According to workers, civil society activists, medical professionals and consultants working inside the yards that I spoke to, a majority of shipbreaking workers take painkillers regularly in order to work so as to not lose income. People in Sitakunda, including shipbreaking families, felt that they should pre-emptively leave, finding it hard to breathe and even live in this area.

Prasad Kaka pointed out:

> Zele in their 20s, 30s, 40s and 50s are dying, lots of people have died. They cough up blood from their lungs. Smoke from shipbreaking and smoke from factories combine to make us sick. But what can we do? We cannot say anything to them [the owners]. What can we say? They would just ask us 'should we close our industries for you'?

The dismissal over concerns over life and health with a remark about closing industries illustrates the political prioritisation of economic growth through industries, where ship recycling provides much of the nation's steel demands. Ships are toxic and are coated with chemicals intended to prevent rust and algae blooms. When the steel is taken apart by handheld gas torches, these chemicals react and turn into toxic smoke. Yet while the HKC is focused on improving worker safety with personal protective equipment, the updated ship recycling facilities will continue to be open-air outdoor facilities. Furthermore, actors involved in reforming Bangladesh's ship recycling industry argue that shipbreaking yards are not the main culprits to this environmental pollution and illnesses among local workers and fishermen. They are able to do so as there is no systematic data collected on health impacts on the local communities and workers.

The lack of evidence of the causes of pollution and fish reduction also means that there is a lack of liability for who is responsible for fixing these problems. This is further accentuated by the very fluidity of this coastal commons that exacerbates the issue of the existence of several competing sources of pollution (ship breaking yards, garment factories, oil refineries, steel processing plants) and other factors reducing fish populations beyond pollution (loss of breeding grounds, overfishing). Such 'toxic layering', or the 'accumulation of multiple and potentially interacting industrial

toxins' (Goldstein & Hall 2015: 640) makes it difficult to establish a causal relationship between toxic exposures and illness as most ethnographies of living with polluted environments can contest.

The ruling elites, in business and politics, have designated Sitakunda into a special economic zone where business concerns in Chattogram outweigh environmental and health concerns. A man maimed in an accident at a shipbreaking yard said:

> The yards are becoming richer and richer, while poor people are becoming poorer and poorer. There is development, but there is corruption inside all of them. It is on the backs of workers that this economic development is even happening.

The distance between those polluting (nationally and internationally) and those having to live with pollution is thus a matter of class. The Bangladeshi elites owning shipbreaking yards live in shielded areas, with air-conditioned private vehicles and air-conditioned offices creating a distance between pollution and exposure. These actors are not foreign or from the Global North: their capitalist relations are inextricable from their social relations, kinship network and family ties that help them wield influence to shape development in Bangladesh. Thus, 'green ship recycling' may expand 'economic development', but are these environmental efforts serious without proper waste management, limited environmental monitoring and no discussion on rectifying existing pollution that is persistent and linger?

Conclusion

More-than-economic 'accumulation by contamination' has resulted in Bangladesh being a cheap destination for dismantling toxic ships, filled with hazardous materials. Land-based industries' polluting activities do not stay within enclosed boundaries, toxic residues of hazardous materials, asbestos, crude oil, PCBs and other carcinogens and persistent organic pollutants seep into waters and air, travelling to distant soils and transform the qualities of surrounding humid air, ground- and surface waters and soils – Sitakunda's fluid commons. The pollution from ships is thus not only one where toxic residues leak, ooze and persist but where the act of burning paint-coated steel creates toxic fumes that travel via air and settles in people's lungs, whether they work for these industries or not. These toxic residues transform and rupture ecological relations in an interconnected fluid commons, affecting not only human health but that of other species, plants and entangled ecologies of water, sediments and soils. Marginalised poor communities like the religious minority Zele fishermen lack the capitalist social relations to benefit from economic growth or even to resist uneven toxic exposure.

Their affective and sensory experiences of loss of more-than-human species such as fish shows the importance of more-than-economic dispossession to understand the emic and effective understandings of dispossession as the loss of an ability to sustain life. Industrial pollution materially transforms the quantity and quality of fish so integral to deltaic Bengali identity. Unlike the reversibility of salinisation by shrimp farms in southwest coastal Bangladesh, the loss of healthy commons in the coastal

Chattogram division with 'only cats and crows' and 'no birds, only industrial noises' cannot be undone with tenure reform due to their more-than-human temporalities of the lingering effects of hazardous materials such as crude oil, and its carcinogenic persistent organic pollutants.

This, in turn, illustrates how enforcement of environmental and labour laws is weak and underfunded. There is no regular data collection on asbestos, dioxins and PCBs in these tidal sediments, or efforts to trace these toxic residues – indeed it is this lack of environmental precautions that enable profit accumulation by contamination through extra-economic cost-shifting. Maritime actors and donors involved in making ship recycling 'green' are set on fulfilling the minimum requirements of the HKC but Bangladeshi regulatory authorities need further strengthening and support. Even if yards may become HKC-compliant, lacking downstream management of hazardous materials risk to continue a tradition of inspections as 'theatre' and contribute to worsening already existing, and significant, environmental degradation and health-hazardous pollution. This attention to the more-than-economic forms of dispossession caused by industrial pollution exposes the context-specific structures of power that permit particular bodies to be more exposed to toxic substances that leak, ooze and persist far beyond tenured enclosures, transforming fluid commons irreversibly and for generations.

To conclude, the reduction of safeguards against transnational dumping of hazardous materials through the shift from the 1989 Basel Convention to the 2009 Hong Kong Convention for Safe and Environmentally Sound Ship Recycling benefit ship owners and Bangladeshi [elite] ship recycling actors. Ethnographic attention to the lived experiences of more-than-economic dispossession among the most marginalised communities in a rural and increasingly industrialising region reveals how underlying global – and domestic – power structures enable uneven toxic exposure both due to, but also beyond that of, colonial environmental racism.

Notes

1. All names and rural places are pseudonyms to ensure the anonymity of my interlocutors. This article draws on multi-sited ethnographic fieldwork I conducted from December 2019 to March 2020. I interviewed a variety of local NGO workers, trade union and labour rights activists, academics, ship recycling yard owners and government officials in Dhaka and Chattogram city; male shipbreaking workers and their families as well as landless Hindu fishermen of the Zele caste, and interviews with international consultants and researchers. I was repeatedly warned before and during fieldwork that 'shipbreaking is a very dangerous industry: be careful'. Workers could lose their jobs if speaking up, organisations risking blacklisting. To conceal the identities of those who helped me I therefore made use of field assistants from different organisations and local communities. I am a fluent Bangla speaker and conducted all my interviews myself.
2. Government officials, on the other hand, stated that no oil is wasted, that each drop of oil is recycled – sold to industries like brick kilns[2] and burned again. This re-processed oil is then used to paint wooden fisher boats.
3. While beyond the scope of the current paper, existing studies on Bangladesh point to corruption and violence in the distribution of *khas* lands (Feldman and Geisler 2012: 977). Elites have

been shown to be successful in manipulating laws, courts, etc. in securing private property through the control and manipulation of land titles, registries and maps on the expanding fringe of Dhaka and other urban areas (Feldman and Geisler 2012: 982).

Acknowledgements

Thanks to all the Bangladeshis in Dhaka, Chattogram and Sitakunda who helped me conduct my fieldwork, by sharing their valuable time, experience, networks and insights with me – from government officials, academics and NGO staff, to shipbreaking workers and fishermen communities. I could not have done this research without them. Thanks to Knut Nustad, Thomas Hylland Eriksen and the anonymous reviewers for constructive feedback on earlier drafts. A special thanks to Heather Swanson for helping me think through 'more-than-economic' and dispossession by pollution, and to Elisabeth Schober for critical suggestions on theories of dispossession and accumulation.

Ethics Declaration

The research has received ethical approval from the Norwegian Centre for Research Data (NSD) and the Ministry of Industries, Government of Bangladesh. Oral informed consent has been obtained by research participants and all personal data has been anonymised to ensure confidentiality of interlocutors.

Disclosure Statement

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

Funding

This research was funded by the Norwegian Research Council [grant number 275204/F10]; Norges Forskningsråd for the project Disassembling the Lifecycle of Container Ships: Ethnographic Explorations of Maritime Working Worlds.

References

Abdullah, Hasan Muhammad, M. Golam Mahboob, Mehmuna R. Banu & Dursun Zafer Seker. 2013. Monitoring the Drastic Growth of Ship Breaking Yards in Sitakunda: A Threat to the Coastal Environment of Bangladesh. *Environmental Monitoring and Assessment*, 185(5):3839–3851. doi:10.1007/s10661-012-2833-4.

Adnan, Shapan. 2013. Land Grabs and Primitive Accumulation in Deltaic Bangladesh: Interactions Between Neoliberal Globalization, State Interventions, Power Relations and Peasant Resistance. *Journal of Peasant Studies*, 40(1):87–128.

———. 2016. Alienation in Neoliberal India and Bangladesh: Diversity of Mechanisms and Theoretical Implications. *South Asia Multidisciplinary Academic Journal*, 13(April). doi:10.4000/samaj.4130, http://samaj.revues.org/4130.

Agard-Jones, Vanessa. 2013. Bodies in the System. *Small Axe: A Caribbean Journal of Criticism*, 17 (3):182–192. doi:10.1215/07990537-2378991.

———. 2014. 'Spray'. *Somatosphere*, May. http://somatosphere.net/2014/spray.html/.

Balayannis, Angeliki & Emma Garnett. 2020. Chemical Kinship: Interdisciplinary Experiments with Pollution. *Catalyst: Feminism, Theory, Technoscience*, 6(1):1–10. doi:10.28968/cftt.v6i1.33524.

Bhattacharyya, Debjani. 2018. *Empire and Ecology in the Bengal Delta: The Making of Calcutta* (1st ed.). Cambridge; New York: Cambridge University Press. doi:10.1017/9781108348867.

Boudia, Soraya, Angela N. H. Creager, Scott Frickel, Emmanuel Henry, Nathalie Jas, Carsten Reinhardt & Jody A. Roberts. 2018. Residues: Rethinking Chemical Environments. *Engaging Science, Technology, and Society*, 4:165–178. doi:10.17351/ests2018.245.

Camacho, Juana. 2017. Acumulación tóxica y despojo agroalimentario en La Mojana, Caribe colombiano. *Revista Colombiana de Antropología*, 53(June):123–150.

Camargo, Alejandro. 2021. Stagnation: Waterflows and the Politics of Stranded Matter in La Mojana, Colombia. In *DELTA LIFE: Exploring Dynamic Environments Where Rivers Meet the Sea*, edited by Franz Krause and Mark Harris, 83–101. London: Berghahn Books.

Chen, Mel Y. 2012. *Animacies: Biopolitics, Racial Mattering, and Queer Affect. Perverse Modernities*. Durham, NC: Duke University Press.

Courtice, Midori N., Paul A. Demers, Tim K. Takaro, Sverre Vedal, S. K. Ahktar Ahmad, Hugh W. Davies & Zakia Siddique. 2011. Asbestos-Related Disease in Bangladeshi Ship Breakers: A Pilot Study. *International Journal of Occupational and Environmental Health*, 17(2):144–153. doi:10.1179/107735211799030951.

da Cunha, Dilip. 2018. *The Invention of Rivers: Alexander's Eye and Ganga's Descent. Penn Studies in Landscape Architecture*. Philadelphia: University of Pennsylvania Press.

DanWatch. . 2016. 'Maersk and the Hazardous Waste | Danwatch'. 13 October 2016. https://old.danwatch.dk/en/undersogelse/maersk-and-the-hazardous-waste/.

Davies, Thom. 2018. Toxic Space and Time: Slow Violence, Necropolitics, and Petrochemical Pollution. *Annals of the American Association of Geographers*, 108(6):1537–1553. doi:10.1080/24694452.2018.1470924.

Demaria, Federico. 2010. Shipbreaking at Alang–Sosiya (India): An Ecological Distribution Conflict. *Ecological Economics*, 70(2):250–260. doi:10.1016/j.ecolecon.2010.09.006.

———. 2016. Can the Poor Resist Capital? Conflicts Over 'Accumulation by Contamination' at the Ship Breaking Yard of Alang (India). In *Nature, Economy and Society*, edited by Nilanjan Ghosh, Pranab Mukhopadhyay, Amita Shah and Manoj Panda, 273–304. New Delhi: Springer India. doi:10.1007/978-81-322-2404-4_14.

———. 2017. *Social Metabolism, Cost-Shifting and Conflicts: The Struggles and Services of Informal Waste Recyclers*. PhD thesis in Environmental Sciences, Barcelona: Universitat Autònoma de Barcelona. https://www.academia.edu/33499194/_Social_metabolism_cost_shifting_and_conflicts_The_struggles_and_services_of_informal_waste_recyclers_PhD_Thesis_.

Dewan, Camelia. 2020. Living With Toxic Development: Shipbreaking in the Industrialising Zone of Sitakunda, Bangladesh. *Anthropology Today*, 36(6):9–12.

———. 2021. *Misreading the Bengal Delta: Climate Change, Development, and Livelihoods in Coastal Bangladesh. Culture, Place, and Nature*. Seattle: University of Washington Press.

Dietrich, Alexa S. 2021. Pollution, Health, and Disaster: Emerging Contributions in Ethnographic Research. *Environment and Society*, 12(1):44–65. doi:10.3167/ares.2021.120104.

Douglas, Mary. 1966. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo. Routledge Classics*. London, New York: Routledge.

D'Souza, Rohan. 2006. *Drowned and Dammed: Colonial Capitalism, and Flood Control in Eastern India*. New Delhi: Oxford University Press.

Fairbairn, Madeleine, Jonathan Fox, S. Ryan Isakson, Michael Levien, Nancy Peluso, Shahra Razavi, Ian Scoones & K. Sivaramakrishnan. 2014. Introduction: New Directions in Agrarian Political Economy. *The Journal of Peasant Studies*, 41(5):653–666. doi:10.1080/03066150.2014.953490.

Feldman, Shelley & Charles Geisler. 2012. Land Expropriation and Displacement in Bangladesh. *The Journal of Peasant Studies*, 39(3–4):971–993.

Fisher, Josh, Mary Mostafanezhad, Alex Nading & Sarah Marie Wiebe. 2021. Introduction: Pollution and Toxicity: Cultivating Ecological Practices for Troubled Times. *Environment and Society*, 12 (1):1–4. doi:10.3167/ares.2021.120101.

Ford, Andrea. 2019. 'Introduction: Embodied Ecologies'. *Theorizing the Contemporary, Society for Cultural Anthropology Fieldsights* (April). https://culanth.org/fieldsights/introduction-embodied-ecologies.

Gan, Elaine, Anna Lowenhaupt Tsing, Heather Swanson & Nils Bubandt. 2017. Introduction: Haunted Landscapes of the Anthropocene. In *Arts of Living on a Damaged Planet*, edited by Anna Lowenhaupt Tsing, Heather Swanson, Elaine Gan and Nils Bubandt, G1–16. Minneapolis: University of Minnesota Press.

Goldstein, Donna M. & Kira Hall. 2015. Mass Hysteria in Le Roy, New York: How Brain Experts Materialized Truth and Outscienced Environmental Inquiry: How Brain Experts Materialized Truth. *American Ethnologist*, 42(4):640–657. doi:10.1111/amet.12161.

A Greenpeace-FIDH-YPSA Collaboration. 2005. 'End of Life Ships: The Human Cost of Breaking Ships'. Paris: International Federation for Human Rights. https://www.fidh.org/IMG/pdf/shipbreaking2005a.pdf.

Gregson, Nicky, M. Crang, F. Ahamed, N. Akhter & R. Ferdous. 2010. Following Things of Rubbish Value: End-of-Life Ships, 'Chock-Chocky' Furniture and the Bangladeshi Middle Class Consumer. *Geoforum*, 41(6):846–854. doi:10.1016/j.geoforum.2010.05.007.

Gregson, Nicky, Mike Crang, Farid Uddin Ahamed, Nasreen Akter, Raihana Ferdous, Sadat Foisal & Ray Hudson. 2012. Territorial Agglomeration and Industrial Symbiosis: Sitakunda-Bhatiary, Bangladesh, as a Secondary Processing Complex: ECONOMIC GEOGRAPHY. *Economic Geography*, 88(1):37–58. doi:10.1111/j.1944-8287.2011.01138.x.

Gross, Lena. 2021. Fuelling Toxic Relations: Oil Sands and Settler Colonialism in Canada. *Anthropology Today*, 37(4):19–22. doi:10.1111/1467-8322.12666.

Guthman, Julie & Becky Mansfield. 2013. The Implications of Environmental Epigenetics: A New Direction for Geographic Inquiry on Health, Space, and Nature-Society Relations. *Progress in Human Geography*, 37(4):486–504. doi:10.1177/0309132512463258.

Harvey, David. 2005. *A Brief History of Neoliberalism*. Oxford: Oxford University Press.

Hoover, Elizabeth. 2017. *The River Is in Us: Fighting Toxics in a Mohawk Community*. Minneapolis , London: University of Minnesota Press.

Hossain, Shahadat M., S. M. Sharifuzzaman & Sayedur Rahman Chowdhury. 2016. 'Evaluation of Environmental Impacts of Ship Recycling In Bangladesh: Final Report'. Programme No. TC/1514 Work Package 1, Study Component 2. SENSREC: Safe and Environmentally Sound Ship Recycling in Bangladesh Phase I. International Maritime Organization.

Iengo, Ilenia & Marco Armiero. 2017. The Politicization of Ill Bodies in Campania, Italy. *Journal of Political Ecology*, 24(1):44–58. doi:10.2458/v24i1.20781.

Kirksey, Eben. 2020. Chemosociality in Multispecies Worlds. *Environmental Humanities*, 12(1):23–50. doi:10.1215/22011919-8142198.

Lahiri-Dutt, Kuntala & Gopa Samanta. 2013. *Dancing With the River: People and Life on the Chars of South Asia*. Yale Agrarian Studies Series. New Haven: Yale University Press.

Lamoreaux, Janelle. 2016. What If the Environment Is a Person? Lineages of Epigenetic Science in a Toxic China. *Cultural Anthropology*, 31(2):188–214. doi:10.14506/ca31.2.03.

Levien, Michael. 2012. The Land Question: Special Economic Zones and the Political Economy of Dispossession in India. *The Journal of Peasant Studies*, 39(3–4):933–969. doi:10.1080/03066150.2012.656268.

———. 2013. Regimes of Dispossession: From Steel Towns to Special Economic Zones: Regimes of Dispossession. *Development and Change*, 44(2):381–407. doi:10.1111/dech.12012.

Li, Tania Murray. 2014. *Land's End: Capitalist Relations on an Indigenous Frontier*. Durham, London: Duke University Press.

Liboiron, Max. 2018. 'Waste Colonialism'. Discard Studies. 1 November 2018. https://discardstudies.com/2018/11/01/waste-colonialism/.

———. 2021. *Pollution Is Colonialism*. Durham: Duke University Press.
Liboiron, Max, Manuel Tironi & Nerea Calvillo. 2018. Toxic Politics: Acting in a Permanently Polluted World. *Social Studies of Science*, 48(3):331–349. doi:10.1177/0306312718783087.
Luxemburg, Rosa. 1951. *The Accumulation of Capital*. Translated by Agnes Schwarzschild. New Haven: Yale University Press. https://www.gutenberg.org/ebooks/41405/pg41405-images.html.utf8.
Mamun, Abdullah-Al, Mohammed Hossain, Md Kabir & Mohammad Kader. 2021. Coastal Afforestation Effect on Soil Physiochemical Properties at Sitakunda Coast of Chittagong, Bangladesh. *Journal of Forest and Environmental Science*, 37(March):25–34. doi:10.7747/JFES.2021.37.1.25.
Mansfield, Becky. 2012. Environmental Health as Biosecurity: 'Seafood Choices,' Risk, and the Pregnant Woman as Threshold. *Annals of the Association of American Geographers*, 102(5):969–976. doi:10.1080/00045608.2012.657496.
Marx, Karl. 1976. *Capital: A Critique of Political Economy*. Vol. 1. London: Penguin Books Limited.
Mukherjee, Jenia & Pritwinath Ghosh. 2020. Fluid Epistemologies: The Social Saga of Sediments in Bengal. *Ecology, Economy and Society – the INSEE Journal*, 3(2):135–148. http://www.environmentandsociety.org/mml/fluid-epistemologies-social-saga-sediments-bengal.
Mukhopadhyay, Amites. 2017. *Living with Disasters: Communities and Development in the Indian Sundarbans*. Delhi: Cambridge University Press.
Muralidhar, Venkiteswaran, Md Faizul Ahasan & Ahad Mahmud Khan. 2017. 'Parenchymal Asbestosis Due to Primary Asbestos Exposure among Ship-Breaking Workers: Report of the First Cases from Bangladesh'. BMJ Case Reports, November, bcr-2017-222154. doi:10.1136/bcr-2017-222154
Murphy, Michelle. 2013. 'Distributed Reproduction, Chemical Violence, and Latency'. *The Scholar and Feminist Online* 11.3 (Life (Un)ltd: Feminism, bioscience, race). http://sfonline.barnard.edu/life-un-ltd-feminism-bioscience-race/distributed-reproduction-chemical-violence-and-latency/.
———. 2017. Alterlife and Decolonial Chemical Relations. *Cultural Anthropology*, 32(4):494–503. doi:10.14506/ca32.4.02.
National Geographic, dir. 2014. *Where Ships Go to Die, Workers Risk Everything*. Documentary. https://www.youtube.com/watch?v=WOmtFN1bfZ8.
NGO Shipbreaking Platform. 2017. 'Platform News – Worker Killed When Breaking the Hanjin Rome'. *NGO Shipbreaking Platform* (blog). 18 May 2017. https://shipbreakingplatform.org/platform-news-worker-killed-when-breaking-the-hanjin-rome/.
Nielsen, Kenneth Bo. 2010. 'Contesting India's Development? Industrialisation, Land Acquisition and Protest in West Bengal'. *Forum for Development Studies*, 37(2):145–170.
Nøst, Therese H., Anne K. Halse, Scott Randall, Anders R. Borgen, Martin Schlabach, Alak Paul, Atiqur Rahman & Knut Breivik. 2015. High Concentrations of Organic Contaminants in Air From Ship Breaking Activities in Chittagong, Bangladesh. *Environmental Science & Technology*, 49(19):11372–11380. doi:10.1021/acs.est.5b03073.
Ofrias, Lindsay. 2017. Invisible Harms, Invisible Profits: A Theory of the Incentive to Contaminate. *Culture, Theory and Critique*, 58(4):435–456. doi:10.1080/14735784.2017.1357478.
Ojeda, Diana. 2021. Social Reproduction, Dispossession, and the Gendered Workings of Agrarian Extractivism in Colombia. In *Agrarian Extractivism in Latin America*, edited by Ben M. McKay, Alberto Alonso Fradejas and Arturo Ezquerro-Cañete, 85–98. Routledge Critical Development Series. Milton Park, Abingdon, Oxon. New York, NY: Routledge, Taylor & Francis Group.
Packer, Melina. 2021. Chemical Agents: The Biopolitical Science of Toxicity. *Environment and Society*, 12(1):25–43. doi:10.3167/ares.2021.120103.
Perreault, Tom. 2013. Dispossession by Accumulation? Mining, Water and the Nature of Enclosure on the Bolivian Altiplano. *Antipode*, 45(5):1050–1069. doi:10.1111/anti.12005.
Picard, Michael Hennessy & Tina Beigi. 2022. A Postcolonial History of Accumulation by Contamination in the Gulf. In *Enforcing Ecocide: Power, Policing & Planetary Militarization*,

edited by Alexander Dunlap and Andrea Brock, 37–59. Cham: Springer International Publishing. doi:10.1007/978-3-030-99646-8_2.

Pulido, Laura. 2016. Flint, Environmental Racism, and Racial Capitalism. *Capitalism Nature Socialism*, 27(3):1–16. doi:10.1080/10455752.2016.1213013.

Senanayake, Nari. 2019. Tasting Toxicity: Bodies, Perplexity, and the Fraught Witnessing of Environmental Risk in Sri Lanka's Dry Zone. *Gender, Place & Culture*, 27(11):1–25. doi:10.1080/0966369X.2019.1693345.

Shapiro, Nicholas & Eben Kirksey. 2017. Chemo-Ethnography: An Introduction. *Cultural Anthropology*, 32(4):481–493. doi:10.14506/ca32.4.01.

Sibilia, Elizabeth A. 2018. Oceanic Accumulation: Geographies of Speculation, Overproduction, and Crisis in the Global Shipping Economy. *Environment and Planning A: Economy and Space*, 51 (2):467–486. doi:10.1177/0308518X18781084.

———. 2019. 'Market Making: Crises and the Global Production of Shipbreaking in Chittagong, Bangladesh'. PhD thesis in Earth and Environmental Sciences, New York: Graduate Center, City University of New York.

Solomon, Harris. 2016. *Metabolic Living: Food, Fat and the Absorption of Illness in India*. Critical Global Health: Evidence, Efficacy, Ethnography. Durham: Duke University Press.

Stein, Serena & Jessie Luna. 2021. Toxic Sensorium: Agrochemicals in the African Anthropocene. *Environment and Society*, 12(1):87–107. doi:10.3167/ares.2021.120106.

Strang, Veronica. 2011. 'Fluid Forms: Owning Water in Australia'. In *Ownership and Appropriation*, edited by Veronica Strang and Mark Busse, 171–196. Oxford, New York: Routledge.

Sultana, Farhana. 2015. 'Emotional Political Ecology'. In *The International Handbook of Political Ecology*, edited by Raymond L. Bryant, 633–658. Cheltenham, UK: Edward Elgar Publishing.

Theriault, Noah & Simi Kang. 2021. Toxic Research: Political Ecologies and the Matter of Damage. *Environment and Society*, 12(1):5–24. doi:10.3167/ares.2021.120102.

Vidal, John. 2017. '"This Is the World's Cheapest Place to Scrap Ships" – But in Chittagong, It's People Who Pay the Price'. *The Guardian*, 2 December 2017, sec. Global Development: Modern-day slavery in focus. https://www.theguardian.com/global-development/2017/dec/02/chittagong-shipbreaking-yards-legal-fight.

Voyles, Traci Brynne. 2015. *Wastelanding: Legacies of Uranium Mining in Navajo Country*. Minneapolis: University of Minnesota Press.

West, Paige. 2016. *Dispossession and the Environment: Rhetoric and Inequality in Papua, New Guinea*. Leonard Hastings Schoff Lectures. New York: Columbia University Press.