Delta Life

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Exploring Dynamic Environments where Rivers Meet the Sea

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Introduction

Life at Water's Edge

Franz Krause and Mark Harris

River deltas are dynamic places, where diverse human projects meet rivers, lands and seas to form environments that easily shift between wet and dry, characterized by soft and saturated terrain that often defies standard categorizations or land uses. Deltas are productive not only biologically and economically, but also as sites to learn about society and culture. Their social and material dynamism is due, in part, to the central role of water and sediment in people's lives, regarding the institutions and infrastructures they develop to respond to these dynamics, as much as the challenges and alternatives this dynamism presents to the conventional view of successful human technological mastery and adaptation.

This volume describes and analyses life in river deltas in Africa, the Arctic, Asia, Europe and South America based on approaches in anthropology and geography. Focusing on the movements of materials, animals and people, the contributions avoid treating the delta as a geographical container, integrated landscape and land-management category, and reconstitute deltaic lifeworlds through the flows, mobilities and transformations within and through them. We call this focus 'life at water's edge' in order to draw attention to the liminal position of deltas and their inhabitants, not only regarding land and water, but also social, political, economic and cultural orders. A well-known trope in anthropological thinking (e.g. Tsing 2012a; Turner 1985), the edge has recently gained new attention in the guise of the coast threatened by sea-level rise, which literally undermines established ideas and structures of stability. As Anderson (2018) puts it, 'humanity is once again entering a more volatile relationship with the edge of the sea. Adieu, complacency'. Having outlined glimpses into the past, present and future of an insular coast in California, he concludes: 'Climate change and sea level rise are not the problems per se; rather, our quandary lies in thinking that is bound up with assumptions of, and perhaps hopes for, stability'.

The shrimp fishers of the Brazilian Parnaíba Delta are unlikely to face this quandary, for example. On the delta islands that they understand as floating on the water, they have no illusions about stability. Shifts in salinity, moving sand dunes, new nature-conservation regimes and the coming and going of shrimps, sardines and many other delta inhabitants have always created and recreated a delta that is characterized by movement. Shrimp fishing hinges on the fishers' highly skilful anticipation of how some of these movements will align in order to bring about a successful 'shrimp time', as Nora Horisberger describes in this volume. As there can be no certainty in this shifting world, Parnaíba Delta fishers continually fear being tricked by the tides, the animals or each other. For them, delta life emerges from the tension between anticipating and being tricked by various unpredictable factors.

Deltas are areas where organic life and inorganic matter meet, mix and form distinct phenomena: salt water and fresh water, human and non-human, water and land. Deltas draw in other kinds of mixtures from human historical constructions such as the Indigenous and colonial, and time and space. They have often been the sites of colonial, imperial and postcolonial development projects that wielded large-scale visions for harnessing the area's economic potential. Today, they continue to be at the forefront of unstable economic developments, for example through their implication in export markets, and of global climate-change models, where subsiding deltas and rising seas in combination with problematic land use and water management practices are projected to inundate deltas and cause widespread upheaval (Szabo et al. 2016; Tessler et al. 2015). Against such bleak scenarios, the Rhine Delta is frequently presented as a socio-technical success story for the taming and productivity enhancement of deltas, especially by Dutch experts whose business consists in implementing and exporting a successful 'delta approach' (cf. Ivars and Venot 2019; Minkman, Letitre and van Buuren 2019). However, many other deltas across the world are portrayed in a quite different light, for instance as a 'quagmire' for centralized political control (Biggs 2010, on the Mekong Delta), a place turned 'flood-vulnerable' by colonial infrastructures (D'Souza 2002, on the Mahanadi Delta) or an area of social, ecological and economic contestations in the context of geopolitical 'invisibility' (Muehlmann 2013, on the Colorado Delta).

Not only do deltas produce diverse lifeworlds, but the very concept, unit and scale of the delta is multiple and culturally specific. As Tanya Richardson (this volume) demonstrates, uncritically adopting a physical definition of the delta is bound to limit the anthropological analysis of the lives of the people who inhabit this place. The 'delta' is certainly not a relevant term for many of the people described as delta inhabitants in this

book. The same goes for other terms that recur in some of the chapters, including 'amphibious' and 'volatility'; we use these as analytical categories, even though they may not be 'emic' concepts. Settings that provide novel insights into amphibious lifeworlds, for example, may be populated by people who see themselves as staunchly terrestrial, struggling against water infringement; or dynamics that may productively be analysed as volatile might be experienced as the ordinary flux of the world by delta inhabitants. By nevertheless engaging such analytical terms, this volume is careful not to impose them on locally specific understandings and perceptions. Instead, it can be read as a conversation between various perspectives on delta life.

This collection therefore treats the delta more as a question than as an already-established notion. As such, we interrogate what constitutes a delta as much as what it means to inhabit one. The term *delta* catalyses several discourses and ideas, including those on development, disaster, resilience and water crisis. It is also a physical setting with characteristics like low gradient and high potential for erosion and accretion, which may have various implications for social, cultural, political and economic life. In particular, we investigate the ways in which water and other flows participate in making the delta a unique combination of environmental, cultural and historical characteristics. This includes the way that these material and semiotic flows relate to people's projects, desires and imaginations in creating and contesting scales, that is, frames of reference, often understood in terms of spatial reach or social inclusion, as we discuss below.

While many anthropological and geographical studies have been carried out in deltas, only recently have some of them begun to engage the delta as an explicit analytical framing. Conversely, recent studies in various fields that do not explicitly focus on deltas have elaborated conceptual approaches that have helped the contributors to this volume to develop their work. It would be too much to review all of them here; already the inspirations coming from the Bengal Delta alone are manifold. They include the geographers Lahiri-Dutt and Samanta's (2013) analyses of everyday life on floodplain chars, historian Bhattacharyya's (2018) focus on the legal and other issues in creating fixed real estate in what is today Kolkata, and landscape architect da Cunha's (2019) argument for seeing varying degrees of wetness instead of focusing on rivers and land. For the contributors to this collection, the delta has served as a point of entry and focus, but ethnographic fieldwork has taught them that this framing needs deconstructing and resignification. Their arguments are also interventions in the recent trend, identified by Ivars and Venot (2019), in the international research community to construct a 'global delta', that is, an image of and

approach to deltas that makes them appear as homogeneous and similar entities. While the contributors to this collection, too, see similarities and comparative material within their and others' cases, their framing differs significantly from that of the 'global delta'. Our analyses do not begin from the level of the delta as a unit, but from the lifeworlds of the inhabitants of deltaic landscapes.

In sum, we take the delta as an anthropological category, similar to the way 'the city' has become a field of anthropological research with a particular agenda. As Low (1999: 2) writes about the latter:

> The city as a site of everyday practice provides valuable insights into the linkages of [the changing capitalist, postindustrial world] with the texture and fabric of human experience. The city is not the only place where these linkages can be studied, but the intensification of these processes – as well as their human outcomes – occurs and can be understood best in cities.

By focusing on life in cities, urban anthropology has been able to formulate questions and engage in debates that might never have emerged without this common agenda. Urban infrastructural and population density, heterogeneity, specialization, segregation and implications in processes of globalization, for example, have enabled specific insights into poverty, race, gender and spatial practices.

Just as anthropology of and in the city has developed in response to real-world urbanization, anthropology of and in river deltas has become acutely relevant in an era of globally altering hydrosocial patterns, where, as Cons (2017: 51) suggests, 'the biopolitical paradigm of the Anthropocene might be the swamp'. Whereas urban anthropology has grown through collaborations for example with architects and urban planners, an anthropology of deltas can benefit from conversations with hydrologists, fisheries biologists and geomorphologists, among others. In (successful) urban anthropology, the city is not a reification, but the focus of study. Similarly, this collection does not reify the delta, but focuses on deltaic lifeworlds and their dynamics. We approach the delta as an anthropological category not because of a list of common social and cultural attributes among delta inhabitants everywhere, but based on the common predicament of hydrosocial volatility in all its guises – that is, of a world where unstable flows of water, land and other matter form constitutive parts of people's lives. Deltas, in this approach, are real-life laboratories for studying social, material and semiotic transformations that happen at speeds and in conjunctures which make them perhaps more pertinent and graspable than in other socio-ecological settings.

Clearly, deltas and their inhabitants around the world follow diverse paths that may share little other than their preoccupation with volatile

waters. Upon closer investigation, however, we find a number of parallels between people's lifeworlds in deltas worldwide. This collection presents some glimpses into this diversity and commonality by discussing ethnographic accounts of 'delta life' as intimate descriptions of the predicaments, imaginations and agencies of different delta inhabitants. Thereby, it also develops 'delta life' as a metaphor for the continual sociocultural, political, economic and material transformations that characterize delta environments, borrowing from the natural sciences, where 'delta' (δ) denotes 'change'. This metaphor, however, must not be mistaken for a claim that what we elaborate in this collection is exclusive to deltas. While our arguments do explore delta life as outlined here, a similar approach and sensibility may well be useful for studying life in other places and contexts.

Rather than providing a general framework for describing transformation processes around the world, this collection outlines a specific lens. It identifies three entry points into the question of the delta that some contributors have found useful in their studies (cf. Krause 2017a, 2018a). These are *hydrosociality*, or the combined analytic of social life and water flows; *volatility*, or a focus on uncertain, potentially rapid and radical transformations; and *multi-scalar rhythms*, or the attention to the production and experience of layered spatiotemporal patterns. The lens this offers on more-than-human dynamics is therefore specifically deltaic, as it were, inspired by ethnographic research and anthropological discussions of life in river deltas. A key dimension of this lens, contained in all three entry points, is temporality, which helps with focusing on the dynamism of deltaic lifeworlds. Of course, deltas hold no monopoly on hydrosocial relations, tensions between volatility and stability, or multi-scalar rhythms. Nevertheless, this lens might well prove useful – and we hope it is – for understanding lives beyond deltas too. In this introduction, we sketch out this lens in more detail, and then outline the subsequent chapters.

Hydrosocial delta life

When the inhabitants of the Indonesian city of Semarang's coastal neighbourhoods build makeshift solutions against the floodwaters threatening their homes and businesses, they are not just fighting a hydrological challenge. Rather, they are struggling with the political neglect that this area and its residents have been experiencing since colonial times, as Lukas Ley shows in this volume. In a situation where sea-level rise and coastal subsidence coincide with crumbling infrastructures and investment in fancy city centres at the expense of their edges, flood risk is a political as much as a material issue.

Understanding the predicaments of delta inhabitants requires a hydrosocial approach (Krause 2017a). Hydrosociality (Krause and Strang 2016; Linton and Budds 2014) is a shorthand for the correspondence of social and hydrological relations: 'water flows may mirror political and economic power, and human subjectivities may be shaped by the qualities, quantities, and timings of water' (Krause 2018b: 6). This approach, however, must not blind us to materials other than water that flow in and out of the deltas, including mud, sediments and salt. As Richardson (e.g. 2018) has pointed out, the materiality of deltas cannot be limited to water. Social and ecological processes contributing to the terrestrialization of formerly aquatic spaces are just as likely to occur as those that create and sustain water flows. Both of these trajectories happen in the context of the area's hydrology and politics, however, and therefore can be considered as the manifestation of hydrosocial relations. Ivars (2020), for instance, has documented how the processes of erosion and accretion in the Ayeyarwady Delta make land conflicts a topic for hydrosocial analysis.

The specific configurations of hydrosocial relations contribute to creating distinct historical and environmental spaces. This means that deltas are specific habitats not only – and probably not even primarily – due to their hydrologies, but most of all due to a combination of socio-economic-political and hydrological relations, which may not only distinguish deltas from other areas, but also differentiate them internally. Some of the hydrosocial characteristics that unite all places examined in this book include the following: deltas are dominated by flat and soft terrain, which is perpetually extending in some places and eroding in others; this shifting terrain means some watercourses change frequently, either due to infrastructural projects, hydrological shifts or a combination of these; deltas have historically often been marginal places that large-scale colonial or development efforts have attempted to make productive, often unsuccessfully; the network of watercourses in deltas opens up the territory for water-based transport, but tends to complicate land-based transport like roads; typical delta processes like regular flooding and siltation, the temporal mixes of salt water and fresh water, and the riverine microclimate provide rich ecologies with high potential for fisheries, agriculture and animal life; therefore, delta histories are always multispecies developments, where particular animals and plants, like fish, rice, reeds and beaver, play important roles.

This list of deltaic characteristics indicates that delta life unfolds in relations that are simultaneously social and material, rather than only one or the other. Only by recognizing this can we begin to understand, for example, why some Asian deltas are characterized by endemic poverty in spite of extremely fertile soil (Van Schendel 1991). This is, obviously, a more

universal point that is not limited to delta life, nor is it particularly novel. But here, again, we see that the velocity of hydrosocial transformations as well as the economic and hydrological reach of deltaic relations make these places into fields in which the simultaneity of social and material dynamics becomes sharply evident. Conversely, keeping this simultaneity in mind brings into focus phenomena that are otherwise marginal and allows the telling of different stories, as the chapters in this volume make evident.

Despite their many shared characteristics, deltas have specific histories and trajectories. For example, while their flat terrain, often with rich fisheries and agricultural or hydrocarbon potential, has been conducive to them developing into frontier spaces, the particular shape of this frontier, and its imbrications in people's lives, varies considerably between deltas. Ivars' contribution to this collection, for example, outlines how the extension of the rice frontier across the Ayeyarwady Delta relates to state and insurgent efforts at controlling the mobile land and its populations. Even though deltaic topographies may resist the memorialization and heritagization tendencies inherent in many other, especially European, landscapes (e.g. Harrison 2004, on life along the Sepik River in Papua New Guinea), there is no doubt that they have been shaped biologically and geomorphologically by the enduring presence of societies, albeit with different forms of economic and political organization. While these influences might not be perceptible at first glance, there is often much more lasting continuity in the way people inhabit these environments than first meets the eye (e.g. Irvine 2016, on the deep history of the East Anglian fens in England), as these continuities might not take on forms familiar, or easily recognizable, to casual outside observers.

The concept of taskscape (Ingold 1993), which posits that landscapes are shaped by related and rhythmic human activities, has proven extremely useful in approaching landscapes as temporal phenomena continually in the making. This is crucial for understanding delta life. Yet, as many contributions in this collection point out, there are other factors beyond or beneath the taskscape, which play important roles in this process. They include politics, history, anticipations of the future, and a more explicit reckoning of other-than-human agents, like flooding or salt or muskrats. Such a development of the taskscape concept chimes with recent work like Meulemans' (2020; see also Gruppuso and Whitehouse 2020) argument for including not only more-than-human practices, but also the dissonances that interrupt the smooth flow of the taskscape in the analysis. It also resonates with the proposition by Wagner and colleagues (2018) that, because of the sociality of water flows and other riverine relations, rivers can be approached as ethnographic subjects in their

own right, rather than as only the backdrop to social life. Delta histories too, with all their unruly ruptures and volatile developments, not only comprise those of their human inhabitants, but also include those of different fish species or plant communities, sediment regimes and climate patterns, and are therefore markedly more-than-human (e.g. Biggs 2010; Scaramelli 2018, for excellent environmental histories of the Mekong and Kızılırmak Deltas, respectively). In this collection, Horisberger's account of the integration and disintegration of delta life with shrimp movement speaks of this more-than-human delta as much as Camargo's analysis of the double role of fish as livelihood and toxin carrier, Simon's descriptions of mollusc-gleaning rhythms, or Krause's foray into the significance of melting permafrost for changing delta mobilities. This more-than-human taskscape, where movements of mud, fish and different groups of humans correspond or contravene, may indeed be indicative of a 'deltascape', that is, an agentive landscape of delta life.

Looking for alternative tropes, it might seem opportune to employ watery metaphors to describe delta life, as recent anthropological work on water has done (e.g. Hastrup and Hastrup 2016). However, these metaphors must be chosen carefully and considered reflexively – while they can highlight some relations, what do they conceal? In general, a metaphor like 'flow' must not distract analysis from the socio-material processes that might or might not flow as they matter to people and places (Krause 2014). In deltas there are many flows, and not only those of water (Lafaye de Micheaux, Mukherjee and Kull 2018), but there is also much stagnation, as Camargo's contribution to this collection makes clear (cf. Richardson 2018). However, this should not mislead us into indiscriminately applying notions of flow and stagnation to a range of other dynamics in these deltas or beyond. To keep with Camargo's chapter, this caution is evident in his utilization of the term 'stagnation' to refer to the accumulation of mercury, fish and sediment in the La Mojana region, while he is careful not to apply the same terms to economic or social 'stagnation' in the area.

Some recent anthropological and related work on deltas has focused on water management infrastructures as prisms offering a multitude of insights into delta inhabitants' social, cultural, political and religious lives (e.g. Biggs et al. 2009; Das 2014; Lafaye de Micheaux, Mukherjee and Kull 2018; Morita 2016a, 2017). Most prominently, Morita (2016b) has argued that the Thai Chao Phraya Delta is structured by two historical infrastructural layers, one aquatic and one terrestrial. The earlier, aquatic infrastructure that predominated until the mid-nineteenth century extended the sea into the land and materialized, through a network of canals, the political ideology of power radiating out from a centre into spheres of successively lesser influence. The more recent, terrestrial infrastructure conversely ex-

tended the land into the sea, cordoning off dry spaces from the rivers and canals and establishing, through drainage and irrigation, the material basis for agriculture, an economy that had been of no interest to the royal courts previously. These diametrically opposed infrastructures – and related ideologies and understandings of what a delta is and what it is good for – have been described as different 'delta ontologies' (Morita and Jensen 2017), each enacting its own reality.

Like the Chao Phraya Delta, many river deltas are shaped by the remnants of past infrastructural endeavours and failed development interventions (cf. Stoler 2008). Ley's contribution to this collection, for example, discusses the predicaments of current delta dwellers inhabiting the leftovers and ruins of previous dream projects and infrastructural experiments, as well as the downstream end of urban developments. Even though, in a riverine environment, the past and the present may not be as neatly layered as a European idea of archaeological stratigraphy suggests (cf. Edgeworth 2011), previous forms of livelihoods and political relationships do leave their traces in deltaic landscapes. As outlined above, deltas are historical environments, in which people have developed social, cultural and material practices, not only in relation to a dominant hydrology or ecology, but significantly also in relation to the worlds outside the delta. For example, deltas have often been places of refuge at the muddy margins of empires or colonies that only gradually managed to take increasing control in more recent history, as has been documented, among other places, in the Mekong and Danube Deltas (e.g. Biggs 2010; Constantinescu and Tănăsescu 2018). Nevertheless, these marginal spaces have seen, and continue to see, important correlations with global economic and political processes, be they in the rise and decline of the fur trade, world markets in rice or shrimp, or hydrocarbon developments. Needless to say, rising sea levels, climatic changes and pollution also significantly enter the specific lifeworlds, histories and strategies of delta inhabitants.

One of the core challenges of hydrosocial analysis remains a fair balancing of sociocultural and hydrological premises (cf. Wesselink, Kooy and Warner 2017). The first step in striving to understand delta life must be to acknowledge that the very term *delta* and its association with a particular geographic landform is a historically specific construct (Celoria 1966; cf. Morita 2016b). Richardson's contribution to this volume makes this argument in more detail in relation to the Danube Delta, but it reverberates through other contributions too, where people whom we may classify, from the outside, as 'delta inhabitants' understand themselves to inhabit primarily islands, riverbanks, coasts or swamps (e.g. Horisberger, this volume). This also applies to other hydrological concepts and facts, which we must understand as specific constructs that have proven useful for the

natural sciences, but may conceal as much as they reveal in an analysis of people's lifeworlds. Simultaneously, we must analytically embed what the natural sciences – hydrology, geomorphology, limnology – have to say about the places in which we study as they can inform our analysis with relationships that may be unfamiliar or tacit for our interlocutors in ethnographic fieldwork. The advantages of such an approach are evident not only in a tradition of insightful environmental histories on rivers (e.g. Cioc 2009; White 1996), but also in many contributions to this collection, including Krause's juxtaposition of scientific findings in changing hydrological regimes and melting permafrost with cultural and economic transformations in the Canadian Mackenzie Delta.

Volatility and stability

For its inhabitants, the Mackenzie Delta is a place for continuing to practise many cherished traditions, including visiting their camps, working with fish and animals, maintaining traplines and celebrating jamborees. They carry out these activities, however, in a way and in a context that have been transforming rapidly for more than a century, as Franz Krause details in this volume. Where economic booms and busts have shaken people's livelihoods, where they are defending and renegotiating their identities, and where the very ground under their feet is becoming unstable, delta inhabitants negotiate a world that is anything but constant.

As specific historical environments, deltas are susceptible – perhaps even 'vulnerable' (Chapman and Darby 2016; Szabo et al. 2016) – to external and internal forces of social and ecological origin. Delta inhabitants' lives are embroiled in infrastructural projects, pollution, agricultural developments and climate change. Caught in between the land, the river and the open sea, deltas are the focus of many of the environmental and human challenges in the contemporary world. Their apparent fragility provides an excellent case study to consider the ways in which people have faced these threats and sought to build resilient lives. Nevertheless, although delta life offers a specific window onto a specific ecological space, there are many general characteristics that go beyond deltas. The broader hydrosocial concerns follow themes of volatility and stability as well as rhythms and scale.

Volatility (cf. Krause 2017a) is a term that a number of researchers have found useful for describing the unpredictable, fast and consequential dynamics of hydrosocial relations (e.g. Björkman 2015, in a study of Mumbai water supply) and saturated materiality (e.g. McLean 2011, on European wetlands) as well as, more generally, of a geologically dynamic

earth (Clark 2011). This term highlights the inherent instability of material processes and social life, where uncertain transformations do not figure as problematic changes in a previously stable world, but as the way things are. Research with delta inhabitants indicates that, more often than not, instability is the status quo that characterizes their daily lives, while sociocultural and material certainties and structures are the products of people's initiatives and hard work. In such an approach, where transformations are primary and structures secondary, stability and change are no longer an opposed pair, but complementary dimensions in the weaving of lives through volatile dynamics (see Ingold 2018).

Our focus on hydrosocial relations must not be mistaken for a claim that this volatility is a simple function of delta hydrologies. Instead, hydrosociality means that such watery fluctuations are internally related to other volatile dynamics in deltas, including those rooted in colonial histories of extraction and current mass poverty (cf. Van Schendel 1991). In fact, we observe that the volatile dynamics that characterize livelihoods based on agriculture, fisheries or hunting anywhere in the world are often made more pronounced by their intersection with the dynamics of land erosion and accretion, of floods and droughts, of grand development schemes and peripheral political and economic positions, of extreme mobility and of major infrastructural interventions as are typical in river deltas.

At any rate, we see this intersectional volatility (cf. Krause, this volume) not as an add-on feature to an otherwise equilibrium world, but as a constitutive, existential and integral aspect of this world. On the one hand, this is to displace the alarmist discourse of sinking deltas that portrays rapid transformations in deltas as foremost a recent, and often climate change-related problem. We emphasize, instead, that social, material and other fluctuations, and in some cases the experience of moving from one crisis to the next, have been common and everyday aspects of delta life for a longer time. On the other hand, this perspective is not to deny the real problems that ongoing, rapid and uncertain transformations may pose for many delta inhabitants. Even though volatility may define the status quo, this does not mean that people necessarily appreciate it. For us as researchers, such volatility may even foreclose an ethnographic study of delta life, which may be too fast, uncertain, dangerous and violent to participate in (cf. Simon 2018). Rather than a stable field of relations in which to seek resonance and identification as a researcher, we are likely to encounter multiple, uncertain fluxes of which even our fieldwork participants struggle to make sense. In a volatile 'field', 'fieldwork' cannot follow a predesigned scheme and claim to capture the totality of delta life, but it is itself necessarily situated in uncertain, and often uncomfortable, fluxes (Krause 2018a).

If this ongoing volatility does away with the opposition between stability and change in the analysis of delta life, it is equally obvious that delta inhabitants do identify particular phenomena as changes. These may include the tides, seasons, market demands, climate change, or the impacts of infrastructural interventions or development projects. Delta inhabitants are also likely to experience other phenomena as stable, such as economically or politically differently situated families, certain customs and traditions, diurnal, tidal and seasonal patterns, or historical rights and obligations. Often, stabilities and changes emerge as significant in relation to each other; people may understand things as stable if they persist while other things change, and vice versa. In a volatile world, where transformations are the status quo, persistence and change are relative to each other rather than absolute attributes. This means that continuity is not a rigid certainty, but a process of successfully realigning the various elements of a transforming world (cf. Ingold 2000: 132–51).

The key to grasping volatile delta life is thus in appreciating its multiplicity of flux, stagnation and movement and their irregularities as well as relative speeds and directions that flow against each other. In a world suspended in movements at different rates, paces and directions, making a living is often difficult and precarious. Volatile transformations may offer productive openings for those who are flexible or endowed enough to seize newly emerging opportunities. The capacity to make use of volatile dynamics may even be one of the key features that creates resilience to endure, nay flourish, in river deltas. In cases where people manage to align their projects with some of these movements, their successes can seem effortless to the outside observer. It is often in cases where this alignment fails that we can glimpse the intricacies and vulnerabilities of volatile delta life (e.g. Horisberger, this volume).

Multi-scalar rhythms

Gathering and processing molluscs has become an economic mainstay in the Senegalese Sine-Saloum Delta, especially for women. Sandro Simon details in this volume how mollusc gleaning is a deeply rhythmical practice, where women synchronize their gleaning with water levels and daylight hours that enable or prevent the gathering of particular kinds of molluscs in specific places. Simon also emphasizes that this practice resonates with other rhythms that happen at different spatial and temporal scales. These include not only the Sahelian drought and other factors that displaced many of the other livelihoods that used to nourish delta inhab-

itants, but also newly emerging markets for mollusc products and recent closed seasons to conserve mollusc populations.

If the spatiotemporal dynamism that characterizes delta life can be regarded as a set of interlocking rhythms, it is evident that different processes have different rhythms, and it is in the interplay of these rhythms that delta inhabitants thrive or suffer. For example, a fisher household's success may depend on the skilful navigation of the diurnal cycle of light and darkness, the tides and storms, the reproductive rhythms of the fish, the fluctuation of market prices, the availability of fuel, the pattern of drinking parties in the village, the schedule of the guards policing the marine reserve, and many other rhythms. Some of these rhythms are easier to manipulate, others impossible to ignore; some have shorter durations, others longer, so long even that people might not even perceive them as rhythmic if it were not for the stories and collective memories that extend beyond an individual's perceptive horizon.

As we have illustrated elsewhere in relation to life along rivers in Amazonia (Harris 1998) and in northern Europe (Krause 2017b), people's lives proceed rhythmically through their perceptive attunement to an ever-transforming world between wet and dry. Diverse human activities also participate in remaking these rhythms, for instance by manipulating fish movement or constraining water flows. However, even the most sophisticated attempts to influence hydrosocial rhythms have only been successful to the extent that they have reckoned with – instead of trying to negate – their basic rhythmic dynamics (Krause 2011). Large infrastructural projects intended to dissociate some of these rhythms in river deltas have repeatedly yet vainly attempted 'to cordon off wet and dry spaces from what are in fact wet and dry moments in a temporal drama of ocean and estuary, coast and beach, rain and tide' (Appadurai and Breckenridge 2009: ix). Rhythms, as spatiotemporal phenomena, provide a productive entry point into dynamics like water and sediment flow, as well as animal movements or economic cycles that manifest – and are encountered and managed – in relation to particular places and recurrent events.

Deltas are rhythmic at multiple scales simultaneously. Some rhythms may develop at the scale of the delta, but many other are likely to be either confined to particular delta parts, like the rhythms related to the tides, or to pertain on a larger scale beyond that of the delta, like those related to national politics, the river basin or economic cycles. Understanding the rhythmic lives of delta inhabitants therefore requires attending to spatiotemporal dynamics at multiple scales (cf. Edgeworth 2018; Harris 2018). Paying comprehensive attention to these scales in a single analysis pushes the very limits of writing. Nevertheless, this is the challenge that authors

in this volume have set themselves. And it is – along with hydrosociality and volatility as outlined above – a distinctive contribution to a delta-inspired lens on more-than-human dynamics.

Eriksen (2016) has argued that clashing scales, rather than 'clashing civilizations', are behind most conflicts in the twenty-first century. He understands scales as a combination of size and complexity and distinguishes spatial, social, cognitive and temporal scales in his analysis of the accelerations of energy consumption, mobility, urbanization, waste production and information exchange that characterize current globalization. Scale, for Eriksen, is an empirical reality, and clashes between scales – local and national or global, short-term and long-term and so on – fuel current conflicts. For Tsing (2000, 2005), conversely, the differentiation of various scales is not the cause of struggles and conflicts, but their outcome. Different scales emerge through particular projects of scale-making, informed by various 'ideologies of scale' (Tsing 2000: 347) that produce sometimes articulate, sometimes messy scalar relations. Rather than distinct scales such as local, regional and global, or short- and long-term, Tsing sees multiple, overlapping scales, with a 'global diversity' (Tsing 2000: 352) resulting from differently situated productions of the global. In more recent work, Tsing (e.g. 2013) has pointed out that humans are not alone in struggling to articulate their concerns at different scales, but these struggles unfold in a more-than-human ecology of relations. This also implies that 'scalability' (Tsing 2012b) is not a precondition but a product of social-ecological orders, and successful cases of scaling up are as much the result of serendipitous encounters as of planned effort.

If scale and scaling are therefore critical aspects of anthropological research on the current human condition, how can they figure in an approach to delta life? Considering Amazonian rivers as agents and fields of spatial history, Harris (forthcoming) outlines four sets of spatial relations within the riverscape and concludes that each of them is associated with its own scale, so it might be more helpful to use the verb of scale – scaling – and bind it up with the work and energy of humans and rivers. Following Harris, we can conceive of an emergence of patterns at specific scales engendered by more-than-human processes in deltas, where hydrological, infrastructural and ideological processes, among others, combine to create different frames of reference and relations. Elsewhere, Krause (2017c) has illustrated how the flow of water in a river participates in shaping geographic references and 'fluvitories' (as opposed to 'territories') among riverbank inhabitants. Drawing on Strathern's (2004) observation that scale is less a matter of magnitude than a question of perspective, Hastrup suggests that scale in anthropology refers to a particular 'scale of attention', one of many 'equally total and equally partial' (2013: 149) pos-

sible angles. Hastrup introduces conversations, connections and concerns as three scale-making moments in fieldwork: conversations exceed the immediate face-to-face encounter to take place at a particular scale, with which the participants in the conversation collaboratively associate; connections between places and people grow out of connective practices and routines, for instance of travelling and visiting; and concerns, for instance about climate change, articulate or disconnect between various knowledge and practice communities, such as scientists and hunters.

When fieldwork in river deltas allows for different scales of attention in conversation with and in accompanying research participants, the various hydrosocial rhythms in which they participate are bound to play a critical role in this articulation of scales. For some dynamics, delta inhabitants or researchers might relate to the catchment, for others to the season, or to climate change, and for yet others to the village or the ethnic group. Making sense and alluding to different scales are thereby closely related – and are likely to be contested, in that some scales will be more dominant than others, also reproducing the power differentials between different scale-makers. In a deltaic spatiality, the more 'upstream' scales are not necessarily more inclusive than the more 'downstream' ones, even though they are inescapably related. In many ways, both socially and geomorphologically, deltas can be seen as fractals, where self-similar patterns are reproduced at different levels of aggregation (cf. Strathern 2004). Furthermore, as Morita and Suzuki (2019) have pointed out, different disciplinary approaches to delta issues are likely to construe these issues at different scales, including that of the delta, the river basin of which it is part, or the global scale that integrates all deltas for instance through the global water cycle. Of course, this situated scale-making is not limited to researchers, but is practised as much by delta inhabitants, who imagine, based on their experiences with (stories about) water, where a river comes from and where a delta opens up to (cf. Harris 2018), as well as the animals, insects, fish and other organisms that live in and around the delta. In this rhythmic world of differently situated scales, the ground of people's everyday lives is not a confined locality, but is always emergent from heterogeneous movements of various magnitudes that both manifest themselves, and are reproduced, in the delta (cf. Scaramelli, this volume).

Critical conjunctures of delta life

The contributions to this volume describe diverse deltaic settings around the world, each approaching the question of delta life from a specific angle. While there are ample parallels between these different delta lives, each

chapter elaborates on one particular aspect, which is marked as an italicized keyword in the respective summary below.

Tanya Richardson questions the *delta* as a geographical reference, based on her ethnographic material from the Danube Delta in the Ukraine. Arguing that as anthropologists, we must not uncritically adopt the terminologies of other disciplines or Western everyday parlance, she suggests approaching delta life without an a priori reference to a geographical river delta. In fact, imposing the idea of the delta as a relevant context for our investigations might hide more than it allows us to learn about the predicaments and understandings of the people whose lifeworlds we study. Richardson traces how the muddy transitionary zone between the Danube and the Black Sea was historically referred to as the Mouths of the Danube, and only with the emergence of nation-states, and their preoccupation with territory, was it designated on maps as the Danube Delta from the mid-nineteenth century onwards. The description of the region as the Mouths of the Danube evidently resonated with a predominant interest in the river channels for navigation, while its designation as a delta coincided with more attention being paid to the interfluve land, territory and biodiversity. In contrast to the map makers and governments who invoke a delta or river mouths, delta residents most often speak of the area as the 'reed beds'.

Lukas Ley's discussion of the amphibious lives in Semarang, Indonesia, hones in on hydrosocial *politics*. The inhabitants of the coastal neighbourhood of Kemijen struggle with the recurring flooding of a watercourse through their neighbourhood, which is supposed to transport wastewater from the city to the sea. Ley discusses the flood risk and pollution as political processes that reflect reverberations of colonial power and current political neglect. This chapter also develops an approach to delta life in an explicitly urban context, where dense living spaces and infrastructures are more prevalent than agriculture or fishing. Ley discusses the sinking and marginalized coastal neighbourhoods as heterotopias, outside of, but inextricably linked to, the fancier dreams and practices of city development in Indonesia.

Alejandro Camargo's account of La Mojana in Colombia focuses on *stagnation*. Taking stagnation as an aspect of the rhythmic speeding up and slowing down of water and other flows, Camargo illustrates the importance of the things that originate elsewhere and travel through deltas, where they tend to accumulate with beneficial or problematic consequences for delta inhabitants. Foregrounding sediment, fish and mercury, the chapter shows how stagnation is a political issue as it expresses and redistributes power and privilege. This includes questions of access to newly emerged land, and alternative food sources to poisoned fish; the acceptance of mining in

spite of its lethal downstream effect; and the crisis in overfishing, which is itself linked to questions of land distribution and mercury poisoning. Camargo's focus on stagnation suggests that, in a flowing world, transformation in fact occurs through non-movement as well as through movement.

Franz Krause argues for approaching life in the Canadian Mackenzie Delta in terms of *volatility*. His account considers volatility, rather than stability, as the status quo in delta life. The chapter illustrates that hydrological dynamics, both seasonal and climate change-related, matter to people not on their own, but in their intersection with other dynamic phenomena, including those inherent in the economy and identity politics. The Mackenzie Delta emerges, on the one hand, as a marginal place influenced by global markets, discourses, power relations and trends such as climate change; on the other hand, it becomes clear that delta inhabitants are far from passive recipients of these influences, but actively and selectively appropriate and ignore, and thereby reshape them. Deltas thus become spaces for mixing economic strategies, kinds of water, and ethnic identities, among others. In these settings, uncertainty is a norm, and flexibility and improvisation are core cultural skills.

Nora Horisberger portrays various *movements* and their interrelations in the Brazilian Parnaíba Delta. Her account of the lives of a group of delta fishers foregrounds the multiplicity of simultaneous movements and traces the ways in which they become relevant through skilled perception, anticipative waiting and active participation. Focusing on what is locally known as the 'shrimp tide', Horisberger describes the rhythmic emergence and unfolding of this multispecies phenomenon, which hinges on the successful alignment of tides, turbidity, shrimp growth, labour, markets and other difficult-to-predict factors. Often, this alignment fails, and Horisberger engages local discourses on tricking and cheating to highlight the necessarily provisional and uncertain dynamics that characterize social and ecological relations in the delta.

Sandro Simon finds surprisingly similar dynamics across the Atlantic in the Senegalese Sine-Saloum Delta. Here, the *rhythm* locally called 'Mbissa' figures prominently in women's working and social lives. This is when most of the mollusc gleaning takes place, currently a mainstay of delta livelihoods. Mbissa denotes the overlapping of particular tides, daylight hours and conservation rules, but also speaks to ancestral care, which all contribute to promising conditions for successful gleaning. Simon traces the historical process by which the Mbissa became what it is today, and explains how this rhythm is present even during the 'off times' of mollusc gleaning.

Caterina Scaramelli sheds light on the notion of *place* in her chapter on the Turkish Kızılırmak Delta. By narrating the histories of delta inhabi-

tants and their practices of making and maintaining a liveable home in a fluctuating world, Scaramelli illustrates how their lives are entangled with places near and far, some outside the delta, in terms of families, markets and water flows. The chapter suggests that the delta as a unit takes on its form through these material, social and semiotic flows from beyond its limits yet within its relational field. Scaramelli emphasizes delta inhabitants' agricultural work as a key locus of weaving together these relations for making and remaking the delta as a physical, sociocultural and multispecies entity. Alongside, in relation to, and in spite of larger histories, policies and schemes of nation-making, agricultural politics and conservation projects, people form their subjectivities and make their places and homes through their everyday work, which is hard, often repetitive, and constrained by time pressure and economic means, but also creative and a source of pride.

Benoit Ivars investigates how farmers work towards stabilizing their access to land in the materially and politically unstable Ayeyarwady Delta. Developing the metaphor of *anchoring* for grasping various practices of claiming and defending land, Ivars emphasizes that the rapid erosion and accretion of land, as well as its changing vegetation, can be less problematic for delta farmers and fishers than the changing and uncertain institutional setting. Changing land use and conservation policies, new regimes and new elites, and the concomitant frequent redesignation of land as 'unused', 'free' or 'available' to particular claimants has resulted in a situation where the farmers' access to land can be as unpredictable and shifting as alluvial land itself. The chapter describes a number of anchors, through which delta inhabitants aim to calm institutional volatility, including their recourse to their original and continual working of the land, as well as their attempts to enrol the anthropologist into their land claims.

Together, these chapters provide detailed analyses of the social, material and semiotic processes that make and unmake deltas. Delta life is characterized by movements of people, substances and ideas. Volatile transformations are the norm, and temporary stabilities must be produced and maintained. At the same time, deltas are places of stagnation, where things accumulate, for better or for worse from the standpoint of their inhabitants. We must not take the spatial category of 'a delta' for granted when researching delta life, but have to consider multiple, overlapping and contradictory understandings of people's surroundings and homes. In this way, deltas become specific places at the confluence of manifold relations and flows. These confluences engender struggles and politics that divide delta inhabitants and redistribute benefits and difficulties. In sum, delta life is both about inhabiting deltas, and about the recognition that

these lives are suspended in ongoing and uncertain more-than-human transformations.

A deltaic approach to transforming lifeworlds may be useful for research in other settings, too. Such a delta-life-inspired anthropology would hinge on understanding relations as hydrosocial, and thereby involve a thorough engagement with the material world. Considering the physical and hydrological alongside the social and cultural, in this approach, means opening up the analysis to more-than-human relations, which must not be mistaken for a determinist model. However people refer to and understand the landscapes they inhabit – whether or not 'the delta' is locally a meaningful category – this approach traces how their lives are interwoven with the rhythms of hydrosocial assemblages. Nevertheless, a deltaic approach begins with an agnosticism regarding the Western classification of physical landscape features. It allows the landscape to be something other than we might have thought before doing fieldwork with its inhabitants. This approach can imply replacing the physical space as defined by natural science with its inhabitants' enactment through multispecies relations and practices.

Following this approach benefits from paying attention to how people engage physically and attentionally at various scales – in relation to each other and to the flows of water and agentive beings. The approach is also sensitive to the relations and interactions between different scales, for instance in terms of the fractal multiplicity of deltaic space, that is, the fact that patterns, like those of flooding or trail-making, may repeat at different scales. Furthermore, it considers volatility not as a series of ruptures to an otherwise stable world, but as the way social and ecological processes have come to be and continue to evolve. In this volatile world, rhythms abound and create provisional patterns that may instil a sense of stability in a context of pronounced movement. We hope that this volume brings across two key messages: first, a better understanding of life in river deltas, not as inhabiting a particular geographical space, but as sets of practices, flows and transformations that participate in constituting what deltas are; and second, a delta-life-inspired understanding of volatile transformations based on more-than-human movements, rhythms and scales where rivers meet the sea.

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Chapter 1

Displacing the Delta

Notes on the Anthropology of the Earth's Physical Features

Tanya Richardson

> Deltas: 'Discrete shoreline protuberances where rivers enter oceans, semi-enclosed seas, lakes or lagoons and supply sediments more rapidly than they can be redistributed by basinal processes'.
>
> – Trevor Elliott, 'Deltas'

> This is the sort of place you needed to float over in a hot-air balloon to get any sort of impression of its size and variety. In a boat you moved in man-made corridors from *giol* to *giol* – lake to lake – with little idea of what lay on either side. Hopefully it was the Danube, learning to have fun.
>
> – Andrew Eames (2009) on navigating the Danube Delta in Romania

> When the Old Believers arrived here, what did they see? Something similar to what you see over there: shallow water, reeds, and silt. They dug up the silt to make islands, and mixed it with the reeds to make a house.
>
> – Nikolai Izotov, Russian Old Believer, gardener, pensioner and tour guide from the Danube Delta town of Vylkove, Ukraine

In their studies of the earth's physical features, anthropologists necessarily begin by making assumptions about what certain entities are (e.g. mountain, river, glacier). Yet they also often leave open the possibility of learning that what these entities are, how they came to be, and the relations that sustain them may not fully correspond with Euro-American scientific knowledge. This is common to anthropologists whether their intellectual projects lean more towards a concern with representation and epistemology (how people view *the* world) or reality and ontology (what exists in *one* of many possible worlds), a distinction that anthropologists affiliated with the ontological turn have drawn most sharply (Henare, Holbraad and Wastell 2007; Holbraad and Pederson 2017; Viveiros de Castro 2003, 2004). For examples of the former, consider Keith Basso (1996) on

Figure 1.1. Reed beds near Vylkove, Ukraine, September 2012. Photo by Tanya Richardson.

the storied Western Apache landscape, Julie Cruikshank's (2005) account of Tlingit and Tagish relations with glaciers in Canada's Yukon Territory, and Hugh Raffles (2002) on Amazonians' floodplain vocabularies. Marisol de la Cadena's (2015) reflections on an *apu* in the Peruvian Andes provide a vivid example of the latter. The reader emerges with a sense that an entity or area – a tree, flowing ice, a floodplain, a mountain – is 'more than' or 'other than' what it is in contemporary Euro-American, science-informed understanding and is composed as such by different kinds of relations (ibid.).

In the emerging field of the anthropology of river deltas, however, scholars have generally taken it for granted that a protruded area at the end of a muddy river is in fact a delta. While the authors of two programmatic statements seek to capture the different ways in which inhabitants engage with the amphibiousness of 'delta life' (Krause 2017) or 'delta ontologies' (Morita and Jensen 2017), the question of whether these areas may be something other than a delta is foreclosed in their discussions. In my own research about conflicting conservation and development agendas along the Ukrainian Danube, I initially reflected little on the givenness of 'delta' as the place I was studying. Even though I became aware early on that 'delta', the same word in Russian, did not feature prominently in how fishermen and gardeners in Vylkove refer to their surroundings, a point also noticed by scholars of the Romanian Danube (Van Assche, Bell and Teampau 2012), I still contextualized my ethnography as being in and about the Danube Delta. However, recent explicit efforts to sketch an anthropology of 'delta life' and to compare 'delta ontologies' made me consider the consequences of this habit of mine and others.

This chapter undertakes a redescription of the Danube Delta in order to make a case for displacing 'delta' in an anthropology of deltas, and contributes to this book's aim to 'avoid treating the delta as a geographical container, integrated landscape and land-management category' (Krause and Harris, introduction to this volume). It draws inspiration from Marilyn Strathern's reflections on writing and comparison (1999, 2004) and from Ashley Lebner's (2017a, 2017b) reading of her work. Displacing 'delta' means beginning with questions such as when, for what purposes, for whom, and through what relations the protruded areas at rivers' ends become deltas rather than assuming a priori that they *are* deltas. The purpose of redescribing and displacing 'delta' is not to say that it does not exist as a delta or to replace 'delta' with something else, but rather to *extend* what it can be, similarly to what Strathern does in displacing 'society' (Strathern 1996, 2001). First, I consider what is obscured if we do not take this approach by reflecting on my own and others' research. Second, I draw on historical and ethnographic research to sketch some ways in

which the zone between the Danube and the Black Sea, long characterized on maps as 'the mouths' and 'channels' of the Danube, became a delta as modern state-building intensified in the latter half of the nineteenth century. Third, I provide a brief description that foregrounds the reeds, silt and shallow water of the *plavni* (reed beds in Russian), which is where Vylkovchany begin when they talk about where and how they live. Through this portrait, I hope to show that although 'the Danube Delta' has gradually become the dominant way of apprehending this place, it is still not the primary way in which many people who engage its fluctuating milieus most intimately think about or relate to them in their daily lives.

Anthropology of river deltas

The study of river deltas as such is typically associated with the physical sciences, particularly hydrology and geology. Deltas are said to stand out from other environments due to the degree to which 'geomorphological, hydrological and pedological features are . . . interrelated' (Verstappen 1964: 4). As the definition cited in the epigraph indicates, geologists define deltas as the outcome of basin-level processes of sediment movement and deposition that produce an alluvial plain. It is the nature of the depositional processes, particularly progradation, that distinguishes deltas from estuaries – which also occur at river mouths (Hori and Saito 2007: 77). While Ancient Greek geographers coined the term 'delta', and nineteenth-century geologists revived the study of them as a landform, modern geomorphological knowledge about deltas – including in a global comparative frame – expanded rapidly from the 1950s (Bhattacharya 2006: 238).

While anthropological research in and about river deltas is not new, the project of explicitly taking 'the delta' as an object/topic of anthropological study is of recent origin (Krause and Harris, introduction to this volume). An anthropologist may refer to a delta (e.g. that of the Danube) in order to locate the reader. In such studies, the focus might be more on a practice related only peripherally to the specificity of the environment (e.g. Naumescu 2016 on Russian Old Believers in the Danube Delta). It may also be about so-called environmental aspects of life not exclusively related to deltas (e.g. Muehlmann 2012 on fishing in the Colorado Delta; or Barnes 2014 on irrigation infrastructure), or conflicts surrounding competing development and wetland-conservation agendas (e.g. Richardson 2015a; Scaramelli 2018). By contrast, an anthropology of river deltas creates a field of inquiry that focuses on characterizing and comparing the specificity of social life and its entanglement with non-human matter in such

places (Krause and Harris, introduction to this volume). A major factor in the emergence of an explicit anthropology of river deltas is climate change (Krause 2017; Morita and Jensen 2017). These areas have come into view on account of their vulnerability to inundation due to rising seas and more intense flooding (Krause 2017; Morita and Jensen 2017). Anthropologists (and other scholars) are posing questions not only about how delta inhabitants are being impacted by these changes, but also about what lessons delta inhabitants past and present might have for living with water and wetness more generally. While dealing with climate change is not always the focus in an anthropology of river deltas, it is central to the two important programmatic pieces discussed here.

My own research has been more a study in than about a river delta. It did not seek to elaborate a field of comparison for 'delta life' or 'delta ontologies'. It considered the ways in which expanding environmental regulation and the creation of the Danube Biosphere Reserve have affected and been limited by the river's fluid yet muddy milieus and residents' fishing, gardening and pasturing-related livelihoods. This area near Vylkove was particularly interesting because Russian Old Believers and Ukrainian Zaporizhian Cossacks fleeing persecution by the Russian state were attracted to settle in the area by its rich fishing stocks just as the newest lobe of the delta began to form (Prigarin 2010, 2015).[1] It is also interesting because of its location in relation to different states and to changing international boundaries and the conflicts that have erupted as a result, most recently in the early 2000s when Romania and the EU contested the Ukrainian government's decision to dredge a shipping channel in its part of the delta (Richardson 2016). As such, my project was in conversation with research on conservation conflicts in transboundary areas and rivers more generally.

One of my aims *was* to describe how long-term inhabitants of Vylkove engage and think about their surroundings, and I thus left open the possibility that 'delta' might not be as significant for them as for scientists. I knew that Vylkovchany have a rich vocabulary for talking about recurring physical features along river branches, such as *girlo*, *gradina*, *yerik*, *zhelobok*, *zaton*, *saga*, *kanal*, *kut*, *pereboi*, *tonia*, *shpil* (Silantieva-Skorobogatova 1996: 156), similarly to the river dwellers Hugh Raffles (2002) describes. However, I noticed early in my fieldwork in the autumn of 2009 that Vylkovchany began conversations about gardening, fishing and pasturing with *plavni*. In my first interview with Nikolai Izotov, who became an important teacher and friend, he began: 'I was born on an island along Ankundinov Branch . . . My grandparents dug these lands up from the *plavni* . . . The islands were embanked as people extended their plots. Beyond the strip of gardens there is an ocean of *plavni*, an ocean of

rushes [*kamysh*] and reeds [*trasnik*]'. Over the next decade, on several occasions I witnessed men and women usually sixty years of age or older – but sometimes their grandchildren – refer to themselves or other residents as 'people of the *plavni*'.[2] However, I have described my work as being about and in 'Ukraine's Danube Delta' to situate my work in a transboundary context shaped by hydrological and ecological connections and to signal on which side of the international and EU border I research. In locating Vylkove and my research 'in the Danube Delta', I inscribed – as context – the zoomed-out cartographic perspective adopted by looking at Vylkove on a map, similar to that found in other contemporary journalistic, scientific and historical texts. This move effaces the ways in which various people have conceptualized and engaged with the area in both the present and the past.

What is 'the delta' as an object of anthropological research and comparison? The two papers discussed here take quite different approaches. Krause's paper identifies deltas' distinguishing features as the 'ever-changing interplay of land and water as a result of flooding, draining, drying and irrigating, sinking, silting, sedimentation, channelling, erosion and reclamation' (Krause 2017: 403). These socio-material characteristics call for an 'amphibious anthropology' which pivots around hydrosociality – that is, the deep entanglement of water in social life (ibid.). More specifically, according to Krause, anthropological research on delta life should attend to volatility, shifting relations between wet and dry, and rhythm – particularly cyclicity and fluctuation (ibid.: 405–7). This approach stresses that what river delta inhabitants have in common are certain predicaments generated by rivers' geomorphological and hydrological characteristics. The anthropologist can thus compare similarities and differences in how people respond to these environments, and the environments to people.

Morita and Jensen meanwhile set out to compare Western and Southeast Asian delta ontologies in Thailand's Chao Phraya Delta. Situated at the interface of anthropology and science and technology studies, their paper suggests that delta ontologies can be characterized by describing the cosmologies that inform them and the infrastructural transformations to which they give rise (2017: 118). The 'cosmological orientation' shaping 'Western delta ontologies' is derived from the Western science of geomorphology and land reclamation practices in which deltas are the manifestation of rivers' land-generating capacities.[3] By contrast, they suggest, the cosmological orientation shaping Southeast Asian deltas is derived from galactic polities which 'conceive of deltas as extensions of the sea into the land' (ibid.) that connected 'inter-Asian trade networks' (ibid.: 122). These overlapping ontologies – one terrestrial (Western) and one amphibious

(Southeast Asian) become accessible to the researchers through excavating infrastructural histories. In the case of the Chao Phraya Delta, a massive 2011 flood brought the existence of older amphibious infrastructures associated with the Southeast Asian delta ontology into view for broader publics (including Morita and Jensen).

While these scholars' work is very productive for thinking about people's relations with river deltas, they inadvertently assume a priori that these places are self-evidently deltas. This runs counter to their theoretical orientations, which in different ways seek to avoid taking reality-as-posited-by-scientists as given. It *is* difficult to avoid naturalizing the earth's physical features even when employing the critical tools of science studies and political ecology. However, the absence of reflection about this means that their accounts are haunted by an implicit naturalism (Candea and Alcayna-Stevens 2012; Strathern 2017) and by its counterpart, what Ashley Lebner has perceptively called 'society thinking' – that is, the conceptual pairing of 'society and individual' whose displacement is central to Marilyn Strathern's work (Lebner 2017a). This creates a few problems in their accounts. First, it forecloses avenues for exploring how these places actually came to *be* deltas – not in geomorphological terms, but taking into account how people came to relate to them *as* deltas. Second, while it is possible to apprehend *deltaic* multiplicity (Morita 2016) – that is, the way different 'versions' of a delta overlap, conflict and coexist (cf. Mol 2002) – it is not possible to capture how the area under discussion might not (only) be a delta (de la Cadena 2015). Third, it can lead to problems in making comparisons among deltas because anthropologists assume they are talking about the same kind of entity when in fact the entity may not be a delta, or not only a delta.

Both articles begin by referring to Western geomorphological definitions of what a delta is. The first line of Morita and Jensen's article refers to a delta as 'a landform shaped by silt deposited by a river at its estuary' (2017: 118). This statement is not qualified as arising out of a particular knowledge tradition but asserts the existence of deltas as entities that are a self-evident given in the world: a landform generated by a river. While the second sentence of the article provides a definition from Western science that is largely the same, it does not qualify the first statement as a particular *way* of apprehending – or, in STS parlance, enacting – a feature of the earth. By asserting that deltas simply exist, the possibility of seeing the place as something else is foreclosed. In Jensen and Morita's paper, this leads them to assume that deltas existed as such for premodern Southeast Asians.

However, if inhabitants of the galactic polities saw the areas at the ends of muddy rivers as extensions of the sea into the land, are such areas in fact

deltas in this cosmology if a delta is by definition a *land*form that exists when imagined from above? Are they a rather different kind of entity – perhaps a seaform – or even a series of entities that relate to river and sea differently than a delta does? It is difficult to tell because no terms from Southeast Asian languages are mentioned and I am not a Southeast Asia specialist. Some scholars they cite about the galactic polity (Tambiah 1977) or port polity (Kathirithamby-Wells 1990; Laarhoven 1990) refer to these areas as river mouths rather than deltas. 'River mouth' is also a technical term but it does not seem to have an author in the same way that 'delta' does. Mouth, in contrast to delta, can be apprehended from the side rather than looking down 'from above', and also directs the thinker/viewer to river channels and passageways. Passageways for navigation in turn appear to have been more of a concern for port polities in the lower parts of rivers similarly to the way they were in the Danube. Laarhoven hints at other ways of knowing and relating to these areas in his discussion of the premodern port polity Magindanao in what is today the Philippines. The root word 'Danao' means people who settled around the lake – in this case, the floodplain in the lower reaches of the river. Hence my questions: in the Chao Phraya, do we have two examples of the same entity (delta), or two (or more) different kinds of entity (a delta and something else)? Is talking in terms of entities the right place to start?

This takes us to the related issues of comparison, context and scale that arise in the creation of anthropological knowledge. In her book *Partial Connections* (2004), Marilyn Strathern exposed some of the problems that Euro-American pluralist – modern – thought creates for doing comparison and for generating anthropological knowledge. The book addresses anthropologists' struggles with complexity – the potential for questions and materials to proliferate and fragment – struggles that are produced, she argues, by the intellectual habit of changing the scale of observation or switching perspective (xiv). This habit arises out of 'a modelling of nature that regards the world as composed of entities . . . whose characteristics are regarded as only ever partially described by analytic schema' (ibid.). It is also connected with a particular notion of the relationship between society and the individual in which society is conceived as a whole 'made up of individual parts' (ibid.: 26) – that is, with 'society thinking' (Lebner 2017a) – which in turn manifests a particular scalar and hierarchical relationship in which the large (society) encompasses the small (individuals). Strathern also raises analogous points about the challenges that naturalism poses to biologists and anthropologists in apprehending and analysing relations (2017: 17).

The difficulties that this creates for cross-cultural comparison are addressed most vividly in Strathern's discussion of Hays' comparative study

of relation between the flute complex and ideas of growth, fertility and male power in Highlands societies of Papua New Guinea (2004: 72–76). Strathern argues that Hays' use of the flute complex as a substrate or a regional culture creates a scale against which he plots particular examples, including cases where it is absent. However, she demonstrates how the themes common to the different usages are not a context or level independent of local use because the flute complex 'never exists in generic form, only a multiplicity of specific ones' (ibid.: 73). While specific incidences do not actually fit Hays' plotting (e.g. where flutes are not a male-female pair but a female-female pair), they are not allowed to affect the author's assumption that the male-female difference *is* significant (ibid.). Summing up, she writes: 'And what is a flute? No external criteria can escape contamination by local meanings – whether we regard it as a length of bamboo, a vessel, a sound-making instrument, an artefact with mystical power or as a male or female appendage. Its attributes can no more be counted than we can perceive "it" as a single entity set apart from the purposes for which it is made' (ibid.: 75). Scale and context (which appear as synonyms at one point in Strathern's analysis – see p. 75 bottom paragraph) are created by the anthropologist in the act of comparing ostensibly similar objects, as 'there is no automatic scale to be generated from such units' (ibid.).

In these two articles on the anthropology of river deltas, the scale of comparison is global. Initially this scale was generated by engineering expertise related to irrigation and land reclamation that travelled in the Age of Imperialism, as in the case with the Chao Phraya (Morita and Jensen 2017). The current anthropological interest in comparing deltas arises out of climate change's planetary dimensions along with the travels of expertise about climate change's impacts on deltas (see Zegwaard 2016). In Morita and Jensen's article, there are also regional contexts – Western and Southeast Asian – whose cosmologies give rise to (and appear to encompass) particular 'delta ontologies'. However, if anthropologists are the ones who *create* context and scales in their work, as Strathern suggests, the authors need to make explicit the prior knowledge on which this is based. These important contributions miss one step in identifying the muddy areas where rivers meet the sea as entities to compare. While Krause (2017) considers how inhabitants may understand water or sediments differently, he does not pose questions about how these areas became known as deltas or about the relations that might compose these areas as something more than or other than deltas to river dwellers. While Jensen and Morita instructively identify how different ways of conceiving and engaging with muddy areas where river and sea meet produce very different landscapes,

they do not explain why we should assume the area they describe has been *a delta* in premodern times.

If comparison reinstates naturalism and 'society thinking', so too does my habit of situating research 'in the Danube Delta'. Rereading Eric Hirsch's introduction to the *Anthropology of Landscape* (1995) indicates that this is a continuation of British social anthropologists' convention of using landscape as a contextualizing device to bring their study into focus from an objective point of view. I was reminded of this text by Strathern's comment in *Property, Substance and Effect* about how certain habits in Euro-American thought may have led to a focus on ceremonial exchange in Melanesia, thereby blocking anthropological knowledge: 'Was it because as a Euro-American I have been trained to equate knowledge with seeing, when what is seen is the *world at large*? I do not see a person but a person in a cultural context, *not a figure but a figure in a landscape* [emphasis added] . . . not a gift but economics?' (1999: 257). Seeing a 'figure in a landscape' suggests that 'society thinking' haunts environmental anthropologists in the very act of locating their work, even those who seek to evade nature/society dualisms by treating a delta as a cyborg or hybrid (e.g. Morita 2016). In still treating a landform as self-evidently a delta even as they study its multiplicity, they leave naturalism and aspects of 'society thinking' intact, which perpetuates the pluralistic thinking some environmental anthropologists seek to avoid. While avoiding naturalism entirely may be impossible, writing about landforms specified by modern sciences requires some reflection on the implications of its persistence in our work (e.g. Candea and Alcayna-Stevens 2012; Strathern 2017).

In the remainder of this chapter, I try to displace 'delta' – that is, take a small step towards redescribing the Danube Delta without assuming it is a priori a delta. I approach the area at the end of the Danube in two ways. First, I reread and redescribe the history of key ways in which the area has been named, represented and engaged. I show how 'the Danube and its mouths' became 'the Danube Delta' in conjunction with modern state-building processes. In contrast to 'delta' and its view from above, the older notion (now encompassed by 'delta') arises from and enables a horizontal relationship with the places that compose it. This more horizontal view can be a starting point for the second way I displace 'delta'. I begin my description where Vylkovchany do – with their relations with *plavni* – and then consider the relations that bring 'delta' into their daily lives. In the final section, I reflect again on the hazards of using 'ontology' in characterizing something like a delta because of the way in which it can lead the analyst to unreflexively 'hover above' delta inhabitants, thereby reinstating 'society thinking' and its correlate, the viewpoint of the modern state (Lebner 2017b).

The Danube and its mouths

In discussing the origin of the term 'delta', scientific texts sometimes mention Herodotus's use of the term in the fifth century to describe the triangular-shaped landform at the end of the Nile (e.g. Bhattacharya 2006: 238). However, in a 1966 article Francis Celoria (cited in Morita and Jensen 2017) argued that in fact 'delta' was first used as a concept by Onesicritis, a Cynic philosopher and sea captain who travelled with Alexander of Macedon (356–323 BCE) to the mouth of the Indus and compared it to the Nile (Celoria 1966: 387). Celoria gleans this from the Greek geographer Strabo who, writing three centuries after these voyages, states that Onesicritis 'calls the island [at the mouth of the Indus] a delta'. Prior to using 'delta', Greek writers referred to the area of the Nile in terms of 'outflows' or the 'silty mouths of the Nile' or the 'triangular Niloti land' (Celoria 1966: 386). The term 'delta' – coined because of the resemblance between the Greek letter and the Nile's landform – eventually became a new concept directing attention to a river's land-generating capacity. This contrasts with the arguably more specific term 'mouth', which is about flows and channels.

While 'delta' may have transformed from a place name to a concept through travel and comparison (Celoria 1966; Morita and Jensen 2017), it was not uniformly adopted as a name for such landforms in all places, even those settled by Greeks. Indeed, Celoria (1966: 385) remarks that the first use in English dates from the late 1800s. Several remarkable environmental histories of river deltas have appeared in recent years (e.g. Biggs 2010; Morris 2012). For example, Biggs' book *Quagmire* offers a riveting account of French, American and Vietnamese projects to civilize, modernize and develop the muddy Mekong 'Delta' through various infrastructural and administrative projects. He helpfully alerts readers to the role of cartography and aerial photography in how the lower Mekong came to be represented as a delta (Biggs 2010: 12) and the 'bird's-eye view' it afforded administrators. Biggs himself tends to take this perspective too in using the term delta throughout his book and in his focus on administrators. Nevertheless, he alerts us to the possibility of other ways of conceiving of and engaging with the area from the point of view of Vietnamese when he describes how it is called 'Nine Dragons' and how river dwellers' embodied engagements offer other insights (ibid.: 13).

The area now known as 'the Danube Delta' was referred to as the mouths of the Istros in antiquity and as the mouths of the Danube in treaties and travel writing throughout the nineteenth century (Focas 1987: 30). Since Greek colonization, the mouths of the Danube/Istros have been regarded as significant for transportation and trade routes (ibid.: 1). How-

ever, it was only in the nineteenth century that the Danube River as a whole came to be regarded as a desirable medium- and long-range trade route and infrastructured in such ways as to materialize this (Ardeleanu 2014: 17). This was due to treacherous physical terrain along the river and at its mouths, and to the political and economic relations between adjacent territories that grew around them (ibid.). Thus, the Upper Danube – the German Danube – was connected to the Rhine and northern Italy; the Middle Danube, the Austrian and Hungarian – the Danube 'that flowed' – was connected by several tributaries and roads to the Adriatic Sea; and the Lower Danube, the Ottoman and Romanian (the latter from 1878), was accessible through seagoing ships and connected to the Black Sea juridically, politically and economically (ibid.).

Greeks settled on the coast at the mouths of the Danube between 600 and 300 BCE, once technology enabled them to pass through the Bosporus (Focas 1987: 11). Eventually they also settled along the river branches, and some of the sites chosen remain settlements today. The Greek colonies functioned as city-states; economic life was based on fishing and trade with the interior, across the Black Sea, and the Mediterranean. Ancient Greek writers identified six mouths, named (from south to north) Hiron (holy or sacred), Naracum (narrow), Calon (beautiful), Pseudo (fake), Boreo (northern) and Psilon (empty, deserted) (Constantinescu 2015: 156). The name Istros applied to the river's lower stretch, beyond which the Greeks did not venture. When the mouths of the River Istros became part of the Roman Empire, the Istros persisted as the name for the lower part of the river even after the water body was recognized as a single river called Danubius.[4]

For a few hundred years, control over the area shifted among the Byzantine Empire, Rus' and the Bulgarian Empire (Barford 2001: 229; Subtelny 1988: 31). The Lower Danube appears in schematic form on the Medieval *mappi mundi* and on thirteenth-century Portolan Charts (Constantinescu 2015: 156). In the fourteenth century, the city-states of Venice and Genoa controlled ports and trade on the Lower Danube. The contemporary names of the branches at the mouth were acquired over time under Byzantine rule. Today the river splits into the Kilia and Tulcea branches at the Izmail fork. The Tulcea Branch (now Romania) then breaks into the Sulina and Sf. Gheorghe channels. The Kilia Branch (Ukraine) splits and reunites twice before splitting into three main branches, Bilhorod, Ochakiv and Starostambul, some of which subdivide yet again.

From 1453 until 1699, the area was part of the Ottoman Empire. From 1700 until the end of the Second World War, the area became a zone of competition and confrontation among the Ottoman, Austrian and Russian Empires and later Britain, France and Romania as they sought to protect commercial and trade interests. The strategic and commercial significance

of the lower part of the Danube for transcontinental trade is highlighted by Karl Marx's statement, 'if you hold the outlets of the Danube River you hold the Danube and with it the highway to Europe' (in Focas 1987: 6), and the statement by the famous nineteenth-century publicist David Urquhart that 'the Lower Danube may be considered a continuation of the Straits of Bosporus and Dardanelles' (ibid.). Both highlight the great powers' interest in controlling the area for its waterways rather than as potentially reclaimed land. The expanded competition among empires and states was accompanied by the production of new kinds of maps. One from 1771 drawn by Russian naval officers is interesting not only because of the way in which a contemporary historical geographer describes it as 'the first to offer a unitary image of the Danube Delta' (Constantinescu 2015: 167), but also because 'Danube Delta' does not appear on the map. Rather, what one can read on the map is 'A description of the small branches and bays', while on the back it reads 'Donau-monden 1771. Sintz 1849 Russisch grondegebied' (Danube-mouths 1771. Since 1849 Russian territory) (ibid.).

The Crimean War of 1853–56 was a critical event in the life of the Danube because of the infrastructural interventions that were undertaken to clear the bar at its Sulina mouth in order to facilitate the river's internationalization (Gatejel 2018). These events and projects in turn reveal officials', engineers' and merchants' concern with channels and their relative indifference towards the areas in between, evidence for which can be found in the maps and surveys produced (Constantinescu 2015: 171). The war pitted the Ottoman Empire, Britain, France and Sardinia against Russia. While the causes were complex, one factor contributing to the tension leading to the conflict had to do with Russians' failure to keep the Sulina channel clear of sediment, which impeded trade and commerce (Focas 1987: 210; Gatejel 2018: 933). The Danube's mouths were long renowned for their difficult terrain. For example, a document from the Ottoman Financial Department from 1565 about siltation in the Danube branches reads (footnotes removed):

> Below Tulcea the Danube becomes separated and one of its courses advances into the St. George (Hizir Ilyas) Branch (bogaz, lit. 'throat') and one of its courses advances into the Sulina (Süline) Branch and one of its courses advances into the Liqo Branch. For that reason [there] the Danube becomes shallow and [thus] they [i.e. the crews] empty half of the loads of some of the ships [that] are to be provisioning Istanbul and empty the entire loads of the other ships and [thereby the ships are able to] pass [the shallows]. [Meanwhile,] as [the crews] with their arms and equipment watch over the loads that they unloaded [onto the shore], their ships are [often] raided. Because [of this] so much property has been lost and their distress has become certain. (Quoted in Ostapchuk n.d.)[5]

Fast-forward three hundred years to 30 March 1850, when we can read what the English Vice-Consul Lloyd wrote regarding the Sulina mouth. Sulina became a major port after the 1829 Treaty of Adrianople which ended a war between Russia and the Ottomans and established Russian control over the mouths of the Danube. Lloyd wrote: 'it is not in the interests of any parties, either the local authorities or the inhabitants of Sulina, that the obstacles of navigation be removed' (in Focas 1987: 181). This was followed by a statement from the British Foreign Secretary calling for a conference 'of the interested states to discuss ways of financing an extensive project for deepening the bar', which was subsequently rejected by Russia because it was not compatible with its sovereignty (ibid.: 196).

The Treaty of Paris of 1856, which ended the Crimean War, sought to address the problem of navigation 'at the Mouths of the Danube' – a term similar to the one used in antiquity and on maps that had appeared since then – and returned the mouth region to the Ottoman Empire. It also designated the Danube an international river and established the Danube European Commission to handle issues pertaining to its administration (Gatejel 2018). Among other things, the Commission was 'charged to designate and to cause to be executed the Works necessary below Isatcha, to clear the Mouths of the Danube, as well as neighbouring parts of the Sea, from the sands and other impediments which obstruct them in order to put that part of the River and the said parts of the Sea in the best possible state for Navigation' (Article 16, Treaty of Paris).

While mid-nineteenth-century international legal documents and popular writing refer to the Danube and its mouths, a 1956 hydrographic map produced for the Commission by English naval officer Captain Thomas Abel Spratt is called 'The Delta of the Danube'. The first published material of English engineer Charles Hartley (who went on to design infrastructure at the Sulina mouth) also describes the area as the Danube Delta (Hartley 1862). English engineers in Hartley's time (1825–1915) trained through apprenticeship (in contrast to formal engineering colleges in France). Ideally this would involve special tutoring in 'mathematics, natural philosophy, land surveying and levelling, drawing, chemistry, mineralogy, geology, strength of materials, mechanical motions, [and] the principles of hydraulics', along with 'French and German' (in Hartley 1989: 16). He would therefore have been acquainted with newly emerging specialist knowledge from English geologist Charles Lyell, Prussian geographer Alexander von Humboldt, and others characterizing and categorizing deltas as types of river mouths (see Burt et al. 2008: 827–29; Samoilov 1952: 8–15). However, while the English engineer's maps provided accurate measurements of the river's main arms, they did not do so for adjacent territory,

and the system of lakes in between the main waterways is almost absent (Constantinescu 2015: 173).

Interest in what lay *between* the branches at the Danube's mouth began to increase after Romania gained de facto independence in 1878 at the Congress of Berlin. This suggests that the emergence of 'delta' as a way of designating the area is connected with the expansion of modern state administration, with its modern cartographic perspective positing a 'view from nowhere'. This followed the Russo-Turkic War of 1877–78, which also enabled Russia to regain access to the Danube via the Kilia Branch. With Romania's acquisition of statehood, scientists and administrators began to make use of new mapping techniques for generating knowledge about what lay between the branches (Constantinescu and Tanasescu 2018: 73). Like other states at the time, the authorities invested extensive resources into producing detailed maps of different kinds of territories under their jurisdiction to make populations and natural resources legible for governing (Biggs 2010; Scott 1998; Seegel 2012). The Romanian army's Institute for Cartography produced maps of the entire Lower Danube valley between 1880 and 1899 (Constantinescu et al. 2015: 263). The map of the coast produced by the Romanian army in 1899 stressed 'the representation of lakes and streams with designations mentioned in Romanian' in the area (Constantinescu 2015: 173) and marked a shift from an 'island approach' (one that portrays the areas between the branches in a homogeneous way as if they were solid ground) that persisted even in Charles Hartley's detailed maps.

Romanian engineer Gheorghe Vidrascu further expanded on this work during topographical research in 1909–11, which culminated in the first detailed (accurate) map of the Romanian part of the delta that was also the first to be explicitly called 'A Hydrographic Map of the Danube Delta' (Constantinescu 2015: 176–77). This involved the use of new methods including the creation of a geodesic system in order to provide a more comprehensive survey of the area. Vidrascu himself claimed: 'until the last few years, the Danube Delta was not known from a scientific perspective' (ibid.: 176). His colleague and collaborator, polymath Grigore Antipa, used these maps and his own research to elaborate plans for the development of fisheries and limited land reclamation for animal husbandry (Constantinescu et al. 2015: 268). These maps were part of a process of making territorial resources visible in the context of building a modern Romanian state.

Nevertheless, full-fledged embankments and land reclamation of the kind associated with the Western (or, more accurately, Dutch) delta model that Jensen and Morita describe were undertaken in the Romanian and Soviet parts of the delta only after the Second World War (Constantinescu

et al. 2015: 272; Goriup and Goriup 2015). In what eventually became the Netherlands, land reclamation efforts began in the tenth century, involving the construction of drainage canals and later dikes (Lambert 1971: 108; TeBrake 1985: 14). In subsequent centuries, the Dutch began to be commissioned to drain other areas of Europe (Blackbourn 2006; Renes 2005). In the Romanian Danube, several thousand hectares of the floodplain were reclaimed in the stretch of the river above the delta between 1904 and 1906 (Constantinescu et al. 2015: 272). This expanded to 23,070 in 1928 and 101,100 in 1962, with additional areas being reclaimed until 1991. Although some polderizing took place in the delta itself in order to stimulate reed growth for paper production, in 1980 only 43,400 of 440,000 hectares of the area of the Romanian Delta had been polderized (Schultz 2015: 310). The vastly greater part of the delta remained unmodified by extensive infrastructural development and sparsely populated. However, on a visit to the Netherlands in the late 1960s, Nicolae Ceausescu viewed the Rhine Delta from the air and decided that the Romanian Delta should be developed in a similar way (ibid.: 304). The goal was to reclaim some 100,000 hectares of land in the delta itself (ibid.: 307). These plans, however, remained largely unrealized, in part due to the efforts of the Dutch experts commissioned to help with the project, who stalled it by writing negative reports about the soil's unsuitability (ibid.: 310, 317).

In the late twentieth century, global conservation regimes became significant in the configuration of relations that make the area a delta. Past failure to implement massive land reclamation projects meant that the mouths of the Danube acquired new significance as a delta for the area's relatively unmodified condition and wetland ecologies when compared to similar areas elsewhere in the world. 'Wetland' was institutionalized globally as a way of valuing heterogeneous marshy areas with the holding of the Ramsar Convention in 1971 (Matthews 1993: 1; Scaramelli 2018: 408, 410–12). Since the 1990s, parts of the Romanian and Ukrainian Danube Deltas have been officially designated Ramsar Wetlands of International Significance, which has helped to justify the establishment of separate UNESCO Biosphere Reserves and a joint Transboundary Biosphere Reserve. Part of the Romanian Delta has also been designated a UNESCO World Heritage site (Van Assche, Bell and Teampau 2012).

In the early 2000s, the delta-as-internationally-important-wetland contributed to the replaying of nineteenth-century conflicts over access to the Danube for shipping (Richardson 2016). In 2003, the Ukrainian government decided to dredge a shipping channel in its part of the delta in order to break the Romanian monopoly and bypass its tariffs. European states aligned with their soon-to-be new member, Romania, and invoked new conventions pertaining to wildlife conservation and environmental

protection to sanction Ukraine (Richardson 2015a). This time, however, the name given to the area was not 'the mouths of the Danube'. Rather, the conflict is known in international law circles as the 'Danube Delta Conflict' (Koyano 2009).

People of the *plavni*

Here I foreground the *plavni* in an account of Vylkovchany's fluvial relations with the Danube's Kilia Branch to demonstrate a second way in which 'delta' can be displaced. In such an account, 'delta' does not disappear entirely. Rather it enters through people's relations with particular beings, substances, knowledges and administrative structures, which participate in conjuring the delta as an administrative, hydrological or ecological unit. This dovetails in part with other contributors who begin their chapters with 'movements of materials, animals and people' (Krause and Harris, introduction to this volume) rather than 'a delta' per se (e.g. Horisberger on tides, shrimp and *croa*; Simon on molluscs, mangroves and sandbanks; and Scaramelli on water buffaloes, marshes, rice fields and gardens) and describe how people's engagements in waiting and tricking, gleaning, and planting and hoeing, respectively, create distinct, more-than-human socialities.

The Lower Danube's multi-ethnic, multi-linguistic, multi-state history manifests itself in the words used to describe the sometimes wet, sometimes dry reedy areas along its channels. Roughly half of the entire area now classified as the Danube Delta (220,000 of 440,000 hectares) consists of different kinds of reed beds (Hanganu and Doroftei 2015: 71). The dominant species of reed is the cosmopolitan *Phragmites australis*, which since the late 1990s has been harvested as thatch and exported to Germany and the Netherlands. These reeds reach a height of three to four metres on average and grow in dense stands (Schneider 2015: 51). The Russian word *plavni* is translated into English as reed marsh, reed beds, and sometimes wetlands (cf. Olenenko 2019), though the more common scientific Russian word for wetland is *vodobolotnye ugodiia*, the literal English translation of which could be water-saturated grounds. *Plavni* is a plural noun formed from *plav*, which in its verb form *plavit'* means to float. Though it refers to reeds when used with reference to the Danube and the Dnipro (ibid.), the word itself does not contain the word reed, *trasnik*, or rush, *kamysh*, Vylkovchany's most common words for *plavni* vegetation. *Plavni* does not have the negative connotations of *bolota*, which can also be translated as marsh or swamp and is similar to the word *balta* used by Romanian speak-

ers across the border, many of whom are also Russian Old Believers and Ukrainians (Van Assche, Bell and Teampau 2012: 171).

A type of floating fen called *plaur* in Romanian (also from the Slavic root to float) and *splavini* in Russian is one of the most distinctive kinds of reed marshes for which the Danube is famous. They were brought to the attention of English-speaking audiences in the early twentieth century by English ecologist Marietta Pallis (Cameron and Matless 2003). There are some discrepancies in how Russian and Romanian words are translated in English-language writing on the Danube. For example, some scientists write that *plaur* in Romanian translates as *plav* or *plavni* in Russian (e.g. Cameron and Matless 2003; Schneider 2015). However, botanists writing in Russian use *plavni* as the general word for reed beds and *splavini* as the more specific term for floating reed marsh (see Zaitsev and Prokopenko 1989: 15). Meanwhile, Vylkovchany refer to the floating reed marsh (*splavini*) with the Romanian term *plaur*. *Plaur* are quite rare and are primarily found in the lakes close to the coast more frequently in the Romanian part than the Ukrainian one. The areas Vylkovchany refer to as *plavni* can range from aquatic spaces that are permanently inundated, to natural levees along branches that are above water except in exceptional circumstances.

Vylkovchany's efforts to clarify their rights to fish and land have left documentary traces that reveal how they apprehended and related to the river in the mid-nineteenth century as the concept of 'delta' came into more frequent use. Their efforts have arisen out of and been complicated by changing borders and governments (Ardeleanu 2017). From 1829 to 1856, Vilkovo was part of the Russian Empire. From the end of the Crimean War in 1856 until 1878, the town was once again ruled by the Ottoman Empire (more specifically the Moldovan Principality), after which it was returned to Russia. While changing borders led some townspeople to migrate from one bank or branch to another, those who stayed put saw their subjecthood and citizenship change multiple times as state boundaries were redrawn.

Articles by local historian and ethnographer Georgii Bakhtalovskii titled 'Posad Vilkovo', which appeared in Russian over several issues of a journal during 1881–82 published in Kisheniev, are a particularly rich source of information about the town.[6] In the 1840s – prior to the Crimean War – Vilkovo Society (*Obshchestvo*) sought to have the town designated as *posad* (a type of town) in order to give residents the higher status of urban commoners in the Russian Empire's estate system. One of the goals was to strengthen residents' access to water and fishing rights on account of the absence of cultivable land. Their 1843 application read:

> Land belonging to Vilkovo . . . is unsuitable for growing grain and other livelihood needs. Located between the Danube and the Sea and covered entirely with *plavni*, water, *kamysh* (rushes) and *kuchugury* (sandy hills) . . . this land is not suitable for [allocating as] plots (*uchastki*). (Bakhtalovskii 1881: 499)

While the town was given *posad* status, river access and fishing rights were not clarified, and therefore Vilkovchani submitted the following complaint in winter 1845:

> . . . [the Senate] department confirmed that they would pass a resolution regarding the request of the Posad of Vilkovo to allocate rights to fish on the banks of the Danube . . . so that residents of Vilkovo, who have from a long time ago fished in the mouths of the Danube, for whom this is the only means of sustenance, and who, because they were completely familiar with the waters and banks of the Danube River, were needed during the last war with the Turks (1828–9) to transport our troops across this river, and in the current times are used to transport border guards to the islands and other places . . . without compensation . . . (Bakhtalovskii 1881: 504–5)

In these passages (and others), the area around Vilkovo is described as the Kilia Danube, the mouths (*ustiia*), branches (*girla*, *protoki*), banks (*berega*), waters (*vody*), reed beds (*plavni*) and islands (*ostrovy*) of the Danube, and also as dunes (*nasipy piska*, or *kuchugury* in local parlance). Bakhtalovskii himself did not use the term 'delta' in these articles. Thus, in contrast to ethnographers and historians writing 150 years later (e.g. Ardeleanu 2017; Prigarin 2015; Richardson 2015b; Van Assche, Bell and Teampau 2012), he likely saw himself as doing research *about* the Danube and its mouths of but not *in* the Danube Delta.

Residents of Vylkove and other settlements along the Danube's branches dealt with changing international borders and state regimes during the twentieth century too. While state boundaries shifted again in 1918, 1939 and 1941, since 1944 the border between Romania and Soviet and independent Ukraine has run along the Kilia Branch, which means roughly 80 per cent of what is called the Danube Delta is in Romania and 20 per cent is in Ukraine. Under socialism, high modern embankment, land reclamation and irrigation projects were implemented (Goriup and Goriup 2015; Richardson 2016). Since 1990, both sides of the Kilia Danube have been subjected to expanding national and international environmental regulation. However, the two parts differ in how they are related administratively, culturally and ethnolinguistically to their respective states. The more sparsely populated Romanian part of the delta is a distinct administrative unit, which corresponds with the Romanian Danube Delta Biosphere Reserve's boundaries. The Ukrainian delta is split among three administrative districts while the Danube Biosphere Reserve

covers just half of Ukrainian delta territories and has considerably less autonomy in making regulations than its Romanian counterpart (Fedorenko 2002). In contrast to Romania, where Old Believers are an ethnic, linguistic and religious minority, in southern Ukraine Old Believers are not a linguistic minority in the same way, for Russian is widespread in many areas of southern Ukraine (even if it does not have the status of official language) and remains a language in which scientific research about the area is published. One consequence of twentieth- and twenty-first-century state-building projects and border regimes is that Vylkovchany are more likely to talk about how their way of life differs from that of fellow Ukrainian citizens who live on 'the steppe, land that has existed for eternity' than of commonalities they share with residents of the Danube's branches in Romania.

Contemporary Vylkovchany's stories about their families, livelihoods and town emphasize the *plavni* as a place of settlement and refuge. Enlightenment land/water and culture/nature oppositions run through narratives of settlement. Paraskovia Mishurnova's statement, 'We conquered (*otvoievali*) this land from the sea and the *plavni*', was one I heard from nearly everyone. 'They dug, and dug and dug' is how Nikolai Izotov described how his grandparents settled the *plavni*. Aksinia Selezneva, an Old Believer born in 1925, said, 'We pave, and pave, and pave (*mostim, mostim, mostim*) . . . to keep raising land. That's how people live here'. Residents describe the labour involved in transporting building materials, appliances and other heavy household goods to houses that can only be reached by boat, and the challenges if the water level is low. Therefore, they said, what distinguished the labour of living in the *plavni* was that there everything was done 'by hand and by boat' (Richardson 2015b). These conversations also emphasized how people's relations with the *plavni* and the Danube were changing, leading to the siltation of Vylkove's canals as part of a broader 'terrestrialization' process (Richardson 2018).

In stories beginning with persecution following Patriarch Nikon's reforms of the Orthodox Church, Old Believers describe the *plavni* as a place that allowed them to hide and to live in a way that enabled them to maintain their faith. The *plavni* has remained a place of actual and potential refuge in the twentieth and twenty-first centuries. One elderly couple described how they hid in the *plavni* from Soviet border guards in 1947 so that they could work on their garden to grow food and avoid starvation during the famine that raged at the time. The *plavni* also resurfaced as a place of refuge during the events of the Euromaidan and the beginning of war in Eastern Ukraine in June 2014. One friend said he would hide his son in the *plavni* if army recruiters came for him. Another friend described how some Vylkovchany had prevented Euromaidan activists from enter-

ing the town by threatening them with statements such as 'We will chase you so far into the *plavni* that you will never find your way out'.

Since they arrived at the mouths of the Danube, people have cut reeds to use as construction material and for mats (Dushakova 2013), and in spring to feed goats and cattle.[7] While tourists might see the marshy areas as beautiful sites of pristine wilderness, elderly women recalled the discomfort of wading in the cold, muddy water in early spring as they cut reeds for feed or other purposes. They recounted frightening incidents of being caught in a boat in treacherous waters far from home during a sudden change of weather because of a change in wind direction. They also point out how the interior lakes that form species-rich habitats now part of the Danube Biosphere Reserve (DBR) exist because their ancestors cleared passageways of mud and reeds at special angles to filter the silt and prevent its accumulation. They also tried to keep these lakes clear of *plaur*, rather than letting them proliferate as biologists prefer and current regulation requires. While people contrast the cultivated spaces of garden plots with the *plavni* beyond, the *plavni* is nevertheless an anthropogenic landscape that people have managed through clearing, cutting and burning.

Vylkovchany do become entangled with 'a delta' in everyday life in various ways. Here I consider two ways in which the DBR's establishment in 1998 expanded their engagement with 'a delta': ecotourism and fishing. The history of nature conservation in this part of the delta dates from 1967, when a small protected area was established along the coast. In 1973 it was expanded once in response to the USSR's signing of the Ramsar Convention (1971), a second time in 1981, the year that the Dunaiskii Plavni Nature Reserve (*zapovednik*) was founded, and a third time in 1998 when the Danube Biosphere Reserve came into existence. The value of Ukraine's part of the delta – in particular the part known as the Kilia Delta – lies not only in its biodiversity, but also in its minimally modified geomorphology. This means scientists can observe the Danube's geomorphological processes in action along with their corresponding ecological successions.

Nature tourism (ecotourism) has been promoted and developed alongside the DBR's establishment and is an area where one does hear talk about 'the delta', including among Vylkovchany guides. Guides use 'delta' in their conversations with visitors in order to locate them in relation to the Danube River as a whole. They also refer to 'the delta' when they describe the area's diverse flora and fauna and the DBR's creation. Outside Vylkove, narratives about the pristine nature of the area, its abundant flora and fauna, and the exoticism of its residents' lifeways have begun to multiply (Richardson 2018). Some guides – including local ones – omit references to residents' stewardship of the environment in the picture they present to tourists.

While the DBR's presence has helped make Vylkove attractive for tourists and enhance some townspeople's incomes, in recent years its existence has led to complications in Vylkovchany's ability to fish at the Danube's mouths. For example, when key fishing grounds became part of the Reserve in 1967, an exception was made in the Reserve's founding document to allow fishing to continue. However, an amendment to the Law on Protected Areas passed in 2010 clashed with the Law on Fisheries and created difficulties for Vylkovchany in accessing fishing grounds. Consequently, Reserve administrators have come to serve in practice as lawyers defending Vylkovchany's fishing rights at the Danube's mouths. For one court case, they translated Vylkovchany's ecological knowledge and testimony into an expert statement written by an Academy of Sciences hydrobiologist. It argued that fishing 'does not just take place *in* the delta'. Rather, over the past 350 years fishing has been what Reserve administrators call a 'delta-forming factor'. What they meant was that the Kilia Delta would not have its existing mosaic quality, with channels and interior lakes supporting species-rich habitats, if fishermen had not been clearing away debris and reeds from these same channels and lakes. This is just one of many instances where Vylkovchany's knowledge that is not explicitly about 'the delta' per se gets mobilized in ways that constitute the Danube delta as an object of administration.[8]

River delta (yet to be) displaced?

I began the chapter with a quote from a traveller to the Danube Delta that expresses the challenges of apprehending it – knowing that one is in a delta – without looking down on it from above. As someone who grew up near mountains, I found it challenging to orient myself on the flat, marshy areas at the mouths of the Kilia Danube. Only in recent years have I become better at getting my bearings after spending large amounts of time locating my boat trips and walks on a map. While the cartographic view of maps is not alien to Vylkovchany, the fishermen, gardeners and guides I have worked with did not really use them to orient themselves most of the time. But this abstract cartographic perspective – which appears to be embedded in the very concept of delta itself – can impede insight in an anthropology of river deltas if anthropologists fail to reflect on it explicitly.

To call for this kind of reflection is not really all that new in anthropological studies of the earth's physical features. Julie Cruikshank and Marisol de la Cadena have provided exemplary accounts of the conceptual, interpersonal and ethical relations Indigenous peoples have with glaciers

and mountains that compose them as entities quite different from what they would be to modern Euro-Americans. These scholars' dispositions can be carried into accounts of places such as the Danube where radical difference is not necessarily at stake. Superimposing 'delta' onto documents, maps and accounts that describe the area as the Danube and its mouths obscures important dimensions of how people's relations with silt, reeds and water affect the forms the area takes and the lives lived there. It also lets naturalism seep into an analysis that intends to avoid or problematize it. Taking a cue from a special issue on ethnographies of naturalism (Candea and Alcayna-Stevens 2012), we might ask how and why deltas have seemed self-evident and given in nature even to scholars trained to avoid doing this.

Morita and Jensen have described a figure–ground reversal in the Chao Phraya Delta as people changed their orientations from the canal (and water) to the street (and land) over time (2017: 128). Something similar seems to be at play in the Danube as it went from being 'the Danube and its mouths' to 'the Danube Delta'. It became a delta with the emergence of the geological sciences in the nineteenth century and their use by state administrators (Romanian, Soviet) to grasp the resource potential of the areas between its branches for fisheries, animal husbandry and later industrial agriculture. But these resource development projects failed around the same time as global conservation regimes expanded. The latter helped to revalue swamps and marshes as biodiverse wetlands. Global conservation projects concerned with wetlands thus helped to reinforce the area's status as a delta. Similar to what Morita and Jensen show in the case of the Chao Phraya, different versions of deltas can coexist, with new ones not fully displacing the old. In the Danube, a major conflict erupted in the early 2000s as allies of the Danube Delta-as-transportation-corridor clashed with allies of the Danube Delta-as-globally-significant-wetland. However, these deltas have in turn not entirely displaced the ways in which Vylkovchany relate to places near the Danube's mouths that existed before the area became a delta.

Finally, I reflect on the use of 'ontology' to speak about deltas. As I argued above, the term 'delta' almost automatically positions us 'above' the landscape because of its entanglement with modern cartography, engineering and state-building agendas. Lebner (2017b) interprets Strathern (2012) as alerting us to a hazard that the concept ontology poses for anthropological analysis. Strathern (2012) recounts a dream in which the final image is one of her hovering over a field of pansies, unable to walk on them because of wooden supports holding the pansies in place. Lebner provides a compelling interpretation in which she argues that Strathern's dream is a comment on how 'society thinking' haunts the ontological turn.

The problem is that ontology, like 'society thinking', leads to the creation of overly abstract and tidy models, and the identification of units that can be compared. This in turn obscures the careful redescription of relations – 'the ever-entwined interpersonal and conceptual distinctions that hold life together' (Lebner 2017b: 225). In an anthropology of river deltas, anthropologists should be mindful of the impulse to equate the place we study with the view 'from above'. They could begin by tracking the relations that lead us (and others) to do so – and to apprehend an area as a delta – in the first place.

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Notes

1. I use the official Ukrainian spelling of Vylkove, Vylkovchany (resident of Vylkove) and other place names when discussing the contemporary period. I use the Russian spellings of Vilkovo, Vilkovchani and other terms when quoting from Russian-language sources or interviews. All my discussions with Vylkovchany and Reserve staff took place in Russian.
2. Between June 2008 and May 2018 I conducted ten months of fieldwork, mainly around Vylkove, during trips ranging from two weeks to three months.
3. Morita and Jensen do not explicitly define ontology or cosmology. In other work, they have indicated that when they use the word ontology they have in mind an STS-informed definition of practical ontologies that refers to 'material-semiotic reconfiguration' (Jensen and Morita 2017: 619) and 'how worlds are concretely made, conjoined or transformed by the co-evolving relations of multiple agents; people, technologies, materials, spirits, ideas' (Jensen and Morita 2015: 82). Their reference to 'Hindu-Buddhist cosmology' in describing galactic polities suggests an encompassing philosophy or worldview, though they do not explicitly say so.

4. See *Dictionary of Greek and Roman Cartography* (1854), edited by William Smith, LLD. Available at http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.04.0064%3Aalphabetic+letter%3DD%3Aentry+group%3D1%3Aentry%3Ddanubius-geo (accessed 4 August 2017).
5. 'Delta' was not a word used at the time. Victor Ostapchuk, personal communication, 1 July 2019.
6. Bakhtalovskii's work is considered valuable and original by historians of Vylkove because of the way it combines oral testimony and documents from the mayoral office that were subsequently destroyed.
7. Traditional forms of housing construction are quite rare now as they have been replaced by different forms of brick and concrete (Richardson 2018).
8. For comparison, see Cameron and Matless (2003) on how fishermen's knowledge was subsumed into the scientific account of the *plaur* in Marietta Pallis's article 'The Structure and History of the Floating Fen of the Danube Delta'.

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Chapter 2

The Global Swamp

The Amphibious as a Figure of Heterotopia

Lukas Ley

In Asia, an estimated 54% of the urban population live in low-lying coastal zones (Kramer 2018). The Bangkok Post reported in 2019 that 'of the 10 major cities most threatened by rising ocean levels, seven are in Asia.'[1] While flooding is nothing new for these cities, the regularity and intensity of such events are. In 2011, Bangkok experienced its worst flooding in decades, not just as a result of torrential downpours, but 'exacerbated by high tides, forcing water back up swollen rivers'[2]. As city roads were turning into rivers, the Thai government had to decide which parts of the city to sacrifice and which to protect, admitting that it is 'impossible to protect' the whole capital (ibid.). Around Manila, high tides are able to reach farther inland while rising sea levels and urban subsidence threaten the foundations of Manila's shores (Bankoff 2003). Recent studies show that previous estimates of flood risk were too low: in a new future scenario by Kulp and Strauss (2019), sea levels by 2050 will be 'high enough to threaten land currently home to a total of 150 million people to [*sic*] a future permanently below the high tide line'.

Cons (2017: 47) recently speculated that we live in a moment of 'global flooding': periodic inundations haunt cities the world over, turning whole regions into swamps and leaving a 'dampness' in their wake. This swamping has become a pivotal human experience. Of course, people wonder whether they will be able to survive in these liquefied, dank environments. This is becoming a more common experience as greater numbers of people are confronted with swampiness (see also Ley 2018), which is why Cons (2017: 52) urges anthropologists to recalibrate: what if the damp is becoming the norm in terms of city planning and subjectivity, an integral feature of the urban experience?

Figure 2.1. Children running through a flooded gang (alleyway) in central Kemijen, Semarang, June 2014. Photo by Lukas Ley.

This chapter asks what it means for cities to undergo prolonged flood crises and become partially amphibious. I show how, in flood-prone neighbourhoods, clientelistic relations, privileged access to building materials, creativity and political finesse allow poor inhabitants to survive in urban landscapes that have become damp, to use Cons' term. As the littoral they built their homes on is sinking, they carry out small infrastructural adjustments aimed at keeping the waters at bay. They rely on unsteady assemblages of people, materials and time to minimize risk. More often than not, I argue, these adjustments are short-lived and not sustainable, only preventing flooding imperfectly and temporarily. In view of this particular challenge, and people's experience of the risk of flooding, I ask, building on Krause (2017), what it means, and what it entails socially, to inhabit an urban delta in the twenty-first century. In other words, what kinds of social and material worlds are emerging in cities built on sinking land? What are the (global) politics that underlie the emergence of this amphibious life? This chapter relates to Camargo's work in this volume in that dampness is a form of hydrosocial stagnation that leads to confinement and health-endangering exposure. There is further overlap with Ivars' piece on the instability of land and tenure as a result of legal procedures and the enactment of rules and policies.

In recent years, a number of anthropologists (Gagné and Rasmussen 2016; Krause 2017; ten Bos 2009) have called for an amphibious anthropology. In the following section, I will review some of their claims and theoretical interventions, focusing on their conceptualizations of water and infrastructure. I argue that a consideration of the urban is largely absent from their analyses of the processes and social dynamics that characterize amphibious lifeworlds. I here define the urban as a dense network of actors, materials and places constituting an ambiguous socio-material landscape. Cities are incomplete and ever-shifting assemblages that enable the accumulation and distribution of resources while constantly forcing people to make instant decisions about 'where to put time, effort, and social and monetary capital' (Simone 2014: 1). People's experience of the urban in the hyperdense cities of the Global South is influenced by the constant necessity of exploring their uncertain material and social surroundings, 'taking materials out of their usual contexts, uses, and meanings and then piecing them together' (ibid.: 3). This undoing and refitting allows people to endure in precarious socio-ecological niches. By considering an urban amphibious situation, I would like to examine ways in which this 'cityness' (Simone 2009) works in the context of sinking land due to rising sea levels. Adding an urban focus to studies of life with and *in* water, this chapter further argues that an understanding of urban development and spatial politics is key to an understanding of amphibious spaces in urban-

ized deltas. These new amphibious spaces can become zones of confinement for some urban dwellers, where they struggle with dwindling land and rising waters. Here, land is suddenly coming to an 'end' (see Li 2014) not because the sea devours it completely but because the infrastructures that created this land stop working for the majority, and because in the eyes of more powerful actors it is simply more important to protect some areas than others (Bhattacharyya 2018). To paraphrase Cons (2017: 51), 'the kinds of infrastructure that do or do not exist to protect people' from the effects of climate change are, 'decidedly, the result of social forces'.

I propose to consider the urban amphibious as a site of often desperate struggle over the meaning of land and access to critical urban infrastructure. To illustrate this, I draw on my own fieldwork in Semarang and Jakarta as well as other available documentation of amphibious life in Southern cities. This account is far from exhaustive. My goal is to encourage anthropologists and scholars in other disciplines to imagine the ways in which the disaster of flooding plays an active part in determining the 'shape of the urban experience' (see Hannerz 1980: 99) in these cities. In many cities, living on the coast has become a particular challenge for the poor. In coastal settlements, citizens are cut off from a number of critical infrastructures and decision-making processes. For them, life at the edge of the sea can be particularly capricious when infrastructures and adaptive mechanisms are out of date or simply missing. They may face further threats from armed groups, or eviction because of land reclamation projects.

Based on these social and material conditions, I suggest considering the amphibious as a contemporary figure of heterotopia. I show that, in Indonesia and elsewhere, poor floodplain inhabitants live in heterotopic spaces, that is, 'other places' that are maintained outside of all ordinary places but exist on the border of a social (urban) order. I provide an account of the amphibious that locates the existence of amphibious spaces in the context of a conjuncture of material (dis)investments, ecological crisis and capitalist state-making. Cons (2018: 285) has made similar use of Foucault's concept to refer to emergent spaces of climate security. He reads resilience-building projects as 'heterodystopias' to show how imaginations of the future are 'grafted onto places of uncertain ecological change'. Embodiments of this futurity, in the form of lived spaces, allow us to predict future forms of containment imposed on imagined environmental victims, such as coastal settlers or climate refugees. These politics, according to Cons, will determine whether and how people will endure in 'self-contained spaces characterized by isolation and fortified against the chaos unfolding around them' (ibid.: 268). The places I investigate, however, have not commonly been posited as harbingers of an apocalyptic future. Rather, they are often described as hopelessly backward and in need

of modernization. They are thus defined by what they are not (urban, modern, civilized) yet might become through economic improvement. I emphasize this discursive framing to keep track of the ideologies that played a role in the material becoming of the coastal amphibious. These ideologies are as important for their biopolitical framing as apocalyptic future scenarios. If the swamp is going global, it is long preceded by these images and representations resonating across cultures of governance.

The main insight gathered from my own long-term fieldwork in Indonesia[3] is that while coastal settlements clearly existed prior to capitalist urbanization, today we cannot understand their amphibious existence without considering the more recent history of urban capitalism, governmentality and neoliberal development. Following Graham and Marvin (2001: 8), I suggest considering the amphibious – that is, people's often awkward relations with wet (semi-)urban spaces – as the product of a modern urbanism that deeply infuses the fabric of cities with capitalist investment based on constructing nature as a separate entity. This urban modernism is turning floodplains into heterotopic spaces, where subjects who are not yet part of modernity are trapped while the wetness of repressed swamplands returns with a vengeance.

The amphibious turn

The German philosopher Peter Sloterdijk has argued that humans have always been amphibious – 'a creature switching from element to element' (see ten Bos 2009: 76). The question for him is not when we became amphibious, but when we started thinking and acting like terrestrials. As ten Bos (2009: 74) suggested, based on Sloterdijk, the human is an 'ontological amphibian', a creature whose actions and thinking are influenced as much by the aquatic as by the terrestrial. This view facilitates a potentially useful unsettling of Western notions according to which 'the idea of place invariably evokes terrestrial metaphors like "rooting" and "grounding"' (Lowe 2003: 111).

Similarly, anthropologists studying deltas and floodplains have pointed to the shortcomings of modernist, land-centred epistemologies. To these anthropologists, the ever-shifting contours of delta ecologies suggest that both human and non-human lives are conditioned by change and ambivalence. Krause, for instance, detects this ambivalence in the very lives of his research participants, arguing that the 'ever-changing interplay of land and water as a result of flooding, draining, drying and irrigating, sinking, silting, sedimentation, channeling, erosion, and reclamation' (2017: 403) makes social and cultural life itself amphibious. Similarly, Lahiri-Dutt and

Samanta (2013: 1) have portrayed the 'lived-in landscapes' of the Indian *chars*, silt islands in the Bengal Delta, as 'uniquely fluid environments where the demarcation between land and water is neither well defined nor permanent'. A modernist scientific view of these environments, they argue, robbed the *chars* of their exceptional ecological and social histories, reducing them to geographical oddities. But, as they show, people actually live on this ecological 'edge', eking out a meagre living in a fragile environment that the authors compare to the coastal wetlands of delta mouths (ibid.: 11).

Anthropological studies of social and cultural life at the water's edge thus teach us an important and timely lesson: our binary categories poorly capture the existence of places where land is not a given and water comes and goes. In view of increasingly frequent flood events that undermine urban livelihoods and functions, gnawing at the very foundations of cities and causing them to sink, we should definitely pay close attention to the ways in which cultural understandings of land, categories of governance, ideologies and livelihoods are constantly reconfigured by water. It is perhaps time to question our very concepts of urban 'land' and, in turn, design new methodologies for research in places whose boundaries are symbolically and virtually fluid.

How can we make this healthy shift in thinking, pioneered by an amphibious anthropology, suitable for an exploration of the city? While cities consist of shifting – rather than entirely stable – structures, they do display a remarkable stability in terms of social stratification and spatial fragmentation. How can we account for this fluid aspect of cities in an analysis of urban life influenced by the blurry line between terrestrial and aquatic infrastructures (Morita 2016)? Where and under what circumstances is an amphibious lens useful in approaches to 'exploring the city' (Hannerz 1980)? I suggest focusing on two central dimensions of amphibious life as identified by proponents of an amphibious anthropology: water and infrastructure. Water is a crucial constitutive element in these worlds, a central source of livelihood and existential uncertainty. Infrastructural assemblages mediate and condition these flows of water, and vice versa.

Zooming in on life in between land and water, the co-editors of a recent issue on amphibious spaces argue that any attempt to fix these landscapes in time is bound to fail (Gagné and Rasmussen 2016). In addition to these being fluid environments, they point out that the cultural identity and practices of place-making of inhabitants are affected by the constant merging of land and water. They conceptualize this 'confluence' as an inhabited relational space shaped by time and movement. For Gagné and Rasmussen, the relational space between water and land shifts with changes in the quality and distribution of water. Novel relationships with

place emerge and power constellations are reconfigured as water infuses everyday life with specific rhythms. Seen as an opening for forms of expertise and knowledges related to water, the merging of land and water is considered generative of new assemblages of actors and practices, as well as social conflict. While they observe a hybridization of knowledges and shared responsibility for adaptive measures, the authors also suggest that adverse events, such as flooding, may lead to undemocratic, unsustainable and lopsided solutions. These adverse events, which upset local balances, seem to be 'natural' occurrences. While the notion of a relational space is useful, it is not clear how, for instance, state and other development projects aimed at creating disaster preparedness affect amphibious relations. Water, too, is a given entity in their account of amphibiousness. Swyngedouw (2004) and others (e.g. Gandy 2004), in contrast, have emphasized the social construction of water through discourse, space and capitalist temporalities. It is not water per se but hydrological cycles and ideologies, then, that add a 'layer of unpredictability and capriciousness' (Gagné and Rasmussen 2016: 135) to people's lives.

Atsuro Morita's work (2016), too, contributed to the emergence of an amphibious anthropology. He described Thailand's Chao Phraya Delta as an amphibious place 'located between land and sea' (ibid.: 118). Here, the sea tide interferes with fluvial activity all the way to the capital city Bangkok, which is low-lying. Water is something to reckon with in Bangkok, as massive rainfall, river flow and tidal movement interact to create the conditions for lasting flooding. According to Morita, these watery conditions explain the historical emergence of an amphibious infrastructure. Currently, traditional amphibious and modernist terrestrial infrastructures are at loggerheads and represent ontologically opposed strategies for dealing with water abundance. Whitington (2013), however, tells a different story of flooding in the Chao Phraya Delta. His informants related flooding to several highly politicized issues. The public especially attributed flooding not only to water infrastructure but also to problems with inescapable land subsidence and overpopulation. Whitington suggests that the 2011 flood event arrived 'through specific socio-technical, cultural and power-laden relations' (ibid.: 319). In fact, his informants referred to water itself as 'political':

> 'This is political water (nam gan meuang)', one resident told me as she described living on the second floor of her house for five weeks, walking in knee-deep water two kilometers to the store when needed. Directly across the road, Thailand's oldest industrial estate had built a towering flood barrier. Her house was on the wrong side of that wall but on the right side of a different one built less than a kilometer away, and new housing construction was underway just down the street.

In the wake of the 2011 flood disaster, new barriers were erected, often with private capital, but also by drawing upon public funds. The disaster thus brought about new ecological and hydrosocial relationships through the installation of anti-flood infrastructure, 'large-scale concrete structures' being the rule. The result was a waterscape 'crisscrossed with canals but now increasingly crossed with barriers' (Whitington 2013: 322). To Whitington and others (Kusno 2018; Ley 2018), flood prevention cannot be considered outside of national politics, economic relationships and infrastructural imaginaries. Urban infrastructure and, notably, unevenly distributed access to it should matter in an analysis of urban amphibious spaces.

Krause's (2017) analytical suggestions for an amphibious anthropology offer useful reflections. His framework consciously interweaves social, political and material factors. Krause's notion of an amphibious anthropology, for example, draws heavily on hydrosociality, a concept that allows us to account for the 'politically and economically inflected ways in which water moves and is distributed' (ibid.: 404). Water movement, in other words, is always facilitated, impeded or mediated by (im)material infrastructure. Furthermore, according to Krause, the wet and the dry not only interact as ontological forces but relate in specific ways to historical arrangements of social, economic and political power. As such, he argues, 'environmental and colonial histories, population movements, and *infrastructural projects* . . . can and should be studied as amphibious anthropologies' (ibid.: 407, my emphasis).

This argument is in accord with the results of the recent increase in anthropological studies of urban water infrastructure. These demonstrate that uncertainty flows from the complex interplay between water, infrastructure and municipal politics. Urban water systems, such as drinking water provision or sewage processing, are artefacts that 'promise' something but require constant maintenance, scrutiny (Anand, Gupta and Appel 2018) and political as well as literal pressure (Anand 2011). This suggests that urban life on the edge of the sea is to a large extent dependent on the politics, differential performance and accessibility of water infrastructure. Instead of asking how aquatic and terrestrial infrastructures overlap or conflict with one another, I suggest that the more important question is how urban infrastructures (re)distribute ecological risk along socioeconomic divides. Following Krause (2017), a focus on the role of infrastructure in mediating movement opens up space for considerations of governance and control. Lahiri-Dutt and Samanta (2013) make this statement early on in their work on the Bengal delta *chars*. According to them, the *chars* are products of river control. They are 'shaped largely by colonial land- and water-management policies, and reflecting the environ-

mental consequences of legal instruments' (ibid.: 11) that lay the foundation for large-scale ecological interventions. Specifically, the colonial land revenue system considered rivers as destructive and in need of control. Embankments, dams and barrages were supposed to afford state control of riverine movement. Today, the authors note, Bangladeshi *char* dwellers are more vulnerable to bank erosion and flooding as policies have created a false sense of security (ibid.: 42).

In my view, the political and historical origins of the experience of regularly or permanently flooded urban spaces have not been sufficiently examined. The following ethnographic section attempts to evince city dwellers' roles and the wider politics involved in the spatial and infrastructural making of new amphibious urban areas. Following Lowe, I consider watery places, 'like a strait or swamp or collecting site' (2003: 129), as emerging through both human agency and ecological processes. What if the various agencies that interact to 'make' urban coastal land force certain people to stay in swamps, 'dank places where bugs multiply' (Taussig 2015: 30), while others enjoy more mobility and agency? How can we consider this (im)mobility in our ethnographic accounts of flux, ambiguity and fluid socio-natures?

Political floods

The Semarang-based poet Muhammad Djawahir (2011) traced the perennial flooding of coastal neighbourhoods to the gradual industrialization of the shoreline and the arrival of 'modern' values. In his poems, he reminds us of a past when Semarang's shore was a lush swamp dense with mangroves and crisscrossed by small water channels that permitted rice cultivation and small-scale agriculture. This amphibious landscape was mainly inhabited and put to use by the Indigenous population of Semarang. Colonial maps dating back to the beginning of the nineteenth century show a coastal landscape dotted with fishponds and scattered Indigenous communities (see Ley, in press). Aquaculture consisted of duck farming and rice growing. Long-time residents of coastal neighbourhoods told me nostalgically about this watery environment, which provided them with a modest but reliable subsistence. While it used to be a productive and spirited environment, it is today marked by never-ending disaster, plagued by flooding, pollution and structural poverty.

As a PhD student living in Semarang, I visited the sub-district of Tambak Rejo (TR) in 2015. I was accompanying two American biologists who were interested in the alarming phenomenon of land loss due to the encroaching sea. TR is the northernmost neighbourhood of Semarang and

belongs to the sub-district Tanjung Mas. At the time, it had a population of around two thousand residents. Many newcomers had been unable to acquire official title deeds, as stretches of the village were located on state-owned land. TR is located on a slim stretch of land reaching into the Java Sea. In the 1970s, it was still predominantly inhabited by fisherfolk. *Tambak* is Javanese for fishpond but can refer to any human-made structure containing water, such as a salt basin. Coastal fishponds harnessed tidal influx but also required the clearing of mangroves, which worked as natural buffers to rising tides. The inhabitants of TR used to live off regular catches of fish and shrimps but soon discovered that their lands were becoming more exposed to flooding. Over time, the degrading area began to attract social outcasts – unemployed, evictees and criminals – that could not afford land or rent in other parts of the city. The North turned into a kind of refuge from the aggressive policing of spaces associated with the 'modern city' (Kusno 2000). As more and more people arrived, it became necessary to enlarge TR's territory by reclaiming land from the sea with dirt and garbage. Residents tried to withstand the rising tide and land subsidence by constantly raising houses and streets. As many houses were located on land not zoned for residential purposes, the city government never came to their aid. Not being invested in the area's development, urban governance let the local infrastructure deteriorate. During my visit in 2015, a resident took us to the ruin of an old fish-auctioning site (*Tempat Pelelangan Ikan*, TPI). The TPI and the roads leading to it had fallen victim to the sea and all that remained was a concrete skeleton protruding above the surface of the ocean.

I returned to Tambak Rejo at the end of 2018 to interview residents. Many had stayed in TR despite intensified flooding. In fact, the settlement had grown, having absorbed more desperate newcomers and evictees, now crammed onto a strip of land succumbing to the sea. On a boat trip that took us from the mouth of the East Flood Canal to the northernmost tip of the coast, I was able to observe the advanced deterioration of the shoreline and the extent of coastal destruction. After passing destroyed fishponds and mangroves, we arrived at the shore, which was entirely covered in rubbish. To the west, we could see the giant cranes of the harbour's landing site. Three fishermen with rods were trying to make a catch. The sun was beating down on them, which was why they were fully clothed and wore motorcycle helmets as protection. The edge of the sea had become an entirely unliveable space.

Today, TR's residents resort to multiple income strategies to get by. Few are still fishing. There are small chicken farms and many fishermen work part-time as *Go-Jek* drivers.[4] I was accompanied by a representative of Karang Taruna, a youth group that was at the time cooperating with

Semarang's Centre for Legal Aid (Lembaga Bantuan Hukum) to defend residents' right to housing in a court case against the central government. The government, which had been largely absent from the lives of the locals, was planning to evict many residents in the wake of an infrastructural megaproject. TR is located at the mouth of the East Flood Canal, a major urban drain, that is undergoing extensive normalization works (dredging, cleaning and embanking) aimed at regulating outflow. We stopped at a house located on the banks of the canal for coffee and snacks. The house belonged to Ibu Rosid, a resident who had provided testimony of the local residents' dire situation to Karang Taruna. On the other side of the East Flood Canal, excavators were busy hauling massive tetrapods – cheap anti-flood infrastructure – into the canal. The side we were standing on, along with Ibu Rosid's house, was soon to witness the same treatment. Ibu Rosid[5] moved here in 1983, settling on 'free land' (*tanah kosong*). Because she had not been able to acquire title deeds for the plot, she was now facing imminent eviction without compensation for the loss of her property.

She and her teenage son were suffering from skin rashes due to their constant exposure to toxic bay water. She led us into the middle part of the house, where her son slept at night on an elevated mattress. After a few metres we had to wade through stagnating water, as the rest of the house had been flooded. The water had not retreated for two months now. All of the remaining rooms, including furniture, stood in brown water. She accepted the prolonged state of the flooding, because she expected that they would not be able to protect their house for much longer – either from sinking into the ocean or from government normalization plans.

In 2019, illegal parts of TR were destroyed by government forces: houses were torn down and crushed by heavy construction vehicles and armed security forces. Local residents resisted the eviction for days, violently clashing with authorities. The intervention was covered extensively in the local and national media and required mediation efforts by the governor of Central Java. In a video from the Javanese *Tribun News*,[6] an evicted woman whose family settled in TR thirteen years ago mourns the destruction of her house, wailing while carrying her child: 'We didn't get any compensation. Where is the government? They said we could stay here. But we were never given this land. . . What do you want me to do?'

The life that many residents of TR had established and protected until this cruel eviction had been intimately related to water. When the settlement emerged in the 1970s, public investments like the fish market that supported the area's economic growth promised improvement. Since the arrival of tidal flooding, residents have had to adjust to unruly water flows due to unpredictable high tides and land subsidence. These pro-

cesses deeply inflected the rhythms of everyday life in that plans had to be made on grounds that never became firm – both in a literal and metaphorical sense. This has everything to do with the fact that the government legally disavowed many residents' existence in the bay. The convergence of flooding and illegality created a sense of confinement met by a desperate politics of waiting. Life at the edge of the sea in Semarang became a kind of quarantine: in the absence of alternatives and in the face of flooding, the coastal no man's land put its inhabitants in an increasingly tight spot.

An upwelling from the past

Raissa DeSmet Trumbull (2013: 142) speaks of various 'upwellings' in her dissertation titled 'A Liquid World: Figuring Coloniality in the Indies'. In Indonesia, she observed 'how a single drop of seawater contains a world of matter'. Java, the most densely populated island of Indonesia, with intensive agriculture and sprawling cities, is also rife with 'presence' (ibid.: 142), according to her: 'postcolonial Indonesia is . . . a doubly haunted space, awash with phantoms new and old . . .'. Not only do undesired people, the poor and revolutionary elements, whose growing presence in Indonesia's metropolises has led time and again to incidents of state brutality (Barker 1998; Siegel 1998) populate the landscape; so do ghosts and other non-human beings. Trumbull's thought-provoking PhD thesis explores how water produces upwellings of old and new spectres – haunting matter. She argues, drawing on Roland Barthes, that icons of modernity and the results of mechanized labour – machines, modern infrastructures or the photograph – are haunted by 'the possibility of accident': 'these technologies become spectral, they contain other dimensions' (Trumbull 2013: 147). Water infrastructure, I argue, also contains such 'other dimensions'. Hydrological management is commonly associated with Dutch colonial rule in Indonesia, as the colonizer introduced Western water-management technologies throughout the archipelago (Mràzek 2001), especially in Java. These infrastructures promised a smooth flow of goods and liquids as well as improvements in hygiene and public health. However, they also carried the risks of miscalculation and failure.

Suharto's totalitarian New Order (1968–99) government ran a nationwide infrastructural programme aimed at improving the situation of urban rivers in Java. In the view of the political establishment, riverbank settlers had become an eyesore, and stained the projected image of a rising modern nation. The official objective of river upgrading was to unclog waterways and prevent urban flooding during the rainy season. This river 'normalization' (*normalisasi sungai*) programme was intended to restore the 'original' flow capacity of rivers. In Semarang, the project stalled af-

ter capital flows from the central government had dried up, much of the money having ended up in the pockets of local politicians, businessmen and state-backing local leaders. Renovations of river infrastructure remained incomplete in the coastal North of Semarang. Despite repeated efforts to 'better the quality of the environment', the area continued to deteriorate (Djawahir 2011: 111).

After the New Order, the unfulfilled promise of infrastructural improvement and constant threat of flooding marked the beginning of a piecemeal, decentralized approach to flood prevention. Small projects at neighbourhood level and municipal water-management projects supplanted state-led projects to drain the North. Today, the drainage system of Semarang is almost completely dysfunctional in the city's Northern *kampungs*, causing recurrent flooding in many coastal neighbourhoods, such as Kaligawe. Tambak Rejo is not the only sub-district suffering from tidal flooding due to sinking land. The deltaic sub-district Kemijen, where I conducted the bulk of my doctoral research (Ley, in press), and the coastal neighbourhood of Tambak Lorok are also affected. While Kemijen is built on wetland, Tambak Lorok and Tambak Rejo stand on land that was settled in the wake of extensions of Semarang's port area. Today, the ground that all these dense neighbourhoods stand on is sinking at rapid rates between five and fifteen centimetres per year.

As such, it is not only the coast that is acutely threatened by tidal flooding due to regular storm surges and high tides, but also places like Kemijen, whose water infrastructure has become self-defeating. While Kemijen's main canal, the Banger River, has recently been dammed to control the in- and outflow of water within the floodplain, the sub-district is not shielded from inundation. Water still creeps into streets, as underground water levels fluctuate and local drainage infrastructure fails. Furthermore, the main drain's tributaries, the smaller channels, still clog and overflow. Residents also trace repeated flooding events back to faulty drainage channels (*saluran*) that require repair, or to more obscure flood-related issues such as seepage from house floors. Always finding a way to elude technical control, water thus appears outside of its engineered conduits (rivers, gutters and channels). Streets often look soaked, not at all solid, and riverbanks seem to be more permeable than straightforward conduits of water. As a result, the streets of Kemijen are often wet and smell foul (*banger* being Indonesian for stinky). Polluted wastewater temporarily collects in gutters and puddles in between houses.

This upwelling of water is called *rob*. While *rob* can be easily attributed to the rising tide and ineluctable land subsidence, it is also the result of attempts to regularize and control water flow locally and in upstream areas of Semarang. Despite efforts to keep the water out, life in Kemijen is

characterized by a constant confluence of water and land. As Gagné and Rasmussen (2016) argue, this confluence of water and land shapes the experience of risk and defines place-making strategies. Residents must devise local strategies and make short-term plans to deal with floods. But not all of the residents of Kemijen succeed in effectively managing water flows or enduring prolonged flooding. The levels of inundation differ from household to household and from neighbourhood to neighbourhood. Though people in several contiguous sub-districts might agree that the tide is particularly high on a given day, they might not be affected by flooding in the same way. Other temporal as well as spatial arrangements are decisive, such as when the neighbourhood's streets were last raised, when the government last repaired the riverbank, or where in the area the government built a retention basin. While the government treats Northern areas as generally prone to flooding, there is no overarching logic of disaster. Living in an amphibious mode becomes a 'present in suspension' for some, while others can more easily continue a terrestrial mode of existence. In 2018, I attended a focus group organized by a local university at which the results of an architectural experiment were presented: scholars from the faculty of architecture had built a stilt house in Kemijen. Despite the implementation of a new, Dutch-designed drainage system supposed to make the area dry, the project was testimony to speculations that the future of Kemijen was increasingly amphibious.

As Whitington observed in Thaisland, floodwater is political. When flooding occurs, water transcends official infrastructure, ignoring physical boundaries. Floods thus unsettle the lives of my informants and disturb state narratives of land and order. This prompts sweeping state measures aimed at preventing flooding: raising riverbanks, building dams and dredging rivers. Especially when national symbols are flooded (like national monuments in Jakarta, or Semarang's historic train station Tawang), the visions of prosperity and claims to sovereignty that these artefacts embody are briskly thrown into question. Flooding is thus a spillage of matter and meaning, or rather a surplus of meaning that floats new interpretations of the present and future. What is more, in Semarang, failing infrastructure can become recycled or reclaimed by insurgent publics that take on substantial government tasks. As noted by Anand, Gupta and Appel (2018: 3), while modern infrastructures promise smooth circulation and improvement, 'these precarious assemblies also threaten to break down and fail'.

In Semarang, the regular breakdown of infrastructure means that in addition to knowing infrastructural trends, one has to 'do' flood safety. Residents do this by making inferences from previous flood events and staying aware of their position within shifting techno-political arrangements (see Trovalla and Trovalla 2015). These arrangements, however,

operate in an uncoordinated, fragmentary way. To extend Mol's (2002) understanding of the modern body, the flood defence system of Semarang is not a bounded whole – its boundaries always leak. As a result, an urban neighbourhood that fails to 'do' flood safety in Semarang dies. In other words, it was not merely flood-related events that required minute attention from people, but also the government's plans to counter them. Residents have to heed the temporalities of relocation plans and water-management projects, as they also critically shape the confluence of land and water. It is the interplay between state plans and ecological trends that produces ambivalent upwellings of matter. Water is also political in the sense that it can prompt civil protest, as in the case of TR.

In the following, I briefly discuss two development projects that were supposed to regularize the movement of water in Semarang's coastal area. The first project aimed to implement a Dutch-designed polder, as already mentioned, stretching from the shore to downtown (see also Ley 2016). The second project is the normalization of the East Flood Canal, also mentioned above. The projects are linked, since the Banger River is a subsystem within the larger drainage assemblage of East Semarang. With the polder, the government wanted to retrofit colonial water infrastructure by modernizing the Banger River with Dutch hydraulic technology: dams, pumps and a retention basin. The renovation of the East Flood Canal put into practice the city government's drainage policy. Residents of coastal neighbourhoods were caught in between these largely uncoordinated projects, as they produced new unpredictable upwellings.

In 2017, the city of Semarang started operating the first polder of its kind. A Dutch consultancy had developed the technical design of the polder. The city involved both Indonesian and Dutch planners and engineers in the implementation phase. Construction had taken almost a decade, for numerous reasons. To name only a few, the national government backed out of the initial financing scheme; construction errors led to the early ruination (Ley, in press) of the main pumping house and time-consuming fixes; and lastly, the project hinged on an unprecedented tendering process as well as lengthy attempts to inform residents about the cultural difference (and superiority) of Dutch water-management systems. Arguably, the pilot project marked a problematic neocolonial (re-)entry of the Dutch into Indonesia's anti-flooding economy.

In 2016, just before the polder began operating, the city of Semarang started construction work on its East Flood Canal (*Banjir Kanal Timur*, BKT). The municipal government under mayor Hendrar Prihadi vowed to undertake improvements of 6.7 kilometres of riverbank and deepen the canal bed. Following the development of Semarang's other main drain, the West Flood Canal, completed in 2012, the BKT is currently undergoing

important changes, accompanied by sweeping evictions. After dredging and widening, construction teams are currently working seven days a week to implement the city's ambitious plan. Semarang's two Flood Canals are supposed to modernize the areas they flow through.

Both water infrastructure projects were controversial and met with residential resistance. However, the polder pilot probably attracted the most public scrutiny as it seemed to redistribute flood risk unfairly. Before construction began, the design gave rise to a heated conflict between the project leadership and residents of Tambak Lorok. Residents rejected the plan not only because it overtly ignored their own longstanding problems with tidal floods, but also because it promised to increase their own neighbourhoods' vulnerability to flooding. They feared that damming the river would increase erosion of their shores because previously the river had at least absorbed waves. They announced their collective resistance to the project, including their preparedness to sabotage its material infrastructure if necessary. Residents only gave in a few years later, when the Indonesian president, Joko Widodo, visited Tambak Lorok and announced a state-financed urban rehabilitation scheme for the settlement. This financial and political commitment to integrate Tambak Lorok into the city's wider flood-defence plan was a gesture towards the future of Semarang's coastal neighbourhoods (Baxtrom 2011: 63) that residents could accept. As this infrastructural project is slowly taking shape, residents have to keep guessing infrastructural trends and 'do' flood safety amidst upwellings of toxic water.

The amphibious as a figure of heterotopia

> The extraterritoriality of outcasts is thus defined by this constant tension between an inaccessible inside, in regard to the categories of national citizens, and the experience outside as a form of assisted and constrained living. It is through this tension or double constraint that the heterotopia builds its artifact-boat, island, or camp, into a place of confinement and a place to live that seems to be in the middle of a void but is actually always on the border of a social or national order. (Agier 2012 279)

Not many proponents of an amphibious anthropology have considered the emergence of 'amphibious thinking' beyond the context of climate change. Furthermore, while some case studies address questions of justice, using a political ecological lens, water flows are often considered in solely local or regional terms, and thus treated as if independent of wider global relations that (re)produce inequality and hegemony. But as various social scientific analyses of water have shown, hydrologies are embedded within far-reaching social and material processes (Ekers and Loftus 2008; Swyngedouw 2011; Taylor 2014). In the case of major cities with extensive

catchment areas and global economies, the importance of seeing the 'bigger picture' can therefore not be overstated.

What is this bigger picture? As I suggested above, colonial city-building, modern infrastructure projects and urban governance styles play important roles in the globally occurring 'dampening' of coastal residential areas. This points to the relevance of historical and global processes in the arrival of the amphibious. As I showed above, uncertainty flowing from political and infrastructural relations underpinning the city characterizes amphibious life in Semarang's coastal settlements. Water is an 'upwelling' from the colonial and postcolonial past that frequently unsettles infrastructure and its attached promises of modernity and participation in national progress.

In this final section, I build on Agier's work on refugee camps and the figure of the ghetto (2012, 2018) to consider coastal flooding zones as heterotopias. I treat the emergence of the amphibious as a product of power relations instead of chalking it up to cultural difference or ecological change. Drawing on Foucault's later work, Agier calls urban ghettos and refugee camps – products of globe-spanning processes of displacement – 'off-places'. These 'off-places' are cut off from, but not external to, global urban economies. Foucault (1986: 24) defined heterotopias as spaces that are, in contrast to utopias, real but located 'outside of all places.' As *other* sites, they are part of a given culture but 'absolutely different from all the sites that [these sites] reflect and speak about'. Interestingly, Foucault also referred to heterotopias as 'floating spaces' (ibid.), probably to underline their flexible location and potential multiplicity once they have been established as 'outside'. In the above quote, Agier mentions boats, islands or camps as human artefacts that were supposed to be temporary vessels but morphed into sites of lasting confinement. These sites are suspended in a 'void' but exist within the thinkable limits of a social or national order. The Guantanamo Bay naval base perhaps serves as a powerful current symbol of this inside-suspension.

Heterotopian spaces further have a mirror function: they allow modern subjects to 'locate an otherness' against which they can think their own self as 'real, full, living, healthy, normal, citizens. . .' (Agier 2018: 15).[7] They are blueprints of a negatively connotated possible, something that urban governments work to manage or suppress. As such, they sometimes have a spectacular aspect, as they reflect an undesired state of being or apocalyptic rendering of society. Urban amphibious spaces are often read as harbingers of an adverse future that should be avoided at all costs. Alternatively, they are framed as consequences of unusual catastrophic events (Taylor 2014). As exceptions, they represent an urbanization 'gone wrong'. This mirror effect perhaps explains many city governments' recent efforts to develop and beautify their waterfronts, a tendency that Herbeck and

Flitner (2019: 125) verified for Jakarta, Singapore and Manila: 'The imaginaries mobilized by planners, developers, consultants, and city officials promise high-end city quarters to be built from scratch, often featuring ideas from smart and or green city discourses, in which different functions (high-end living, commercial uses, tourist attractions) are combined'. In Jakarta, the changes proposed by the NCICD masterplan (National Capital Integrated Coastal Development Plan) would turn the city's waterfront into a beacon of 'world class'-worthy urbanism. To this day, the plan remains a technical and bureaucratic mirage.

What I am arguing is that flood-stricken places in Indonesia and Southeast Asia meet the criteria of Agier's off-spaces in that they are often extraterritorial. Their overall poor inhabitants are forced to inhabit land that is off limits. This is precisely the case in Semarang: in the absence of affordable urban space, rural migrants built homes on swamp land that was vacant but restricted, such as riverbanks and harbour space. The local government often tolerated these land appropriations in exchange for an informal tax. For example, as the administrative area of the North started to spread, it informally incorporated *kampungs* built on land initially zoned as industrial or for the transportation sector. Residents who live here are now confined inside; they may be penalized and evicted at any time despite living in an official sub-district.

Similarly, in Jakarta, the obsessive clearing of land to make room for what Yunianto (2014) calls 'a brave new world' of shopping malls, offices and apartment towers and overpasses leaves many poor dwellers with no other option than illegally settling on flood-prone land where construction is prohibited. Many inhabitants of Kemayoran were evicted in the wake of the construction of modern housing complexes. Some found refuge in illegally settled parts of Pademangan, a regularly flooded neighbourhood in North Jakarta,[8] where I conducted fieldwork in 2011.

My ethnographic observations in Indonesian coastal areas suggest that such amphibious places are predominantly (but not exclusively) inhabited by social outcasts, the human 'waste' produced by Asian cities' rapid urbanization (Björkmann 2015). They mostly find work in the so-called 'informal' sector, as street vendors, prostitutes or pedicab drivers. These days, the gig economy offers new precarious income strategies as regulated wage labour is becoming rare. Thousands of residents of Jakarta's biggest informal coastal neighbourhood, Muara Angke, were evicted in 2011 as part of then governor Joko Widodo's plan to build a public oceanside park. The intricate neighbourhood, which I visited before its destruction, was partially built on stilts and struggled with pollution, disease and high crime rates. As Herbeck and Flitner (2019: 123) have argued, 'such securitizing moves by city governments are couched in terms of adap-

tation and justify the reorganization of urban settlement structures, and they sometimes involve militarized and violent interventions'. However, instead of disappearing in the wake of modernization schemes, amphibious spaces are today proliferating in Jakarta, as the city is experiencing a wholesale 'subsidence crisis'. The poor Northern district of Pademangan repeatedly experienced tidal flooding in early 2020. As the government noted, the surplus water reaching a height of two metres could not 'be streamed back to the sea'[9] and remained trapped in the streets.

Lastly, as shown above, coastal neighbourhoods built on marshy lowland are highly vulnerable to global climate change. These spaces have come to depend on humanitarian aid or loan-based development programmes – they are the targets of development policies on which they have virtually no influence. As such, these spaces are often sustained by fragmentary interventions that follow ad hoc policy-making which eludes public participation or long-term monitoring. The fact that these spaces are now increasingly threatened by sea-level rise and storms further contributes to the public perception of their inhabitants as helpless victims. These places are thus increasingly managed outside of accountable government structures.

Agier (2011) demonstrates how the political configuration of refugee camps strongly limits the choices of inhabitants, leaving their lives confined in indeterminate suspension. In view of this agency-reducing

Figure 2.2. This dense coastal settlement in the Bay of Jakarta was destroyed in 2012 to make space for an urban oceanside park. Photo by Lukas Ley.

confinement, he argues that the horizon of millions of refugees is characterized by sustained quarantine. While Agier's choice of words owes to the deeply concerning increase and growth of refugee camps on a global scale and cannot easily be transposed to the case of coastal dwellers, the notion of temporal and spatial quarantine seems apt for amphibious places, such as former wetlands or *chars*, because they too have no viable future. Furthermore, Agier demonstrates that this very confinement ends up giving birth to new forms of urbanity. He is therefore in agreement with Simone (2015), who argues that it is not enough to draw attention to the creative ability of the poor to survive in dire circumstances. Rather, we should register their 'contributions to remaking notions of urban life itself' (Simone 2011: 357). This urban life is characterized by the constant repurposing of infrastructural assemblages in the face of ecological deterioration.

Coastal areas have long been treated as requiring quarantine and control by colonial and postcolonial governments. This isolation was created by colonial ordinances and affirmed through infrastructure projects in the postcolonial era. Coastal regions were considered breeding places for disease and in need of modernization by both colonial and postcolonial governments. The cases of Semarang and Jakarta show that those leading amphibious lives are pathologized by the state while their lives are increasingly circumscribed by humanitarian interventions that hinge on their victimization and therefore depoliticization. This depoliticization goes hand in hand with the (re)production of amphibious life in the Indonesian metropolis.

To conclude, if we can consider the amphibious as a figure of heterotopia, the proliferation of these spaces follows a distinctly 'urban logic'. Swamping is the result of longstanding exclusionary mechanisms and the discriminating operation of urban water infrastructures.

The amphibious future

New research shows that around 150 million people are living on land that will be below the high tide line by 2050 (Kulp and Strauss 2019). Inhabitants of urban deltas in Indonesia are already living amphibious lives in very poor conditions as a result of policies that condemn wetlands and prioritize the economic functions of coastal zones over human existence. State interventions such as dams and embankments heighten uncertainty, adding to the already existing challenges of living with unruly water flows and uncertain land tenancy, instead of preparing coastal areas for rising sea levels. Importantly, coastal dwellers in cities around the world are not – yet – given the same attention as climate refugees or victims of ecological

catastrophes. Instead, these amphibious subjects are often invisibilized by policies and systems of governance (Lahiri-Dutt and Samanta 2013). Living in socio-ecological niches of an urban form that disavows their amphibious existence, they have to endure so as to outlast flooding and infrastructural shifts. In other words, some victims of climate change do not have to migrate to end up being confined inside. Some are already confined to places that simply fail to take a proper governable form, such as coastal wetlands or *chars*. Communities living in these spaces are maintained in a limbo by the interplay of state governance, poverty and rising tides.

Calls for an amphibious anthropology have sensitized us to the ultimate ambiguity of land and water. However, this current has yet to develop a clear purchase on the influence of governance and politics on amphibious existences in cities. In this chapter, I have outlined a possible approach to the analysis of amphibious existence that might be specific to the experience of urban coastal dwellers in Southern cities. Yet it clearly shows that this amphibiousness, spreading globally, is not only a physical state of being, but also a procedural outcome of a political system of inequality. In postcolonial cities, uncertainty emerges from infrastructures that unevenly distribute access to urban services and resources in the city (Anand 2017; Simone 2009). An apt example of this is water infrastructure in global cities, such as Mumbai or Semarang, which produces uneven levels of flood exposure and vulnerability (Kusno 2018; Marfai 2012; Van Voorst 2015). Douglass et al. (2015) and others (Kooy and Bakker 2007; Kusno 2018) have shown that flooding in Jakarta is a complex socio-ecological event compounded by urban development policies. Riverside settlements, such as Kampung Polo, described by Van Voorst (2014), are located in high-risk areas, along rivers and canals, and lack the socioeconomic and political resources to respond adequately. Here, one risk constantly replaces another. Similarly, Baxstrom (2011: 61) poignantly asked whether the megacities of Asia – Singapore, Hong Kong and Jakarta – are giving birth to a particular form of urban life that is 'never coming to rest'. These places share no singular vision of the future and people have to continually recalibrate their own strategies, investments and cognitive maps, as official masterplans partially and contradictorily materialize on the ground. At the same time, plans do not translate neatly into local realities. Rather, a multiplicity of virtual plans with potential outcomes introduces never-ending uncertainty about the future. This uncertainty gives rise to an 'oscillating movement through which a wide range of economic mobilities are hedged through the cordoning off of others' (Simone 2011: 356). It is this cordoning off of certain economic pathways that is also productive of amphibious lives, and which marks them.

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Notes

1. Source: https://www.bangkokpost.com/world/1740904/sinking-cities (accessed 4 December 2020).
2. Source: https://www.bbc.com/news/world-asia-pacific-15381227 (accessed 7 December 2020).
3. I conducted a total of twelve months of fieldwork in Semarang and four months in Jakarta.
4. *Go-Jek* is an Indonesian-owned company offering affordable rides, deliveries and online payments.
5. All names used are pseudonyms.
6. Source: https://jateng.tribunnews.com/2019/05/09/video-kericuhan-dalam-penertiban-hunian-liar-di-kampung-tambakrejo-semarang (accessed 7 December 2020).
7. Today, according to Foucault (1986), we see a proliferation of a specific kind of heterotopia – that of deviation. Heterotopias of deviation are spaces where individuals 'whose behavior is deviant in relation to the required mean or norm are placed' (ibid.: 25). Concrete examples are homes for the aged and psychiatric hospitals as well as prisons. Heterotopias have a specific function for society. Cemeteries, a key example of heterotopia to Foucault, serve a clear function for all societies, as they provide a space apart for the dead, for tending to them and for mourning their loss.
8. It is important to note that while it is often criticized by state representatives, the construction of illegal settlements also serves the government, as poor dwellers disappear from 'proper' city space (Yunianto 2014: 102).
9. Source: https://en.tempo.co/read/1299125/north-jakarta-submerged-under-high-tide-floods-says-mayor (accessed 31 August 2020).

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Chapter 3

Stagnation

Waterflows and the Politics of Stranded Matter in La Mojana, Colombia

Alejandro Camargo

Deceleration

Deltas are morphological formations that result when a river enters 'the relatively still waters of a lake or sea and deposits its load' (Charlton 2008: 204). This is to say that deltas are environments where river flows – and the sediment travelling in them – decelerate as they meet standing waters (Bridge 2003). Stagnation is evidently an important phenomenon in the origin and transformation of deltas. At first glance, it may be counter-intuitive to define stagnation as intrinsic to transformation. But in deltas, as Krause and Harris suggest in the introduction to this volume, change and stability become complementary. In this chapter, I focus on stagnation as it shapes and is shaped by the lives of the humans who dwell in deltas. Although water is by definition the main medium through which stagnation and flow as physical phenomena occur, I concentrate on the things that travel *with* and *in* waterflows and that eventually become stranded in socio-ecological terrains. In that encounter, I argue, stagnation creates the material conditions for socio-political conflict and instability. This chapter analyses how those things that cease to flow and become stranded intertwine with the politics of life in deltaic formations.

I develop these ideas through the case of the La Mojana inland delta of northern Colombia (see Figure 3.2), where I have been conducting ethnographic fieldwork since 2003. This particular region is an area of about 5,600 km^2 where rivers of national importance such as the Magdalena, Cauca and San Jorge mingle. This confluence configures a dynamic and shifting hydrological network of freshwater marshes, swamps, streams

Figure 3.1. Living in La Mojana Delta, November 2019. Photo by Alejandro Camargo and Jorge Escobar.

and other wetlands which annually flood the surrounding lands. During the dry season, small farmers cultivate the previously flooded lands and fish in the marshes as migratory species such as bocachico (*Prochilodus magdalenae*) leave the wetlands to migrate upstream. When the rainy season begins, the rivers and marshes overflow and inundate thousands of hectares of land. In this region, flooding is irregular and has fluctuations up to seven metres. This leads to extensive horizontal expansion of water given the flat nature of the topography (Galvis and Mojica 2007: 130). Other contributors to this volume (e.g. Horisberger, Ley, Scaramelli) emphasize the centrality of the movement of multiple species and elements in the configuration and modification of deltaic environments in different parts of the world. La Mojana is not an exception to this pattern. As water comes and goes, a myriad of elements, organisms and humans also move across this region and beyond – as in the case of migratory species. La Mojana, therefore, constitutes an 'aquatic space' (Oslender 2004: 967) in which water shapes everyday life and mediates the spatialization of social relationships.

In the midst of constant and erratic eco-hydrological motion, however, some things cease to flow. Drawing on anthropological and geographical scholarship on waterflows and circulation, I focus on three things that have been crucial to understanding the main socio-ecological conflicts in the La Mojana delta: sediment, fish and mercury. Deltas are by definition deposits of river-borne sediments (Coleman 1976: 1). Yet on some occasions waterflows deposit these sediments in areas that are of strategic interest to different actors. Such is the case with the sediment that becomes stranded at the edges of marshes, where small farmers grow food and wealthy cattle ranchers graze their animals. Small farmers and landowners have long fought for exclusive access to these new sedimented lands, thereby giving rise to hostile environments where property and nature intertwine in multiple ways. The livelihoods of these small farmers are dependent as much on agriculture as on fishing. Nevertheless, over the last three decades, regional fisheries have dramatically declined in number due to overfishing. Fish of commercial value are becoming increasingly scarce because their migratory and reproductive cycles are interrupted by nets and other fishing gear. Fish become stranded in fishing territories where fishers strive to make a living in spite of the economic and environmental crisis. Some of the fish that enter these territories carry with them a very toxic element that finds its way into human bodies: mercury. Mercury travels in considerable quantities in waterflows from upriver mining districts to the delta, where it accumulates at dangerous levels in human and non-human bodies via the food chain. The analysis of stagnant sediment,

fish and mercury reflects that stagnation is not merely a key process pertaining to the hydrogeomorphology of deltas, but also a socio-ecological and multiscalar phenomenon with significant political implications. Scale, as a number of scholars have pointed out, is a spatio-temporal relation produced through the interaction of levels, processes and components of systems (Sayre 2005, 2009). Power is part of the production of scale, as it intervenes to shape particular meanings, controls, metaphors and representations of social and biophysical landscapes (Rangan and Kull 2009). Therefore, the analysis of stagnation is also a way to understand the multiscalar phenomena that occur in deltas.

I start from the concept of stagnation as the physical deceleration of matter in an environment where movement is a predominant condition, but I take this concept beyond its material manifestation. When matter ceases to flow, stagnation becomes a state of disruption and interruption of everyday life. Stagnant matter not only obstructs flows, but, when it intersects with inequality and power imbalances, it also hinders the possibilities of good health, a sound environment and fair access to resources. Stagnation is deceleration and, at the same time, triggers new socio-ecological movements. It is transitional, unfinished and dynamic, as it is 'neither a beginning nor an end point' (Ley 2018: 2). Therefore, stagnation helps us to understand how crucial aspects of people's lives cease to function in the way they desire. In so doing, its analysis exposes yet another dimension of how everyday life merges with the broader biophysical and geological life of deltaic environments.

The rest of the chapter is organized into five sections. In the next section, I explain the socio-ecological meanings of flow in La Mojana, and how waterflows shape the landscape and become part of the everyday life of the region. Likewise, I analyse how recent literature on waterflows and circulation helps to explain those regional processes of flow and stagnation. In the subsequent three sections, I focus on the consequences of mercury, stagnant sediment and fish, respectively. In the final section, I discuss and analyse the problem of stagnation as a conceptual and empirical phenomenon and analyse its implications for the social study of deltas.

Flows

The direction, temporality, magnitude and spatiality of waterflows profoundly influence the relationships between people and the environment in La Mojana. When the rainy season begins around May, fishers move

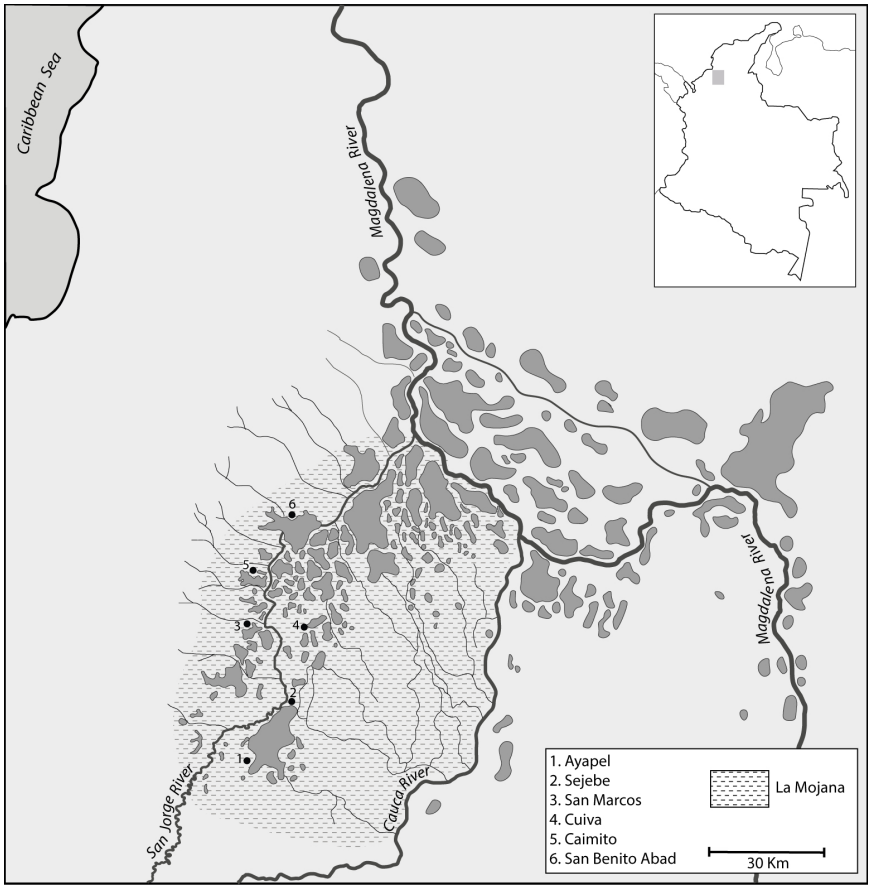

Figure 3.2. La Mojana inland delta in northern Colombia, the marshes in dark grey and the places mentioned in this chapter. Map by Alejandro Camargo.

from the rivers to the marshes to catch the fish that are maturing there. Farmers conclude agricultural cycles, and cattle ranchers move their livestock back to the savannahs. Embankments and ridges stand out noticeably in the landscape as human-made barriers protecting households and estates from flooding. In some areas, it is possible to discern ancient ridged fields built between 200 BCE and 1000 CE by the Zenú people. This pre-Hispanic hydraulic system helped inhabitants to manage seasonal flooding for agricultural irrigation and drainage over nearly 500,000 hectares (Plazas et al. 1988). Marshes and streams, separated by land during the dry season, connect to each other and even merge to form vast single bodies of water. These connections open new aquatic routes for the

mobilization of people, agricultural produce, domestic goods and other basic items across the delta. But other things travel *in* the waterflows as well. Large amounts of sediment, organic materials, fish, and agricultural and mining waste flow downstream from the mountains and spread out over the lowlands. During the rainy season, therefore, water expands, inundates, infiltrates, mobilizes and pollutes people and things. Water connects multiple worlds through its multidirectional flows.

There are two characteristics of waterflows that are central in our understanding of stagnation as a socio-political phenomenon. The first characteristic is the relationality of flows. The literature on hydrosocial relations in political ecology and cognate areas tends to see water as a self-contained element that interacts mainly with society. In consequence, less attention has been paid to the study of the intersections, commingling and coexistence of water and other non-human elements (Camargo and Cortesi 2019; Lafaye de Micheaux, Mukherjee and Kull 2018). For instance, Hastrup and Rubow explain the 'agentive powers of water' as a force that is 'closely related to the ways in which water moves and organizes people on its way' (2014: 23). In other words, water has an intrinsic agency that becomes evident through society. But the idea of water as having agentive powers needs to be reconsidered in the case of fluvial environments. On the one hand, scientists have long pointed out that water moves in reaction to multiple forces – such as gravity and pressure – acting on it (Dingman 2009: 94). On the other hand, the way water flows is also shaped by resistive forces. In the case of rivers, the erosive force of flows is counteracted by the resistance or friction imposed by the riverbed and banks (Charlton 2008: 21). As Krause suggests, different kinds of water movement 'engender different social and ecological relations, and vice versa' (2014: 91). Stagnation occurs precisely at the connection of waterflows with other elements and phenomena, which include weather, gravity and society.

The second characteristic of waterflows is their temporal heterogeneity. Flows move with multiple rhythms, many of which occur simultaneously. The very hydrodynamics of a river reveal how different currents flow at different velocities within the same channel. From this perspective, stagnation is not always the end stage of the flow, but only one part of it that decelerates as a result of multiple forces acting upon it. Since other flows continue moving, stagnation cannot be seen as the final stage of a circuit or cycle because flows may or may not stop at a certain point. The concept of flow in social sciences has gained currency both as a metaphor of dynamic processes such as globalization (Rockefeller 2011), and as a way to understand the 'rhythms' of water 'against which human societies organize and

structure their economic and cultural activities' (Linton and Budds 2014: 176). Yet some authors have pointed out the importance of considering the instances in which flows do not occur. In that sense, Strang (2014: 94), in response to Krause (2014), observes that 'phenomena that do not actually flow' are also important for the metaphor and understanding of the relationships between the human and the non-human. Ley expands this discussion by approaching stagnation as a 'non-flow'. Instead of flowing waters, Ley concentrates on the social and hydrological stagnation that results when rivers swell and seep (Ley 2018).

This chapter contributes to the study of waterflows through an analysis of instances where a part of those flows decelerates, thereby fuelling both accumulation of matter and social conflict. In other words, social conflict in this particular context emerges as (to borrow Tsing's words) friction, or 'the grip of encounter' (2005: 5) of different socio-ecological processes, beings, mediums and objects. Flows are here considered as assemblages of things and processes in which water participates as a milieu, and as an engine of motion, friction and, ultimately, stagnation. Accordingly, stagnation is a manifestation of the temporalities and multiple materialities that shape waterflows. The stagnation of three objects which travel in water in the La Mojana delta – mercury, sediment and fish – has political effects that will be explained in what follows.

Mercury

I met Claudia in July 2017 at a bridge over the San Jorge River in La Mojana while I was observing the unfolding dynamics of a fish market. She was waiting for a fellow farmer to attend a meeting in a nearby township. In the meantime, she took a glance at the river. 'Are you buying fish?', she asked me. 'No, I am not. I am just observing the market. Are you buying fish?' 'No, I am just waiting for someone. I don't eat too much fish these days. They say it contains mercury. Although it seems I already have mercury in my body.' For four years, Claudia worked at an artisanal gold mine on the Pacific Coast of Colombia. She worked under very precarious conditions and was never warned about the risk involved in directly handling mercury without any type of protection or safety measures. When she decided to return to her hometown in La Mojana, she had already noticed some changes in her health. She began to get recurrent headaches and muscle pain, but she refused to see a doctor. 'If the mercury is in my body, it will stay there anyway and I won't be able to do anything about it, so it is not worth seeing a doctor.'

Although Claudia is no longer working in mining, she is still exposed to mercury via the food chain and the hydrological dynamics of the La Mojana delta. Since the 1990s, scientists have warned about the discharges of mercury which travels from the mining exploitations of the Cauca River catchment, one of the main watercourses that flows into La Mojana. Since colonial times, the lower Cauca River basin has been a strategic area for gold extraction. Today, this basin is home to nearly 480 mining sites, which dump large amounts of mercury into the river and its tributaries (Martínez 2015: 53). Given this dramatic situation, Colombia has been considered the world's top mercury polluter per capita on account of artisanal gold mining (Cordy et al. 2011). This contributes to a growing global trend of mining-related mercury pollution, which is increasingly affecting other regions such as the Amazon (Castilhos et al. 2015; Fraser 2016). During the rainy season, the Cauca River overflows, thereby connecting with the whole hydrological system of the delta. Following the flooding pathway of the river (Marrugo-Negrete et al. 2010), mercury travels throughout the region, eventually becoming stranded in fluvial sediment at the bottom of marshes and streams. Through biomethylation, micro-organisms transform some of that mercury into methylmercury, a highly toxic compound which bioaccumulates and biomagnifies in food chains (Marrugo-Negrete, Benitez and Olivero-Verbel 2008: 305). Fish, among other organisms, accumulate mercury in their tissues and pass it on to their predators. Through fish consumption, methylmercury finally makes its way into human bodies, such as Claudia's.

Human bodies are the ultimate destination and milieu where mercury stagnates. In a study carried out in a marsh in La Mojana, researchers found that the levels of mercury in the hair of 112 individuals was substantially higher (2.18 ± 1.77 µg/g average) than the internationally accepted limit (1 µg/g) (Gracia, Marrugo and Erasmo 2010; Mancera-Rodríguez and Álvarez-León 2006). Among humans, mercury can also be transmitted by way of placental exposure and the ingestion of mothers' milk (Olivero, Johnson and Arguello 2002: 41). For this reason, pregnant women are at a more critical period of risk than other individuals. This situation is alarming, especially when we consider the serious health problems that emerge out of this 'toxic accumulation' (Camacho 2017). Mercury can cause damage to a foetus's brain and induce other malformations. In adults, mercury toxicity produces emotional instability, muscle weakness, loss of peripheral vision, nausea and headaches, among other problems. The effects of mercury on the inhabitants of La Mojana are yet to be examined in detail, but a study showed a potential correlation between the presence of mercury in people's hair and emotional instability (Olivero, Johnson

and Arguello 2002). Other studies have suggested that there might be a relationship between mercury pollution and the increasing instances of children who are born with cleft lip and cleft palate in this region (Cardona 2001).

Even though the presence of mercury in fish, water and human bodies is widely recognized in La Mojana, little can be done to protect the people whose dietary habits heavily rely on fish. For thousands of families in this area, fish is the main, and sometimes only, source of protein (Marrugo-Negrete, Ceballos and Benítez 2007: 885). Therefore, removing fish from their diet is just not a realistic possibility. Gloria, a 56-year-old woman who lives in a fishing community near a marsh, explained to me her understanding of the risk involved in fish consumption: 'Yes, we know that fish has mercury, but what can we do about it? We won't stop eating fish because of that. Fish is what we eat, so we would rather die of mercury instead of giving up fish'. For Gloria, fish is important not only because of its role in her diet, but also because it is at the heart of people's livelihoods. The hydrological dynamics of La Mojana sustain agrarian economies that alternate between fishing and seasonal crop production. But for many peasants, many of them landless, fishing is the only source of income. Furthermore, mercury is invisible for the most part. It may or may not be in fish. If it is in fish, it is unlikely that anyone will notice because there is no flavour, texture or smell that could alert people. If mercury is accumulated in human bodies, it is not felt because the symptoms can be associated with something else. Headaches, for instance, are usually associated with high temperatures in the area. But even if people are aware of stagnant mercury in their bodies, they will not be able to remove it, ameliorate its effects or prevent further accumulation, as long as fish remain a vital food source. In foetuses, infants and children, the accumulation of mercury might cause irreversible damage.

Waterflows in the delta, therefore, connect human bodies with the political economies and ecologies of extractivism via mercury. The invisibility of mercury turns these problems into a silent and slow form of violence. The irreversibility of a flow that condemns people to uncertainty leaves little room for hope and optimism. While mercury accumulates in human and non-human bodies, however, sediment also accumulates in marshes as the waterflows of the delta move in their dissimilar rhythms.

Sediment

An important prerequisite for the formation of deltas is the existence of a river system that is capable of carrying substantial amounts of sediment

(Coleman 1976: 3). Sediment flows from the Andes into marshes and other wetlands where it then combines with nutrients, organic matter and plankton, which help to sustain aquatic and terrestrial biological communities (Rúa, Palacio and Flórez-Molina 2014: 198). For humans, these processes of sediment deposition and accumulation at the interface of land and water are crucial for the reproduction of agrarian livelihoods. In La Mojana, people seasonally cultivate their crops on sedimentary areas, or *playones*, which are exposed during the dry season when water recedes. The richness of this soil provides the conditions for growing subsistence crops and grass to feed cattle. During the rainy season, floodwaters renew soil fertility and deposit more sediment. In La Mojana, as in the Amazon, 'the river is the plow' (Higbee 1945). This sedimentary process has fuelled a history of subsidence in which the whole region has been sinking a metre every two hundred years due to the weight of the sediment carried by rivers (UNESCO 2012). As Richardson (2016) suggests, flow and sedimentation are intrinsically connected processes.

Although sediment has an important role in the reproduction of human and non-human life in the delta, an excess of sediment may bring about multiple socio-ecological disruptions. In March 1997, for instance, heavy rains caused landslides in the upper basin of the San Jorge River. Consequently, large amounts of sediment flowed downstream and killed thousands of fish on the way. According to Negrete (1997), the concentration of suspended solids in the San Jorge River dramatically increased from 252 mg/l to about 35,000 mg/l, and turbulence from 25 units to 1,820. Furthermore, Parra (1997) estimates that nearly 1,000 tons of fish were lost. Suddenly, the river turned into a stream of mud and dead fish.

Multiple explanations of the genesis of this environmental calamity circulated in La Mojana. For some people the *avalancha*, as this event is locally known, was a consequence of gold mining, while others associated it with a volcanic eruption. Rumours caused people to refrain from eating fish because it was believed to be contaminated with mercury or cyanide. As the high concentration of suspended solids dissipated over time, the rumours subsided, but this abrupt event added to a broader longstanding concern: the accumulation of sediment in marshes. The *avalancha* was a peak in an ongoing process of sediment transportation and deposition which exceeded what some people in La Mojana perceive as the 'regular' level of sediment discharge. People recount that after the *avalancha*, several marshes were reduced in depth and size due to the abrupt increase of sediment. Antonio, a fisherman from San Benito Abad, a village in La Mojana, explained to me in a personal conversation the effects of this phenomenon thus:

> The marshes are losing depth because the river is carrying more sediment than before. That sediment accumulates in the marshes and new lands have been appearing here and there. That is causing a lot of trouble. The floods are now inundating more villages than before because the marshes cannot hold the water with so much sediment at the bottom. But water needs to go somewhere so it goes to the villages . . . the other big problem is that people have been fighting for those lands. Cattle ranchers want it for grazing and we, the small farmers, want it for agriculture. There are problems all over the San Jorge and La Mojana because the new lands are being appropriated.

Barbed wire and cattle have been instrumental in the ways in which cattle ranchers appropriate the sedimented lands. In some cases, landowners have violently evicted small farmers from these spaces in order to expand their grazing areas, while in other cases small farmers have insisted on remaining on what they consider to be public lands for subsistence agriculture (Camargo 2017). Large-scale cattle ranching and subsistence agriculture become mutually exclusive activities in the sedimented terrains. Small farmers and landowners alike have historically used these lands under a *de facto* scheme of appropriation called 'derecho de ciénaga' (right to the marsh), which has been asserted through various means including violence (Camacho 2015: 95). Near the municipality of San Marcos, for instance, the fishers of a village have progressively lost access to the marshes because landowners have spread out their barbed wire to enclose sedimented lands. These lands have become private property where barbed wire and fear warn fishers off. Other landowners have accelerated the stagnation of sediment by way of infrastructural interventions in the landscape. They have diverted streams, drained marshes, and built ridges to prevent areas from flooding. Colombian law provides that the lands which are formed by the 'natural' action of rivers and sediment deposition in marshes belong to the state (Camargo 2017). This means that private ownership of this property is illegal in these areas, although the law grants special rights to small farmers to seasonally cultivate subsistence crops in the marshes. Even so, some cattle ranchers manage to pull political strings to obtain deeds that prove their legal possession of these lands. Over time, some of these sedimented properties have even been named after the landowner who appropriated them. By recognizing that a particular area belongs to x or y individual, fishers have, in some way, acknowledged the power imbalance that surrounds their relationships with the cattle ranchers.

When sediment ceases to flow in areas of special importance for the economic life of small farmers and landowners, it becomes a crucial element in the transformation of political relations. Since sediment lies at the centre of these conflicts, it might eventually help to avoid the proliferation

of these violent disputes over land as well. For Antonio, a crucial measure to reduce these tensions is to control the flow of sediment. In the case of San Benito Abad, the course of the San Jorge River changed in the 1970s. Since then, the river traverses a network of marshes and deposits large volumes of sediment in those environments. Antonio argues that because the deviation of the river accelerated the deposition of sediment in the marshes, the river course should be moved back to its former path. By decelerating the deposition of sediment into the marshes, conflicts would eventually cease as well. In this way, stagnation and flow have different effects on the direction and dynamics of political relations in the delta. These relations are strongly shaped by the need to make a living in a region where land is highly concentrated in the hands of a few[1] and where other means of subsistence and sources of income such as fishing have fallen into crisis. Fish has found in stagnation the beginning of its decline as an economic and ecological resource.

Fish

Over recent decades, stocks of commercial fish species in the Magdalena River basin (the most important in Colombia) have abruptly declined from around 80,000 tons/year in the 1970s to just over 10,000 tons/year in the 2000s (Galvis and Mojica 2007; Gutierrez, Barreto and Mancilla 2011: 35). Multiple factors have contributed to this crisis, but overfishing has played a prominent role. In La Mojana, the decline of fisheries is usually attributed to the increasing use of large fishing nets. These artefacts obstruct the journey of migratory fish species in rivers and marshes. Bocachico (*Prochilodus magdalenae*) is one of those species whose reproduction is contingent on the connectivity and seasonality of waterflows in the delta. During the rainy season, migratory fish stay in the marshes, where they find plenty of food. As the dry season approaches, water levels decrease, water temperatures rise, and oxygen levels fall. This array of environmental changes signals the beginning of the upstream spawning migration of species such as bocachico. This species leaves the marshes in large groups in search of better conditions to spawn before some marshes temporarily lose their connection with the river. The places where marshes meet the rivers become overcrowded fishing spots, which host numerous nets, canoes and fishers. The sustainability of fishing in this area is threatened because the nets' mesh is generally too small and therefore they catch all sorts of fish of different sizes. This means that many fish do not survive to reproductive age. As more fishers congregate in the same fishing spots across the delta,

and large amounts of fish become stranded in fishing nets, the fishing economies deteriorate.

Government authorities and academics have called public attention to the rapid decline of artisanal fisheries in the Magdalena River basin. Fishing nets, together with the interruption of fish migration cycles, have played a central role in this narrative about anthropogenic pressure on aquatic resources. Yet focusing on fishing alone implies a narrow perspective on this socio-ecological crisis. In La Mojana, the crisis is better understood when the question of why people fish is considered, although the answer is far from obvious. Evidently, the hydrological connectivity and environmental configuration of La Mojana have long sustained multiple fish species. But people have too often made fishing the sole source of livelihood among other possibilities. Specifically, the cyclical transformations between the rainy and the dry seasons have created the material conditions for the connectivity between fishing and crop production. In fact, it is fairly common to hear stories of better times prior to the worsening of the fishing crisis. Then, people worked in fishing for around five consecutive months during the migratory period of fish such as bocachico. During the rest of the year, they worked the land and prepared for the next fishing season. This means that for several months fewer fish were extracted. The rhythms of fish, water, plants and labour intersected to create a dynamic taskscape (Ingold 1993) where the pressure on aquatic resources was less intense than today.

Colombian sociologist Orlando Fals Borda coined the term 'amphibious cultures' to refer to the people who navigate between land and water, crop production and fishing, as a way to build their lives in the midst of the dynamic hydrological transformations and the deep economic inequalities in La Mojana (Fals Borda 1979). Although these connections are still very important for the reproduction of livelihoods in this region, the intensifying process of land concentration has made the transition from water to land a very difficult endeavour (Camargo 2017). As explained above, this has been particularly evident in the case of subsistence farming on the shores of marshes. But the locations of particular fishing villages also reflect the imbalances of land tenure. Villages such as Sejebe and Cuiva are located between the banks of waterways and large cattle farms. These villages grow sideways because cattle farms leave little space between them and the river or stream. In Sejebe, those who wish to cultivate the land have to rent a parcel from a neighbouring landowner because they do not own any themselves. Renting land, however, is a risky decision. Occasionally, abrupt rainfall and floods have severely affected crop production. When that happens, those who rent land not only lose their production but also fall into debt with the landowner. For them, and for

many others who have no access to land, fishing is the most immediate solution to meet their economic and food needs. In consequence, fishing has moved from being a seasonal livelihood to a year-round activity. This change has further increased the pressure on aquatic resources, led to greater commodification of fisheries, and ultimately added to the ongoing depletion of fish stocks.

The fishing crisis, however, is not yet an overwhelming force that has turned people into powerless and hopeless subjects. In various communities, fishers have negotiated and contracted to establish measures to diminish the pressure on fish. They have regulated fishing periods, nets and tools, and minimum fish sizes. Aquaculture has provided an alternative for some fishers, but the costs and the threat of abrupt flooding have rendered this method too unattractive and risky for many. Although fishers describe the fishing season today as less abundant and plentiful than in past times, when they do occur, fishing areas become highly regulated. Not everyone has access to them and usually those who do not live in the community are excluded. These measures have probably helped more fish to survive and reach the spawning areas in the upper river basins. But fishers are also aware that regulating fisheries in their communities has only a limited impact. The fish that are protected in one place can be caught on their way to other fishing spots where there is no such regulation or other mechanisms to guarantee unimpeded fish migration. The risk of getting caught in spaces of land inequality and precarity remains.

Overfishing has had several impacts on the well-being of humans and the sustainability of aquatic resources. Because fish are the main source of protein and income generation in some villages, the lack of fish has had significant health and economic consequences. In Sejebe, for instance, when fish are scarce some children go to school without having had breakfast at home. Migration and livelihood diversification have also been noticeable consequences of the fishing crisis. Fishers migrate to urban areas in order to find a job, mainly in construction or as private security guards in the case of men, and as domestic workers in the case of women. These jobs allow them to send remittances back to their families in the fishing villages. Those who stay in the delta find alternative sources of income as farm workers or motorcycle taxi drivers. In the meantime, fishing has become a very unattractive activity for the youth, whose aspirations are more connected with migration than with the reproduction of an activity that has proven uncertain, unproductive and unhealthy. As fish diminish in number and size, people begin to migrate. From time to time, however, large amounts of fish suddenly begin their migration from the marshes and temporarily resuscitate fishing. That was the case in early December 2017, when thousands of fish unexpectedly appeared in the San Jorge

River. Some people say that they had not seen such massive migrations for at least ten years. These times of plenty, while welcome, have become rather unusual and unpredictable.

Deltaic movements

I have proposed an analysis of stagnation as a constitutive phenomenon of the dynamics of life in deltaic environments. I approach stagnation as intrinsic to waterflows, not as their opposite. Focusing on the political implications of stagnation, I explained the conflicts that emerge when things that travel with and in water become stranded in socio-ecological terrains. In the La Mojana inland delta of northern Colombia, mercury, fish and sediment are three material elements whose stagnation has created socio-ecological and political tensions. Those tensions, in turn, shape the way in which people dwell and experience their lives in a changing environment where multiple rhythms and flows intersect.

Yet stagnation is not entirely definitive. Human and non-human bodies, shorelines and fishing nets are not the ultimate destinations of mercury, sediment and fish respectively. When these material elements become stranded, they fuel other forms of movement and conflict in the delta. In the case of mercury and sediment, their accumulation in human and non-human bodies and shores has resulted in particular forms of dispossession. Juana Camacho (2017) has pointed out how the intensive use of other toxic agro-chemicals in La Mojana has involved the dispossession from peasants of clean natural resources, commonly held goods and sound health. This form of dispossession, Camacho contends, operates in a silent and subtle fashion. The flow and accumulation of mercury follows a similar path. This substance is an invisible form of pollution that undermines people's health and access to fish – the main and sometimes only source of protein and income for thousands of subjects across the region. Perreault (2013) presents a similar instance in which mining fosters livelihood dispossession in Bolivia. This occurs through the accumulation of toxic sediments on agricultural fields, the accumulation of water and water rights by mining firms, and the accumulation of land by mining operations. Perreault shows that heavy metals from mining contaminate river-borne sediment, which in turn affects crop yields and the quality of soil (2013: 1059). Conversely, the accumulation of river-borne sediment in La Mojana has enabled a particular form of dispossession due to its fertile characteristics. Since sediment keeps accumulating, stagnation becomes an ongoing process which is animated by the movements of water, the effect of gravity, the intensity of rainfall, deforestation and other socio-

ecological processes. Unequal access to land in the delta, and the resulting land conflicts, have become environmental problems that unfold as geological and hydrological processes occur.

The stagnation of fish, sediment and mercury are interrelated phenomena. The accumulation of mercury in fish contributes to the broader fishing crisis, as it turns it into a problem of food quality and health in addition to the problem of seasonal availability and the capture of immature fish. The excessive accumulation of sediment has also undermined fish habitats in marshes, as it reduces the depth and size of these bodies of water. Although the presence of mercury in La Mojana is widely known and scientifically proven, the impacts of contaminated sediment still need to be further examined. These types of connections make stagnation a relational process. Water, people, sediment, fish and mercury are but one assemblage of the multiple relations that emerge and change when matter ceases its typical flow in a delta.

Stagnation is a multiscalar phenomenon, as mercury connects human and non-human bodies with extractive industries and the distant global demand for gold. The lands that are contested in places such as San Benito Abad emerge as a consequence of the erosion and weathering that takes place elsewhere in the delta and beyond in the upper river basins. These land conflicts are also connected with longer histories of land concentration that can even be traced back to colonial times. Juvenile fish caught in nets are reflective of the global crisis in fishing that thousands of people currently face. Stagnation occurs at the intersection of multiple hydrological and spatio-temporal connections, relations and processes. This makes stagnation reflective of the ways in which deltas, as Scaramelli argues in her chapter, connect with national and transnational flows of substances, markets and human exchanges and migration.

As a conceptual device, stagnation helps us to understand that waterflows involve multiple temporalities and velocities because things do not merely flow in a predetermined or uniform way. As Bryant observes, 'objects incorporate . . . different senses of the rhythm, speed, and trajectory of time' (2014: 683). Material accumulation can be understood as a temporal process that follows stagnation and its duration may disrupt socio-ecological orders. In La Mojana, the spatial and temporal trajectories of these objects become part of the broader history of shifting political economies, dispossession, social inequality and ecological degradation. These trajectories, however, also intersect with the personal biographies and expectations of those who dwell in, walk on and navigate through the delta.

Stagnation also shapes the ways in which people imagine the future. If stagnation is not the end of the flow, but the deceleration of some ram-

ifications of it amidst multiple movements, then stagnation serves prospectively as a component of other scenarios yet to come. However, the shape and duration of those scenarios can be rather uncertain. As Krause suggests in his chapter, uncertainty, transformation and volatility are the norm in deltaic environments. Stagnant things may or may not continue to accumulate. This depends on the transformations of waterflows and the forces acting upon them, including global climate change. Stagnant mercury in human bodies may not be reversed, but perhaps unregulated mining may. Tragically, there is mercury already present in the environment. It is still unclear how much of it there is and how long it will stay there. Sediment keeps accumulating while the idea of changing the river course seems unreal. Fish come and go, but always threaten to disappear. Stagnation, therefore, is fundamental to understanding the indeterminacy of life in deltaic environments.

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Notes

1. Aguilera (2004) pointed out that the Gini index for land in La Mojana is 0.87, which means that land is unequally distributed.

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Chapter 4

Economy, Identity and Hydrology

Towards a Holistic Approach to Intersecting Volatilities in the Mackenzie Delta, Canada

Franz Krause

What would happen to our understanding of social life if we conceptualized it as inherently volatile? What if uncertain and potentially rapid transformations were seen as part and parcel, rather than exceptional disruptions, of society and culture?

In this chapter, I explore this question in relation to the lives of the inhabitants of the Mackenzie Delta in the Canadian Northwest Territories. In the developments that have characterized the region for at least 150 years (e.g. Usher 1971), as in many places around the world, the only constancy seems to be that of inconstancy, and those forms that do endure to some extent – whether social, cultural or material – must be meticulously constructed and maintained. Relations in and beyond the delta are volatile, and people continuously devise ways of living with uncertain and rapidly transforming worlds.

I therefore sketch some historical transformations of Mackenzie Delta life in a way that does not assume that they are shifts between more-or-less stable plateaus. Instead, in this chapter I suggest some initial steps towards the formulation of an approach to social and cultural life that takes *volatility* as its starting point and *stability* as an achieved second-order phenomenon. This approach understands stability as a social and material *product*, which requires effort to set up and continuous endeavour to maintain; volatility, on the other hand, is here understood as describing the uncertain and often rapidly transforming processes that characterize many if not most of the social, economic, cultural and ecological dynamics that constitute people's lives (cf. Krause 2017a). This is not to claim that people do not perceive some things as structures and regularities, but it asserts that they do not take centre stage. In outlining this argument in

Figure 4.1. Tumma Elanik fishing through the ice at Jackfish Creek in the Mackenzie Delta, November 2017. Photo by Franz Krause.

broad strokes, I am unable to delve more deeply into the ethnographic particularities of life in the Mackenzie Delta, and I refer the interested reader to the cited literature, which provides the missing detail. This broad approach also means that internal differences among Mackenzie Delta inhabitants are somewhat backgrounded, which should not be taken to imply a homogeneous and harmonious community. While attention to this diversity is vital, this chapter must neglect some dynamics in order to be able to scrutinize others.

In a way, my argument is taking to an extreme the discussions in British structural functionalisms of the mid-twentieth century, which realized that social structures alone explained neither how these structures were reproduced nor how they changed. Firth (e.g. 1954: 10) argued that, alongside structure, anthropologists must consider what he called 'social organization', that is, 'the working arrangements of society' that emerge from spontaneous activities and decision-making in contingent situations. What I understand as volatility is the continual extension of contingency, and the concomitant development of a 'social organization' that does not predominantly reflect and reproduce a more abstract social structure, but rather works towards riding out some developments and building relative stability where possible and adequate.

While volatility refers to uncertain and potentially rapid and far-reaching transformations, it differs from both the concept of change and discussions of resilience (Krause, nd). Both terms, change and resilience, reference an equilibrium or baseline, from which change deviates and which resilience restores. Discussions of resilience implicitly reintroduce problematic ideas of adaptation (Walker and Cooper 2011; Watts 2015) and their policy application can turn deltaic lifeworlds into 'heterodystopias' (Cons 2018) that limit people's options to coping with continual catastrophe. Volatility, as developed here, references no baseline and is not tantamount to never-ending emergency. Instead, it refers to the always uncertain dynamics of a world in movement. Delta inhabitants are continually devising ways of inhabiting such worlds. For example, the farmers and fishermen of the Ayeyarwady Delta in Myanmar are employing various means of what Benoit Ivars in this volume calls 'anchoring'. This implies fixing their claims to land and resources to particular, stable points in the face of incessant political, economic and hydromorphological transformations. Mackenzie Delta inhabitants confront such volatilities in quite different ways, as I will sketch later.

Volatile dynamics take different forms, and are usually accounted for in different terms – the volatility of social life through revolutions, large-scale displacement and sudden violence; economic volatility through price fluctuations or stock market developments; cultural volatility through the

unexpected borrowings and shifts in meanings and the shaping of new identities; and ecological volatility through disequilibria in populations and habitats or catastrophic events. This chapter, conversely, is an attempt to think these different volatilities *together*, and to explore what a holistic approach to volatility may reveal. Sandro Simon takes a similar approach in his chapter in this volume, discussing mollusc gleaning in the Senegalese Sine-Saloum Delta. By illustrating how the rhythm of delta women's lives is animated not only by tides, molluscs and sediments, but also by conservation moratoria, ancestral spirits and people's other projects, he demonstrates the power of holistic study.

I will suggest that attention to the *rhythmic* temporalities of the intersecting Mackenzie Delta transformations may be a key to better understanding delta inhabitants' everyday life. Rhythms have different tempos, scales and amplitudes; they may overlap, synchronize or conflict; most of all, they constitute 'repetition with difference' (Lefebvre 2004) and thereby speak of regularity as much as novelty, of uncertainty as much as predictability. Finally, I will note that in such a volatile world, flexibility and improvisation are valuable social traits rather than weaknesses or lack of resolve. Calling them 'valuable' does not imply that people necessarily appreciate all these volatilities and flexibilities. I use this term to highlight that improvisation must be regarded as a strength in a volatile world, rather than as reflecting people's weaknesses.

In the Mackenzie Delta, volatilities have characterized people's lives for a long time and in very tangible ways. Their livelihoods have been subject to a number of boom-and-bust economies, most notably the fur trade of the late nineteenth and early twentieth centuries and the hydrocarbon explorations of the latter part of the twentieth century. People's identities have been undergoing a continuous roller-coaster ride, through interethnic conflicts between the original inhabitants of the region, the mixing of different Indigenous groups and those with colonial incomers of European and other descent, through the advent of residential schools, up to and including the current equation of Indigenous identity with membership in powerful land-claim corporations. The hydrology of the delta is no less volatile, with its annual cycles of freezing and flooding, erosion and sedimentation, which are seen to be accelerating with current permafrost thawing and more erratic weather events.

These, and other, volatilities foster a social and cultural context where it is vital for delta inhabitants to acknowledge uncertainty and the imminent possibility of radical transformation. As Bates (2007) has argued, in the volatile context of the Canadian Arctic, it can be more appropriate to remain flexible, train improvisatory skills and prepare for eventualities, rather than to devise and execute plans based on predictions that are

geared towards – but never arrive at – the reduction of risk and uncertainty. However, such characterizations must heed Krech's (1978, 1983) warning not to naturalize the region's volatilities, and instead recognize the ways in which Eurocanadian colonization has amplified people's vulnerability and food shortages. While there is ample oral history evidence of precolonial periods – roughly referring to before the nineteenth century – of hardship and scarcity among the region's inhabitants, there is also material suggesting that volatility was boosted when people began producing for the fur trade and adjusting to other colonial ventures. According to Krech, the flexible social organization – for example, giving married couples free choice to legally and physically affiliate with the wife's or the husband's group – that is so characteristic of the Dene and other hunter-gatherers worldwide may well be linked to the vagaries of colonialism. Imposed forms of economy, disease and politics might have left no space for precolonial social organization and forced people into more flexible arrangements.

Central to my argument here is that it is a conjuncture, or intersection, of different volatile dynamics of colonial, climatic, commercial and other origins, that shapes – and is shaped by – the world of Mackenzie Delta inhabitants. I present three dynamics in the following paragraphs, separated into the familiar categories of 'economy', 'identity' and 'hydrology', only to subsequently argue that they must not be considered separately from each other. In fact, these three sections should be understood as windows through which to approach delta life, not as constituent parts of it. Each window may reveal particular rhythms, but these dynamics intersect with others that, in real life, are already integrated into the world people experience. This integrated perspective, known as holism, is itself as elusive as it is desirable, and under continuous debate in anthropology.

The three windows I open in the following are not exhaustive, but reflect my particular approach to life in the delta, and the particular historical period I refer to. For instance, I do not focus on health, which constitutes another volatile dynamic currently discussed in the Canadian Arctic (e.g. Stevenson 2014), and my text features no specific section on the state, although relations with different forms of governmentality and the volatilities of politics are of course important aspects of delta life. By tracing different rhythms through the windows of economy (a subject of the social sciences), identity (a field studied in the humanities) and hydrology (a discipline of the natural sciences), I hope to illustrate nevertheless how Mackenzie Delta inhabitants are involved in multiple dynamics, which all combine to shape their volatile lifeworld. Dividing a person's lifeworld into different categories is already an analytical move. If we make such a move, separating life into different 'aspects', we must not forget to put

them back together in order to gain a valid 'prospect'. The following argument is based mostly on existing literature, which provides a wealth of detailed insight into different aspects of life in the Mackenzie Delta, but tends to focus on particular aspects or ethnic communities. My own ethnographic fieldwork from summer 2017 to summer 2018 complements these sources.

Economy

Economic life for delta inhabitants has seen several stark and relatively short-lived booms over at least a century. The original populations of the area followed nomadic hunting and fishing lifestyles, and did not settle in the delta permanently. The delta formed a neutral buffer zone, and scene of trading and occasional raids, between the Inuit and Gwich'in inhabitants of the region (Slobodin 1960). The delta was particularly dangerous – and deserted – during the early periods of trade relations with Europeans, when Gwich'in acting as middlemen between Inuit and Europeans were keen on maintaining their advantageous position. When US American bowhead whaling crews entered the Beaufort Sea between 1889 and 1914, some of the original delta fringe inhabitants seized the opportunity to trade and work with these newcomers. Whalers often overwintered next to the Mackenzie Delta on Qikiqtaruk, known as Hershel Island on present maps, and employed Indigenous people as hunters, seamstresses, dog drivers and pilots (Alunik, Kolausok and Morrison 2003). The whalers also traded furs on much better terms than the actual fur-trading companies, which were making their way into the delta from the southeast (e.g. Usher 1971: 174). But this phase ended as quickly as it had set in, with the depletion of bowhead whales and the decline in caribou, on which the whalers had relied for food. While Inuit had lived and hunted in the region for centuries, the sheer population concentration of hundreds of whalers from California and Inuit from all over Alaska and the delta coast had put a strain on the region's ecology.

Also around the turn of the twentieth century, some of the inhabitants of the upper delta fringe briefly and creatively incorporated elements from the cash economy into their livelihoods. In the context of the gold rush in and around Dawson City, they found opportunities to earn money in fishing, transport and woodcutting, among many other occupations (Slobodin 1962: 30–33). This intense but short-lived episode resulted in a generation of Indigenous delta inhabitants who were much more used to a European-derived cash economy than both the preceding generation and the following one (Slobodin 1963). While both the gold rush and the

whaling boom were encounters with notable consequences for the delta economies, it is evident that these episodes were also significantly shaped by the original delta fringe inhabitants. It is unlikely, for instance, that without the work of Indigenous hunters and seamstresses, the miners and whalers would have fared very well during their visits in the Arctic.

Throughout the nineteenth century, the fur-trading companies established trading posts in the vicinity of the delta, but traded mostly for meat and fish with the area's inhabitants, since they had trouble provisioning themselves in this remote region. Only with the establishment of steamboat traffic on the Mackenzie River around the end of the nineteenth century could the Hudson's Bay Company concentrate on acquiring furs (Wishart 2014). This was also the beginning of the intensified occupancy of the delta by Gwich'in and Inuit families. While the Mackenzie Delta remained marginal for the company's overall operations, the fur trade brought about radical changes in the area (Usher 1971). One of these was the spatial orientation of the previously mobile hunter-gatherer populations towards some of the fur trading posts; another was the increased occupancy of the delta itself (Wolforth 1971). However, this was not a linear process, as fur prices fluctuated extensively throughout the twentieth century, reflecting world market shifts (e.g. Slobodin 1962: 38–39). Nevertheless, once the Mackenzie Delta inhabitants were engaging fully in the fur trade, the global appetite for furs was already waning. Despite various booms, for instance that of arctic fox fur at the beginning of the twentieth century, fur prices declined for a number of reasons, including the spread of alternative products, fur farming and the animal rights movement. Given current low fur prices, some Mackenzie Delta inhabitants say that trapping is little more than an expensive hobby today, where successful trappers might break even and earn enough to pay for the expensive equipment and fuel, but can only rarely make a living from it. As trapping continues to be held in high esteem in the delta, and is sanctioned as a traditional activity in the Indigenous governing institutions, various funding programmes exist to support trapping efforts against the economic odds.

At the same time, other economic developments have created sudden – and usually short-lived – increases in regional opportunities, wage labour and market exchange, which have attracted outsiders to the delta for their duration. Many of these people left again with the decline in the particular development, leaving behind infrastructural and economic legacies among the Indigenous people who stayed because the region was their home rather than their career opportunity. One of these developments was the construction of sophisticated Cold War infrastructure along the northern fringe of continental North America, the so-called Distant Early Warning, or DEW, line in the 1950s (Fritz 2010). This series of manned ra-

dar stations was designed to detect possible Soviet air raids or missile attacks across the North Pole. While the US American and Canadian forces built and occupied these stations, they employed a number of northern Indigenous people alongside the technicians from the south. Five of these stations were located immediately in and along the Mackenzie Delta.

More recent economic booms in the delta were mostly connected to hydrocarbon industries. From the early twentieth century, various companies prospected for coal, but especially oil and gas along the rivers, in the delta and surrounding hills and the Beaufort Sea. This resulted in two notable booms that brought a lot of exploration activity and employment to the delta, albeit mostly for unskilled labour. The first oil and gas boom, during the 1960s and 1970s, resulted in countless seismic explorations and test drillings that left their mark in the delta and its surroundings. It also gave rise to a plan to build a 1,300-km gas pipeline from the delta along the Mackenzie River to the province of Alberta, where it would link to the North American gas-distribution system.

Although this project had stalled after a large-scale public inquiry during the 1970s (Berger 1977), it found new champions, and new opponents, around the turn of the millennium. A second, albeit smaller, oil and gas boom in the early 2000s contributed to reanimating the pipeline project, this time with an 'Aboriginal Pipeline Group' as a shareholder. This group, initiated in part by the delta's Indigenous populations, held that the economic benefits from industrial development would exceed its risks and harms, and argued that there were no viable alternatives to hydrocarbon extraction in the region. The pipeline's opponents, in turn, were concerned that this technology-intensive project would have similar effects for the area's inhabitants and ecology to earlier such developments, where better-paid jobs went to outsiders, but social and environmental problems spread locally (Nuttall 2010). While this pipeline project was approved at that point, the industry has since abandoned it due to the low oil price on the world market, which made drilling and infrastructure investment in the far north unviable. As a result, many people in the delta are currently waiting for the next boom, making ends meet by reinventing certain hunting and trapping techniques, working in administration or one of the few businesses, receiving state benefits like income assistance, or finding occasional employment near and far, for example in state-sponsored projects such as the recent extension of the Canadian highway network to the Arctic Ocean next to the delta.

Although these developments resulted in a far-reaching transformation of economic life in and around the delta in less than a century, from subsistence economy and sporadic contact with whalers or fur traders, and via mercantilist relations to a full-blown inclusion in world markets and state

welfare, they did not proceed incrementally. Instead, a series of short-lived but significant opportunities opened up and left their traces in the delta (e.g. Usher 1971; Wolforth 1971). Delta inhabitants must be credited with an extraordinary flexibility and resilience that enabled them to make use of many of these opportunities, anticipating how to coordinate them with existing livelihoods and commitments, and how and when to shift from one opportunity to the next.

Given these volatile economic developments, delta inhabitants have had to adjust their livelihoods multiple times over the period of a few generations. For young people today, it is impossible to know how they will be making a living once they have their own families. In this context, tradition and skills have to be continuously reinvented, and signs of this abound. For example, many people consider trapping a core element of their culture, even though it has only been practised extensively in the delta since the late nineteenth century.

Identity

In fact, delta inhabitants' cultural identifications, ethnicity and ethnic evaluations – terms and processes that might be addressed by the shorthand of 'identity' (cf. Frideres 2008; Green 2009; Lyons 2009) – have recently gone through rather different historical transformations, too. There are two Indigenous groups in the delta today, the Inuvialuit and the Gwich'in. The Inuvialuit are an Inuit group that comprises both the descendants of a closely related group of linguistically separate populations along the Beaufort Sea coast, which was widely decimated through measles and smallpox epidemics by the early twentieth century, and Iñupiat from Alaska, moving into the delta from around 1900 (Lyons 2009; Usher 1971). The Gwich'in, on the other hand, are a Dene Athabascan group who have long lived along the rivers and mountain ranges south, east and west of the delta (Heine and Gwich'in Social and Cultural Institute 2007; Slobodin 1962). As mentioned above, both groups became established permanently in the delta during the twentieth century, when they congregated there in the pursuit of fur-bearing animals, including muskrat, mink, lynx and beaver, and in order to interact with the trading posts in and around the delta. In spite of their rather different ethnic backgrounds and very different languages, the livelihoods of the Mackenzie Delta Inuvialuit and Gwich'in became ever more similar during the twentieth century, so much so that anthropologist Richard Slobodin observed in the 1960s that 'everyone in the North is becoming Metis' (Slobodin 1964: 53). Métis is a Canadian term describing the society and culture that emerged in the con-

text of the fur trade, and in turn shaped its social, political and economic development. Originally understood as the offspring of male traders and Indigenous women, Métis became the label of an ethnic group in its own right, with a distinct political voice, language and heritage that could not be reduced to a mix of European and Canadian First Nation traits.

Slobodin, in contrast, saw the Métis as a distinctive form of 'regional working-class subculture' (1964: 53) emerging in the context of the frontier-style economic history of Northern Canada. He emphasized that this understanding of Métis did not imply an intermediary position between Indigenous and white people or culture on a trajectory of 'acculturation'; neither did it infer any genealogical traits, but rather a socioeconomic position in a changing north, of people working as unskilled or semi-skilled wage labourers, or independent trappers and fishers. Furthermore, Slobodin observed that the group he labelled as Métis was not growing only by absorbing ever more Indigenous people who lived differently from their parents, but was also formed by people who came to the north as whites, and participated increasingly in this emerging subculture. Above all, he stressed that these Métis of the north 'have been not only the products of culture contact but the agents of such contact' (Slobodin 1964: 53). In some sense, the results of a long process of Métisation in the Mackenzie Delta is still discernible today. Many Inuvialuit and Gwich'in large families have French-, Scottish- and Scandinavian-derived last names; wage employment in various offices of government administration and private enterprises constitutes the main source of income, and the English language is spoken in the vast majority of homes. However, these traits must not be mistaken for a conscious adaptation of a Métis identity by Mackenzie Delta people; while some did indeed identify as Métis, most families retained a clear idea of being Gwich'in, Inuvialuit or white.

For a while, anthropologists (e.g. Helm 1961) suggested that Dene people seemed to be particularly fast at incorporating foreign skills and values into their ways of life. Asch (1998) and others, however, have since argued that this was an unwarranted conjecture, indicating that for instance the seemingly exceptional mix of kinship terms in different generations among Slavey Dene was not a sign of adaptation to white influence, but an expression of the exogamy rule among residence-based groups. Also, it is obvious that the conversion to a 'regional working-class culture' did not come about purely by historical accident, but is the result, at least in part, of explicit government policies, especially the infamous residential school system. Children were separated from their families and livelihoods, sometimes for years on end, prohibited from speaking their own languages and taught that the ways of their parents were primitive and futile in a modern world (Truth and Reconciliation Commission

of Canada 2015). Six residential schools were located in and around the delta throughout the twentieth century, and many children from the delta were also sent to schools further afield in the Yukon or the Northwest Territories.

Many current inhabitants of the Mackenzie Delta feel that it is because of the residential school system that they have lost touch with their ancestors' traditions and that they now have to put great efforts into reacquiring and passing on the languages, skills and ways of life that they deem appropriate heritage. The present schools in and around the delta, run by the regional Beaufort Delta Education Council and overseen by locally elected District Education Authorities in each settlement, play a major part in this project of relearning (Lewthwaite 2007; Rico 2013). The irony – that current schools are to mitigate the effects of past schools, which were often located in the same location, sometimes even occupying the same buildings, as their predecessors – is not lost on delta inhabitants, and many explain the problems of present schools as being related to their ugly legacy. Alongside the school, the Inuvialuit and Gwich'in land claim organizations and adult education centres are important actors in teaching 'traditional skills' programmes and the like.

This effort is especially relevant in the context of the land-claim agreements that the Canadian federal and territorial governments signed with the Inuvialuit in 1984 and with the Gwich'in in 1992. These agreements legalize and institutionalize ownership, access and governance terms to specific parts of what has become recognized – after decades of negotiations – as Indigenous peoples' Traditional Settlement Regions (Alunik, Kolausok and Morrison 2003; Loovers 2019). Each agreement has come with the establishment of a corporation, the Gwich'in Tribal Council and the Inuvialuit Regional Corporation, with the mission to co-manage the territories and administer the agreement's finances. This implies, conversely, that people have to identify as either Inuvialuit or Gwich'in in order to receive a share of the benefits of these treaties, for instance through special hunting and fishing rights, education grants and the annual payment of dividends, alongside numerous other support systems. Today, very few people in the delta identify as Métis. Both the ascription of bounded and contiguous territories to one group or another, and the categorization of people into either one ethnic group or the other requires extreme simplification of social and historical relations (cf. Nadasdy 2012 for an analysis of a similar process in the neighbouring Yukon). Geographically, this has been solved by drawing a straight line through the centre of the delta, dividing it into a northern part that is part of the Inuvialuit Settlement Region, and a southern region as part of the Gwich'in Settlement Region, with the hamlet of Aklavik and the town of Inuvik on the border between the two.

The division becomes even more complicated in terms of the delta inhabitants. After decades of exchange and intermarriage, both between the two ethnic groups and between them and other delta residents, most people's genetic backgrounds are mixed. While the land-claim process divided the population into two camps, current intermarriages and shifting entitlements for members of the respective groups lead to frequent changes in ethnic affiliation. A current delta resident, for example, is likely to have parents who are participants of both land claims. Many of those have opted for membership in the Inuvialuit claim, because they feel that it offers better conditions. If this resident is married to a member of the Gwich'in land claim, the couple will have to consider again under which land claim to register their children. Additionally, this delta resident has the option to deregister from Inuvialuit membership and apply for Gwich'in membership instead, should she decide that the latter now provides better conditions.

While there is fluctuation between Gwich'in and Inuvialuit membership in the delta, both groups feel the political imperative to emphasize their autochthony and delta-related traditions, in order to strengthen the foundations of their respective land claims. The Gwich'in Department of Cultural Heritage, for instance, has been conducting oral-history, ethno-archaeological, traditional-knowledge, place-name, biographical, ethnobotanical and other research since 1993, and published its findings widely (e.g. Aporta et al. 2014; Heine and Gwich'in Social and Cultural Institute 2007), thereby manifesting not only the rich Gwich'in traditions, but also their belonging to particular territories. The Inuvialuit have also sponsored research and publications delineating their specific ethnohistory, for instance via the Inuvialuit Cultural Centre and the Inuvialuit Communications Society (e.g. Alunik, Kolausok and Morrison 2003; Inuvialuit Regional Corporation 2011), emphasizing the continuity and homogeneity of Inuvialuit traditions over their diversity, including the fact that many current Inuvialuit are descendants of Iñupiat immigrants from Alaska, who were drawn to the delta in the early twentieth century. As in other instances of delta volatilities, people have to invest a lot of effort in order to create even temporary stability and order in their sense of belonging and image of identity. Continuous work goes into creating these two ethnic identities as distinct spheres, associating them with particular territories and fixing their membership.

Hydrology

A third field of volatile dynamics in the delta comprises those of the water. Mackenzie River waterflows fluctuate markedly annually and seasonally,

where spring discharge can be as high as 30,000 cubic metres per second (m^3/s) and winter discharge as low as 2,000 m^3/s (Yang, Shi and Marsh 2015). As an Arctic water body, the delta develops a thick crust of snow and ice during the winter, which breaks open again with the floods in late spring, when the snowmelt from the catchment inundates much of the delta. In spring 2018, however, delta inhabitants did not experience a pronounced flood; the ice floes and driftwood that litter the channels for days did not materialize, at least not in the usual places. Every year is different, some people commented. The particular way that the delta freezes and floods, which varies from year to year, is of great concern to the delta inhabitants (Krause in press). For instance, a swift and uninterrupted freeze-up allows them to use the watercourses as snowmobile routes and even motorways for cars and trucks. Usually, the delta's lakes and smaller channels with slower currents freeze over first, while larger channels with strong currents take longer to develop a reliable ice cover. If, however, a river channel freezes over in early winter, but a warm spell brings a small flood before the ice has thickened enough, the crust breaks open and develops into a difficult-to-navigate field of congealed, jagged ice floes. Temperatures have to be very cold for a few weeks in a row for the ice to become sturdy enough to carry larger motor vehicles – in fact, the Canadian highways department regularly hires contractors to thicken the ice along stretches where the ice roads will lead. To accomplish this, the contractors plough the snow off the respective river channels, effectively removing the insulation between ice and air, which cools and thickens the ice. In places, they may also drill a hole in the ice and pump water out, which freezes to the surface, adding a thickening layer on top.

In this way, the delta settlement of Aklavik, unconnected to the national road system most of the year, is linked with the one highway that connects the delta to the south of the country. During winter, travel and transport across the delta is therefore much easier than in summer, when people and goods are hauled on boats and barges along the winding river channels, or during freeze-up and break-up, when they have to be airlifted into these places. In fact, regular air traffic to Aklavik continues throughout the summer, weather permitting; only during the winter, when the ice road provides a more reliable transport artery, is the service interrupted. The conditions of snow and ice during the winter also allow for a vast array of other movements through the delta, including hunting and trapping and other activities people hold dear to their sense of self.

In late spring, as snow and ice begin to melt and floods set in, the particular trajectory of the transition from solid to liquid water is again significant for the delta inhabitants. In the 1950s, for instance, Aklavik,

which had developed into the area's commercial and administrative centre since the days of the fur trade, suffered from continuous flooding and was considered threatened by erosion from the river channel upon which it sits. The Canadian government deemed the location unsustainable and subsequently had a new town, Inuvik, built at the eastern edge of the delta, planning to move population and services there. Many people did move, but others decided to stay in the delta, preferring occasional flooding and muddy streets during snowmelt to a more urbanized life on dry ground. Nevertheless, some delta inhabitants feel that floods and freeze-ups have not been what they used to be, for instance that there have been many years where the ice road to Aklavik has not been declared safe for traffic until well into December, whereas in earlier times it was already operational in October. Hydrological research also suggests that climate change is tangibly affecting the Mackenzie River, where, in spite of large inter-annual variation in discharge, the average snowmelt peak is currently several days earlier than in the 1970s (Yang, Shi and Marsh 2015).

But irregularities in ice formation and flood events are not the only manifestations of a volatile hydrology in the delta. In recent decades, a warming Arctic climate has led to an acceleration of permafrost thaw in and around the delta (Burn and Kokelj 2009), with tangible consequences for delta inhabitants (e.g. Andrews et al. 2016). Many observe that, as the formerly solid ground is increasingly softening, riverbanks have been eroding at an ever-faster rate. This erosion has jeopardized many camps in the delta, which are often located on accessible river channels. As banks recede, they undercut people's cabins and destroy many places that are not only held dear by their inhabitants, but may also constitute significant Gwich'in or Inuvialuit heritage sites. Furthermore, when rivers erode the land bridges between channels and lakes, the latter, which tend to be higher than the summertime river water levels, drain empty, taking with them the lake fisheries that delta inhabitants might have appreciated or relied upon. With increased erosion also comes higher amounts of sediment in the delta, which may lead to faster growth of sandbanks and the gradual filling in of channels. Many delta inhabitants deplore the increasing sedimentation of the delta: numerous channels that used to constitute important travel corridors are now impassable by boat with outboard engines for most of the year. Trails, which often combine stretches along the water with portages over land, used to be crucial for knowing and using the delta, and are falling out of use in part due to erosion, sedimentation and permafrost melt. The virulent erosion and sedimentation also mean that productive fishing spots, which are often related to a deep channel, an eddy in the currents or the confluence of a smaller creek into a larger river, may shift or disappear altogether.

Intersectional volatility

Peeking through one of these three windows that open out to the volatile dynamics in the Mackenzie Delta – hydrology, identity or economy – does not provide an adequate understanding of its inhabitants' lives. Even looking through all three consecutively is not enough. In fact, no matter how many windows we open up, as long as we consider them separately, we will not get to the heart of volatile delta life. The point is that these and other dynamics do not impinge on people's lives separately, but simultaneously. This means that delta inhabitants cannot rely on a stable and predictable hydrology and economy when negotiating their identities, or navigate economic fluctuations based on the solid ground of a settled identity and a fixed hydrology. The combination of these – and other – dynamics results in a world where volatility is 'intersectional', and people experience instabilities and uncertainties to a more pronounced degree. The term 'intersectionality' was originally introduced to understand how forms of discrimination based on gender and race have even more debilitating effects when they coincide, or intersect, than both kinds of discrimination added together (Crenshaw 1989). This means that black women find themselves facing inequalities that initiatives aimed at reducing gender or racial discriminations individually cannot address.

Applications of intersectional social analysis have developed and produced powerful scholarship in the decades since the inception of the concept, focusing on the canon of race, gender, class, sexuality and nation (Cho, Crenshaw and McCall 2013). Treating different registers of volatility in a similar way as these social categories may be seen as heretical, but I would argue that it can be heuristic, too. Just as the intersectionality approach has demonstrated that the intersection of different axes of discrimination results in inequalities more severe than their simple addition, understanding multiple volatilities as intersectional can focus attention on the extremely fluctuating and unstable lives of people whose world is not only undergoing 'climate change' or 'economic restructuring', but is subject to a number of uncertain dynamics simultaneously. This is not to argue that these dynamics have the same discriminatory effects as do the intersection of gender and race inequalities, for instance. The point is, rather, that intersectional volatilities produce a world that is more uncertain and unstable than the sum of the different volatilities would generate, and that we cannot arrive at an understanding of this world by analysing the different volatilities separately. As I noted above, this does not mean that we first have to separate the world into different elements and then try to fit them together again – even though I have structured this chapter in this vein. Rather, in an academic and policy world where disciplinary

and departmental divisions of labour have already divided up life into separate realms, I argue for considering them together instead of multiplying the distinctions.

Therefore, the old anthropological principle of holism (cf. Otto and Bubandt 2010) may once again be useful for approaching life in a volatile world. While holism fell out of use in anthropology when the assumption that cultures or societies form integrated and bounded wholes was thoroughly discredited, it remained, mostly implicitly, at the core of anthropological analysis. Here, it functioned as a general understanding that social and cultural life must be understood in the context of a wider range of political, economic, religious, aesthetic and other relations than more specialized studies of any of these fields by themselves would perceive. This wider – or different – contextualization of studied phenomena was often considered the hallmark of anthropology. Granted, context, too, is contextual (e.g. Dilley 2002), and what we take as a phenomenon's context configures what this phenomenon is. Nevertheless, tracing the relations of a studied phenomenon beyond its immediate occurrence and across otherwise separate fields of inquiry – like economy and religion – has been, and continues to be, axiomatic in anthropology.

Recently, some anthropologists have begun discussing the question of holism more explicitly again. Bubandt and Otto, for example, who 'take holism to mean that a phenomenon has meaning, function, and relevance only within a larger context, field of relations, or "world"' (2010: 1), have suggested stripping the concept of its totalizing overtones by proposing 'that anthropology can be holistic without being totalizing, that there can be holisms without wholes' (ibid.: 10). Writing of holisms in the plural reflects the insights that holistic approaches necessarily remain partial and situated in the always-specific research endeavour and ethnographic field and that, like 'context', the larger whole must not be taken for granted or treated as a self-evident unit. What is included and excluded in a holistic analysis therefore depends on the questions asked as much as on the empirical situation. Parkin and Ulijaszek (2007), for instance, discuss holism as a possible integration of social anthropology with insights from biology and material culture studies. The holism proposed in this chapter also does not limit itself to classic categories of social and cultural anthropological analysis, but notably includes hydrological dynamics alongside economic and identity processes.

This use of holism should not be read as an attempt to homogenize the three volatile dynamics sketched above. Economy, identity and hydrology may be arbitrary ways of dividing up reality, but their rhythmicity is produced through specific correspondences between people's projects and other dynamics, including health, governance and the climate, which

are not the same in these three realms. Therefore, intersectional volatility is made up of various intersecting rhythms, rather than one totalizing movement. Furthermore, the term volatility itself subsumes a large variety of dynamics at multiple scales (see the introduction to this volume), from global processes like climate change to more specific Canadian legacies like the residential schools and regional issues like unemployment and infrastructure. The point is that a holistic approach aims to trace how these different dynamics unfold in relation to each other and intersect in people's lives.

Let me sketch a brief example to illustrate how a holistic perspective and an approach to volatilities as intersectional may help us to understand life in the Mackenzie Delta. Born in the early 1960s, the person I shall call Ernest had an Inuvialuk mother and a Gwich'in father. He knows some words in both languages, but speaks English at home and at work. Because nominal, state-sanctioned ethnic affiliation used to be passed on patrilineally, he grew up officially as a Gwich'in. His wife is also of mixed descent, but because her father was Inuvialuk and her mother Gwich'in, she grew up officially as an Inuvialuk. Ernest left school as a teenager, before finishing grade nine, because of a conflict that involved some other students and a teacher. He proudly reports that he became a hunter and trapper during a time when fur prices were still rather good. These were the final years when delta trappers were still trading lynx, mink, wolf and other furs through private enterprises including the Hudson's Bay Company. When the global fur market went through a crisis in the 1980s, the Canadian government took over buying for guaranteed minimum prices, as even the Hudson's Bay Company gave up the fur trade.

After a few years trapping, Ernest began to work as a labourer in the oil-extraction industry around Norman Wells, the regional centre of the hydrocarbon industry, a few hundred kilometres up the Mackenzie River. Dispatched in shifts of two or three weeks on different oil-drilling sites, with ten-day breaks at home in the delta, Ernest earned good wages and learned welding and how to operate large machines like cranes. In the 1990s, he used some of the money and skills he had gathered in the oil industry to establish himself as a contractor and transport operator in Aklavik, the delta settlement where he grew up. Over the years, he has managed a number of successful companies in his home settlement.

Ernest has held various functions in the local Gwich'in band administration and is an enthusiastic participant in the Aklavik drum dancing association, which celebrates Inuvialuit tradition. In the 2000s, he took over his uncle's former camp on a high bank on a major channel in the delta, on land belonging to the Gwich'in Settlement Region. The late uncle's former cabin is still standing, surrounded by a thick layer of mud that the succes-

sive river floods have deposited. Ernest first built a small house next to the cabin, but soon extended it with a two-storey building as the camp gained popularity with visitors from the delta and beyond. He reports that he mostly uses the camp in winter, when his family celebrates Christmas and New Year there and they entertain numerous guests, as well as in autumn, when he fishes for arctic char. This fish migrates through the western edge of the delta on its way to its upstream spawning grounds and constitutes, among many delta inhabitants, a highly appreciated catch for local consumption and sharing.

While fishing in the river channel below the camp, Ernest has noticed how the sandbanks have expanded so that he has to set his nets ever further into the river to reach the deeper channel where char move. During summer, his family does not visit the delta camp, but goes to another cabin that they have in a popular fishing and whaling spot on the coast, which is part of the Inuvialuit Settlement Region. Ever since he has visited this spot, the gravel spit on which their cabin is located – alongside those of many other Aklavik families – has been extending further into the sea. The summer of 2017 was so windy on the coast that the people camped there had only very limited opportunity to fish, but the summer of 2018 witnessed an unprecedented turn of events when a group of beluga whales swam far into the delta, making them easy to hunt and haul to the settlement. In short, Ernest's life is marked by what appear to be stark economic, cultural and hydrological fluctuations, which do not seem to fit into any category or trajectory, and which happen simultaneously, or intersectionally. Ernest is one of the many people in the delta who are managing well in the face of these fluctuations, although others are less fortunate.

Conclusion

How to restore holism into the study of delta life, if economic, cultural and hydrologic dynamics are being studied in such incommensurable terms? In holistically studying 'multidimensional change', as Casciarri and colleagues (2015) have called it, one key challenge is to identify a core trope which articulates well with, and throws light on, the otherwise different dynamics. They suggest focusing on 'the forms and effects of (global) capitalist penetration' (ibid.: 4) as a framework for grasping such multidimensional change. While these politico-economic processes certainly play a central part in the volatilities of the Mackenzie Delta too, I am hesitant to grant them such a dominant role, since capitalist penetration and exploitation may not be the main factors behind processes of hydrology or identity.

Instead, having traced some of the historic and seasonal transformations in the delta's economy, identity and hydrology, and suggested that they matter as intersectional dynamics for people's lives, I would like to propose that their fundamentally *temporal* characteristics are key to grappling with a holistic approach. Delta hydrology is about highly volatile flows of different intensities at different times, Mackenzie Delta inhabitants' identities have gone through, and continue to go through, extraordinarily volatile transformations, and the area's economy is characterized by continual fluctuations and boom-and-bust industries. What unites these dynamics is therefore their (ar)rhythmic character; they all encompass movements of acceleration and deceleration, of intensifying and decreasing energies. These movements have very different durations and different implications for different people's lives, but as rhythms (Krause 2017a, 2017b) they interact with each other and transform each other, and in the process continually condition the ever-changing delta life.

It is also as rhythms that they matter holistically in the sense outlined above. There is never just one rhythm, say that of economic cycles or that of temperature, in which delta life is steeped and with which people align. Delta inhabitants always participate in a multitude of different and often conflicting rhythms. Rhythmicity alone does not make up delta life, but the dynamics of different fields matter as they come together, clashing with or amplifying each other. Careful readers will have noticed that even the above sections artificially separated into economy, hydrology and identity were 'leaky' in the sense that portraying identity transformations is impossible without alluding also to the economy, which is a field that makes sense only in relation to the region's hydrology, and so forth.

I would propose that in order to trace how Gwich'in, Inuvialuit and other delta inhabitants negotiate the volatilities – economic, cultural, hydrologic and others – of the Mackenzie Delta to make ends meet and live decent lives, we need to begin by acknowledging the rhythmicity of these lives, and attempt to unravel them as sets of interlocking, conflicting and mutually entraining rhythms. On the one hand, a rhythmic image of time and transformation is deeply rooted in Gwich'in and Inuvialuit understandings of animal population dynamics, harvesting activities and spatial movement, for instance to different camps throughout the year. The rhythmic idiom may provide, on the other hand, a way to transcend the understanding that things are stable unless they change, alluded to at the beginning of this chapter. Rhythms can accelerate or slow down, they can manifest more weakly or strongly, and they can amplify or inhibit each other, with changing resonances or dissonances, but they are always continuity and change in one (cf. Lefebvre 2004). Most of all, rhythms do not just happen to people, but are created through the correspondence of different human projects and skills with wider ecological, political and

economic transformations (Harris 1998). This also means that the volatilities manifesting in the Mackenzie Delta are also always shaped and appropriated by delta inhabitants, who are not simply victims of these dynamics. Beaufort Sea whaling would have failed without Indigenous support; the collapse of the fur market was so significant in the delta because so many delta inhabitants had embraced it so wholeheartedly; and the successful negotiation of land claims went hand in hand with an appropriation of the colonial state's political structures.

In a delta where volatilities abound, and where transformation and uncertainty are the norm, the question arises as to how people manage, even thrive, under such circumstances. A recurrent theme in the literature is that of flexibility and improvisation, among both Inuit (e.g. Bodenhorn 2000; Briggs 1991; Willmott 1960) and Dene (e.g. Brody 1988; Loovers 2019; Slobodin 1962). Flexibility and improvisation may be key not only for making ends meet in a volatile world, but also for transforming the outlook that perceives volatility as disastrous, surprise as unwelcome and uncertainty as something to be overcome by processing increased amounts of data. Perhaps flexibility and improvisation constitute the social and cultural aspects of a world that is equally 'flexible' and 'improvisational', if these terms may count as glosses for 'volatile' and 'uncertain'. For example, people's flexibility repeatedly disrupted my fieldwork plans in the Mackenzie Delta (Krause 2018) until I realized that it was just another facet of life in a world constituted by, and geared towards, volatility.

Nuttall (2009) has indicated that Inuit may not experience 'change' – like climate change – in the same way as European observers would, since they do not assume the world to be stable or certain in the first place. Rather, when confronted with the volatilities that outsiders would see as extreme and daunting, Inuit may understand them as part of a world that is perpetually in the process of becoming. In Nuttall's words:

> In the [Western Greenlandic] communities in which I have worked, acquiring personhood is a matter, in part, of growing up to be always prepared for change, for seeing the world as one of constant surprise and the environment as one of motion. . . . An inability to respond appropriately to this world of constant flux has much more to do with institutional, political and social changes that provide no room to move freely in a changing world. . . . (Nuttall 2009: 298)

In a world in motion, where change is not solely a feature of a period between stable equilibria, the means of people's flexibility also transforms as the opportunities to develop or forget particular skills wax and wane with different economic, cultural and meteorological climates (Harris 2005). Skills that people currently find of little use may be lost, while they develop new skills according to new challenges; volatile rhythms are not reversible. Whereas particular skills disappear, however, the delta inhabitants' open-

ness to embracing ever-new opportunities, and to incorporate them in a flexible livelihood, remains (Krause, under review). This is not unique to the Mackenzie Delta, of course. Caterina Scaramelli, in this volume, demonstrates how farmers in the Turkish Kızılırmak Delta continually improvise in order to carry on their livelihoods and home-making in a transforming world. She also emphasizes that this improvisation follows considerations of pride and morality that shape delta life in always specific trajectories.

Intersecting volatilities are not only a threat – they can also be a stream of opportunities that resourceful and open people can benefit from, given a conducive political context, as Nuttall's quotation above suggests. Thereby, volatility can mean many different things to differently situated people. In the Mackenzie Delta, it certainly means something very different from the interpretation of volatile deltas as 'heterodystopias' of a disintegrating world (cf. Cons 2018). People's experiences and the stories they pass on from the past tell of many hardships, but also of many good times. Volatility here is merely the acknowledgement that delta life is suspended in intersecting, uncertain and often rapid transformations.

The volatilities of life in the Mackenzie Delta are definitely multidimensional, related to (post)colonial dynamics as much as to the world market and global climate change. Having outlined three of these dynamics, I have argued that they must be studied holistically in order to understand not only their intersectionality but also how they participate in shaping an overall volatile world, which continues to provide challenges and opportunities for Mackenzie Delta inhabitants.

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Chapter 5

'This Tide Will Be a Good Tide'

On Movement, Anticipative Waiting and Tricking on the Islands of the Parnaíba Delta, Brazil

Nora Horisberger

Introduction

Shrimp tide (I): Expecting a 'good' tide

Seu Miguel bends over to starboard to comb the river water with his splayed fingers. 'The water is still too clean', he says, while the wooden canoe powered by a *rabeta*, a 5.5-horsepower outboard engine, glides smoothly through the water. We had left the port of Água Doce – a small town on the *maranhense* mainland – a couple of minutes before. Driving against the rising tide, it will still take us a good hour to reach Barrinha Island and the village of the same name. The canoe is heavily loaded. Ice-filled Styrofoam boxes and sixty-kilogram bags filled with *farinha* (manioc flour) and rice pile up between the canoe's back thwarts. The gunwale is barely a hand-width above the water surface, but Seu Zé confidently steers the canoe along through the mangrove forests. He knows from experience where snags are hiding just below the surface and where, despite the rising tide, sandbanks are dangerously high. Branches protruding from the river bottom could damage the engine if not detected in time, and running the canoe onto a sandbank would have disastrous consequences.

'This tide is going to be a good tide', Seu Miguel, who had visited town to look for fishermen to complete his shrimp-fishing team, had told me with joyful anticipation some hours earlier, while we were waiting in Água Doce's small port for Seu Zé's provisions to arrive. Both men are

Figure 5.1. A *marisqueira* (shellfish collector) makes her way through the mud to gather sururú molluscs in the Parnaíba Delta, March 2018. Photo by Nora Horisberger.

expecting a 'good tide' (*maré boa*) to start in the coming days. Good tides can occur during the spring tides at new or full moon, when the rise and fall of tidal levels is the greatest. During such tides, Barrinha similarly seems to swell, for the number of people in the village sometimes almost doubles, as shrimp fishers from villages all along the mainland travel to the island. From tomorrow onwards, they will hang up their hammocks between the wooden bars of the fishermen's huts at the edge of the beach or in one of the permanent inhabitants' backyards, setting up a temporary home for a period of seven days. The bags of *farinha* and rice, together with sugar and salt, as well as gasoline, diesel, tobacco and sugarcane rum (*cachaça*), are part of the basic supplies Seu Zé will provide to 'his' fishers during the shrimp-fishing period. In exchange, the fishers will sell all the shrimps they have caught exclusively to Seu Zé, their 'boss'. Nowadays the only shrimp buyer in Barrinha, he will then ensure the commercialization of the shrimps – either preserved with ice in Styrofoam boxes or sun-dried – in various cities of Maranhão and the neighbouring State of Piauí. If the tide, despite expectations, is a 'bad tide' (*maré ruim*), at least the fishers' basic needs are covered and they can pay back the resulting debt in the form of shrimps during the next tide. If, on the other hand, the tide is good but Seu Zé faces difficulties in reselling all the shrimps right away or if his buyers in the city delay the payments, making it impossible for Seu Zé to pay the fishers in cash, the latter will similarly carry over the resulting credit to the next tide.

We have now made more than half of the journey to Barrinha. Night begins to fall. Startled by the engine's noise, a flock of scarlet ibis take flight. Red crabs stare at us from the muddy banks of the mangrove thickets, only to disappear quickly into their holes some seconds later. In front of us, a mullet (*tainha*) jumps out of the water. The men's eyes follow its movement and attentively scan the water's surface. Frightened shrimps pop up from the muddy river bottom and with a powerful movement of their tail they propel themselves over the water surface; blob, blob, and off they go. The movement of a rising school of fish makes the water stir. The men point with excited anticipation, but I am unable to detect all of the quivering and shivering they indicate – isn't it just the wind churning the water's surface? During my fieldwork, I learned that attentiveness to, and observation of, various kinds of movements in and on the water – including that of fish, shrimps, birds, water currents, changes in water texture and colour and also other fishers' movements and their catches – is valuable in order to be able to anticipate the beginning of the 'good' tide and to locate good fishing spots for the coming days.

On the sandy islands of the Parnaíba Delta, movement is indeed probably the only form of permanence. In this chapter, I describe both the interplay of various movements and the delta inhabitants' conception of these movements, as well as their relation to, and implication for, everyday delta life and relations. In the first section, I trace some of the interweaving seasonal and tidal movements on and around the deltaic islands, and how their repetitive aspects shape anticipation and preparation. I argue that amidst the manifold movements, people create a sense of order and constancy through their practices of anticipating, preparing and adjusting. I then explore how the continuous movements, which require observation, attentiveness and flexibility to adjust, relate to the perception of time, and to people's preference for living 'in the moment' – that is, from one tide to the next, rather than making and following plans and fixed schedules. I then focus in more detail on the particular kinds of anticipation and waiting that this ever-becoming deltaic world entails. I argue that the openness and thus uncertainty of the outcome of most movements must not be confounded with primarily negative feelings of doubt, but that it also opens up possibilities and spaces for action and hope. In the final section, I explore situations where things do not turn out as anticipated or as hoped for. In spite of their skills, knowledge, continuous observation, attentiveness and anticipation, getting it wrong and failing to adjust to movements, too, is part of everyday life on the deltaic islands. Delta inhabitants often explain these situations in terms of *enganar*, which means being deceived but also being tricked or cheated, and involves human as well as non-human beings. More-than-human movement, anticipation and tricking are significant dimensions of people's lives beyond the Parnaíba Delta, and indeed beyond any river delta. But according to Seu Miguel, Seu Zé and other *barrinhenses*, it is especially in the delta that these dimensions matter. In fact, this is how these people distinguish life on the island from life on the mainland, where movement is less pronounced and anticipation is less focused.

A fluctuating village, fluctuating waters and shifting activities

In Northeast Brazil, between the States of Piauí and Maranhão, a labyrinth of fresh and salt waterways with more than seventy islands of different sizes and shapes forms an area commonly known as the Parnaíba Delta. Barrinha, currently consisting of around twenty houses – most made of mud and covered with palm leaves – and several wooden fishermen's huts, is situated in the larger, *maranhense* part of the delta. Since 1996, the

entire deltaic area has held the status of an Environmental Protection Area (APA),[1] although it still lacks an official management plan. In addition, since 2000, some islands eastwards of Barrinha are included in a marine extractive reserve (*resex marinha*)[2] with stricter regulations. Barrinha has a rather conflictual relationship with the administration (ICMBio)[3] of these protective areas, partly because the latter has recently declared illegal some of the fishing techniques inhabitants rely on. After conflicts almost escalated in 2007, villagers succeeded – at least for a while – in keeping the protected-area managers away from the island. Additional conflicts, this time over land titles, further led the inhabitants to set up a residents' association, the APAMEX[4] (Association of Artisanal Fishermen and Shellfish Extractivists).[5] Under the current Brazilian legislation, the distribution of land rights is indeed based on identity criteria. Certain identity categories such as Indigenous, *quilombola*[6] and traditional peoples were institutionalized during the last two decades of the twentieth century, and members of those categories subsequently received territorial rights and specific health and educational programmes (Boyer 2015). Outsiders commonly name *barrinhenses* and other delta inhabitants as *ribeirinhos* – river dwellers of mixed Indigenous, African and European descent. Whereas the inhabitants of Barrinha are certainly of mixed origin, I prefer to call them *barrinhenses*, which seems to me a more neutral term, especially because the few times *barrinhenses* employed the term *ribeirinho*, they did so to emphasize the negative habits of other villagers (e.g. 'this *ribeirinho* is so lazy'). The deltaic islands, Oliveira (2017) points out, have historically been – and for the most part still are – portrayed in terms of emptiness and social backwardness. While access to some of the islands improved from the 1970s onwards, the Parnaíban urban elite in particular maintained and steadily reinforced a clear separation between themselves – the urban civilized – on the one hand, and the poor rural islanders on the other. This went hand in hand with their valorization of the islands' natural features. The contrast proved to be beneficial for national tourism[7] as tourists were promised that they would visit rather 'exotic' realities. These ideas of marginality persist, and Adams and colleagues' (2009) observation that *ribeirinhos* are generally characterized by a common socio-political invisibility at the national scale is thus pertinent for the deltaic context.

In this way, officially assuming an identity linked to traditional activities (artisanal fishing, gathering) enabled *barrinhenses* to legalize and guarantee their continued livelihoods in the protected area. Relabelled as a 'traditional population', they were able to gain at least some visibility in territorial conflicts, as this designation distinguished them from the heterogeneous and marginalized *ribeirinho* group. Nevertheless, Barrinha's inhabitants rarely introduce themselves solely as fishermen and even less

as shellfish gatherers or members of the 'traditional population'. Such singular categories would not do justice to the *barrinhenses*' multiple past and present activities. Although fishing – especially for shrimps – is indeed of importance, and during 'good tides' constitutes the main source of income on the island, most people nevertheless equally rely on a range of complementary livelihood strategies. These include chicken and duck breeding, cultivation of home gardens or small fields (maize, beans, watermelons, fruits), harvesting of cashew nuts and forest fruits, temporary jobs for neighbours (construction, cleaning), exchanging dried fish with other villages, social assistance (*bolsa familia*) and pensions. Furthermore, trajectories of intensive migration are very common in Barrinha. Of the adult inhabitants currently living in the village, not one was born on the island. The majority come from neighbouring islands or villages or towns of the *maranhense* or *piauiense* mainland. Also, before coming to Barrinha, most inhabitants lived in various other places (e.g. São Paulo, Pará, Goiânia, Rio de Janeiro), where they worked on sugarcane plantations, in the construction of hydropower dams, in aluminium companies, in the navy, as carpenters or housemaids and even in golf clubs.

Movement is not only a crucial element in people's biographies – for example in the form of leaving, coming back and leaving again – but also very much part of everyday island life. Indeed, many people's movements interweave with and adjust to seasonal transformations – water fluctuations, migrating fish, ripening fruits – as well as monthly and daily changes in tidal flows. Delta inhabitants commonly name the period of abundant rain (January to July) 'winter' and the subsequent dry period, when rainfall completely ceases and strong winds prevail, 'summer'. In winter, people dedicate more time to their fields (*roças*) of various sizes, located either in their home gardens or in parts of the – previously cleared and burned – nearby *caatinga* (tropical dry forest, a type of savannah). Thus, in this period, freshly harvested green beans accompany rice and fish, *maxixe* (maroon cucumber) and *quiabo* (okra) give the stews a special taste and roasted maize is snacked upon in the evenings. After the first weeks of intense rainfall, lower-lying areas turn into swamps and temporary lakes start to form all over the island. Although the rains soak extensive areas, the sandy ground prevents serious flooding, as the water continuously seeps into the sandy substrate and flows away beneath it towards rivers and the sea. As soon as the transitory lakes are deep enough to shelter a variety of fish, people turn to lake-fishing activities. While fishing on the river is mainly a men's activity, often the whole family participates in lake fishing. Villagers perceive these moments of children playing in the water, of bathing together and laying fishing lines, as joyful and pleasurable.

Generally, whenever the typically short but heavy rainfalls start, a vibrant bustle takes over the village as people open covered water tanks and (re)position all kinds of receptacles under improvised gutters to collect as much fresh rainwater as possible. After the first months of rain, the *guabiraba* – a small black fruit – ripens in the *caatinga*. The '*guabiraba*'s time', as people call this period, is particularly fleeting, so those who want to snack on these appreciated fruits usually do not wait long to undertake a trip to the nearby forests. Shortly afterwards, huge swarms of sardines migrate through the deltaic waterways. For many shrimp fishers, this 'time of the sardines' is rather annoying; sardines have little market value, but require a lot of time to be untangled from nets, and through their frantic movements cause many of the valuable shrimps to drop out of the net back into the water.

Towards the end of winter, rain becomes sparser and eventually completely ceases. When strong winds start blowing and the landscape gets increasingly dry, villagers say that summer is about to begin. Lakes and swampy areas dry up, and previously fervently sprouting herbaceous plants, called *matinho* (small forest), shrivel and die. Women now spend several hours a day pulling out dried weeds, raking, sweeping and burning withered *matinho*, which they consider an ugly, unpleasant presence in the surroundings of their houses. Only when the garden's sandy soil resembles a white sheet stretching between selected plants (e.g. coconut palms, cashew trees, papayas, banana palms, acerola, ornamental succulents) do people feel satisfaction and a sense of beauty when contemplating their gardens. As the rains become sparser, water is now – thanks to the infrastructure funded by an evangelic pastor a few years ago – pumped up from the groundwater table into a five-thousand-litre water tank and distributed through a network of plastic tubes to the surroundings of most houses. Rather than keenly watching for dark rain-filled clouds, people are now more attentive to the rattling noise of the generator, switched on every two to three days and prompting a bustle of water bucket activity. With the appearance of the first reddish flowers on the cashew trees, a restless excitement spreads through the village as preparations for the appreciated 'time of cashews' begin. People start to attend to their trees – often planted in more distant parts of their home gardens – and clear the ground underneath. This facilitates the later gathering of fruits and nuts but is also said to please the trees, which reward the 'caring' (*cuidar*) by producing nice big fruits. When the first yellowish-red fruits then begin to appear between the dense green leaves, women and children in particular spend several hours a day collecting fruits and nuts. While acidic fruits now give the fish stew the desired sour taste and the juice of the sweet fruits offers a pleasant refreshment, women sell the nuts to traders, some

of whom live in the same village. As an important temporary source of income, cashew nuts are indeed often called 'the women's salary'.

In addition to these seasonal transformations, people stay attentive to the lunar cycle. The power of the moon, *barrinhenses* say, is immense. Besides moving masses of tidal waters, it influences activities as diverse as the cutting of wood, the hatching of chickens and ducks, and other animal behaviour, and it regularly 'burns' numerous cashew fruits. High and low tides arrive twice a day and spring tides twice a month during either new or full moon. High tides completely flood mangroves, making the gathering of crabs and seashells impossible. During low tides, an extensive field of mud stretches between Barrinha village and the river, and many waterways, especially creeks, become too shallow for canoeing. Fishers in particular observe daily the time the moon rises and its position in the sky to anticipate the strength of a tidal flow, decide whether it is a 'good' or 'bad' tide for a certain type of fishing and calculate the coming and going of high and low tides.

In Barrinha, many of these seasonal and tidal transformations are referred to and explained by the phrase 'everything has its time' (*tudo tem seu tempo*). What people call 'times' are annually or monthly recurrent events such as the migration of fish or the ripening and harvesting of fruits. Their coming and going varies from year to year but together they still form a sequence of happenings. Some, such as the 'time of cashews', require preparation; others, such as the 'time of the *guabiraba*', are so short that they are easily missed if one is not attentive; and still others, like the 'time of the sardines', are rather disturbing and unpleasant. Following Ingold's (1993) perspective of rhythms and Harris's (1998) work on seasonality and sociality in an Amazonian floodplain, it is pertinent to say that attending to 'times' requires experience and continuous observation of other-than-human movements, in order to adjust one's own movements to these changes. Harris (1998) indeed sees the rhythmicity of activities making up social life as constitutive of seasonality and not simply expressive of it. Seasonality, he argues, is an 'embodied periodicity, produced in the attendance of people to their environment' (1998: 66).

In this way, 'times' should not be conceived of as external changes happening somewhere 'out there', but rather as rhythmically coming into being through intimate relations between humans and non-humans (see also Krause 2013; Whitehouse 2017). For instance, many fruits ripen in the forest, but only through relations of gathering or harvesting do their ripenings become conceived of as 'times'. Many kinds of fish are present during the whole year, but at certain moments – during their 'times' – people fish for them more frequently because they are particularly fat and tasty or because the fishing technique only allows them to be caught

during these moments. Amidst the various interweaving seasonal and tidal movements, the repetitive aspects of 'times', which allow – at least to some extent – for anticipation and preparation, create a sense of ordering of movement (cf. Simon, this volume). Therefore, if 'times' are movements that emerge through people's attentiveness and adjustments to other-than-human temporalities, it is through their practices that people create a sense of constancy in an otherwise fluctuating environment.

However, in spite of this relative ordering, 'times' are far from fixed events or mechanical repetitions. Not only the moment of a 'time's' arrival, but also whether it is actually going to happen at all and in what way, are impossible to predict with certainty. 'Times' indeed need to be understood in the context of other kinds of movements, especially those relating to what is locally seen as nature's 'making and unmaking', considered a particularity of island life, as I outline in the next section. The detailed observations of non-human movement described so far must not be misread as an argument for environmental determinism. Shrimp, the moon and cashew trees do not determine anything for the people of Barrinha, but rather the inhabitants' observational skills, ability to anticipate and readiness to seize opportunities are what make 'times' in relation to these movements. There can be no 'shrimp tide' without the fishers' anticipation, preparations and actual fishing, even if shrimp are plentiful. For instance, one week in June 2018, when the Brazilian national team was playing at the World Cup, many fishers decided not to travel to Barrinha even though considerable numbers of shrimps were appearing at the island's beaches. Thus, the 'times' and other rhythmic phenomena come about in relation not only to tides, precipitation and growing cycles, but also to such 'social' dynamics as *bolsa familia* payments, festivities, football games and price fluctuations.

Attentiveness and anticipation on the ever-becoming islands

The inhabitants of the Parnaíba Delta see themselves as inhabitants of islands, rather than inhabitants of a delta (cf. Richardson, this volume). If they use the term *delta*, it is usually in reference to tourism or nature conservation, fields of activity within which actors in the 1990s started to introduce and actively promote the denomination Parnaíba Delta. At times, delta inhabitants refer to the sandy islands they live on simply as *ilha* (islands), but sometimes also call them *croa*. *Croa* is an ambiguous term that refers to various kinds of sandy formations emerging in the tidal waters, some of which completely disappear during high tides, while others, such as the inhabited islands, are much more permanent, but still partially

flooded and continually reshaped by tides, rains and moving sand dunes. When using the term *croa*, inhabitants usually emphasize the dynamic, temporary, transformative character of islands, as well as the qualities of the porous sandy ground, through which water not only flows downwards but also wells up from below. Older inhabitants narrate that the mainland, or *terra firme*, was directly created by God several hundred years ago and has remained largely unchanged since. Not so the sandy islands. This area was once entirely composed of rivers and mangroves until a big sand dune passed over it. The sea spat out sand to the east of the delta and the wind transported it westward; it was the sand dune's movement, people narrate, that created their islands and made the area inhabitable.

Indeed, from the delta inhabitants' perspective, the distinctiveness of their place is that 'nature' (*natureza*) continually 'makes and unmakes everything'. A fisherman illustrates this with the following words:

> Look, this *igarapé* (creek) has previously been bigger. For us it is dying, but not for the sea. At any time, if the sea wants to, it opens it up again. It has nothing to do with laws, not at all. As far as I know the sea made these islands, but it is also going to dissolve them. I do not rely on laws. I rely on nature's power, because nature makes and unmakes everything.

It is important here to point out that the local conception of 'nature' – even if the term, *natureza*, is similar – differs in many ways from the Western concept of nature. Nature, in the delta dwellers' perspective, has its own intentions. People often describe nature as mysterious and inexplicable, emphasizing that it is impossible for people to entirely understand nature and its actions. Nature's power, moreover, is considered to be much stronger than human power and thus nature cannot be controlled or tamed, and humans do better by following nature's doings.

Croa life thus unfolds in continuous material transformation and dissolution: sand pours over waterways, invades mangroves and lakes, trickles into houses and hammocks; rivers 'eat' sandy shores; rains swamp low-lying areas, forming transitory lakes and temporarily 'sweetening' saltwater flows; tides flow deep into mangroves, submerging roots and crabs' homes, and wash over flat lands, leaving ponds and crusts of salt after ebbing away. *Croa* life is never fixed or ultimate; following Haraway (2008), it is fundamentally a 'becoming with', challenging delusions of separation, where entities cease to be bounded and the understanding of human beings themselves is essentially based on entanglements with other beings. If there is a constancy in this volatile world, it is the permanence of movement itself; it is the making and unmaking of nature that is ever-present. Transformation and dissolution, however, are not simply destructive but, as Deleuze (2004) tells us, a source of creativity and of be-

ginning anew. Importantly, the idea of beginning anew, as McLean (2013) points out, is not a beginning from scratch, because there is always something preceding the beginning itself. Therefore, there is no going back to a unique origin. The ever-present making and unmaking in this sense opens up possibilities of becoming, which do not have a direction and thus do not fit any linear chronological time. Islands, McLean (2013) further argues, might have something different to teach us. They are sites of encounters not only of human and a range of other-than-human materialities, but also of different kinds of temporalities, for instance human-centred time and a more elusive, impersonal and non-linear time of becoming and dissolution.

Indeed, on the sandy islands, through the interplay of various movements, time becomes remarkably manifest and palpable. The continuous becoming and people's attentiveness to these movements ties them to the immediate here and now. The present, then, is of much greater importance than the past or future. 'Times', as repetitive human–environment relations, certainly create a sense of ordering of movements and at least a temporary constancy, which allows for particular forms of anticipation and preparation. However, this has to be understood in the broader context of 'nature's' constant 'making and unmaking', which mostly takes people by surprise. Therefore, the only relatively reliable and stable 'thing' is the present time. While the future is unpredictable and open, the past is constantly being wiped out or dissolved, as Lima and Alencar (2001) argue. They relate Brazilian floodplain inhabitants' circular rather than linear collective history and memory of their communities to the fluctuating landscape and people's frequent moving. As the floodplain changes and reforms each year, people's memories are continuously disconnected from fixed references, and because of intensive migration, they do not share the same pasts. Therefore, their interest lies in the present. In the same way that they start anew each year, after each flood, their stories also start anew and thus take on a cyclic rather than a linear chronological form. Such observations are also pertinent for Barrinha. *Barrinhenses* generally prioritize the present over their past trajectories or future projections; many remember having moved to a variety of places before coming or returning to the island, but the dates and sequences of these past events remain hazy and some do not even recall where they were born. In addition, *barrinhenses* are generally decidedly resistant to fixed scheduling. 'Here, there are no commitments' (*aqui não tem compromissos*), they enjoy saying, to praise their way of life and contrast it with life in the mainland cities, full of fixed plans, schedules and obligations. It is also common to live 'by the water' (*por água*), that is, from one shrimp tide to the next, which for instance means that money earned during one tide is rarely saved longer than the beginning of the next tide.

This does not mean, however, that in everyday *croa* life, the past and future are completely absent. Rather, there is a kind of over-layering, a peculiar co-presence of past and future in the present. The future is there in the forward-looking, the anticipation of what might come; the past is there in the form of experiences. What is to come is not necessarily completely new, but neither is it definitive. This experience of time comes close to Lefebvre's (2004) understanding of rhythm as 'repetition with difference' and Deleuze's (2004) 'beginning anew' but not from scratch. Fixed plans, schedules or forecasts would not make sense in this world of open becoming. Flexibility to jump to respond to whatever possibility opens up, or to change plans if an opportunity dissolves, is essential. What prevails is a kind of anticipative waiting imbued with attentiveness. Anticipation and preparation do not replace continuous perceptual alertness, because what is expected remains merely one possibility among others. Indeed, following Nuttall (2010), in a world of constant movement and open becoming, what is important is not anticipation in terms of predictions, forecasts and scenarios, but rather anticipation as learning: 'A way of orientation, exploration and possibility – a way of imagining, framing, and viewing the world . . . a way of finding one's way in and around an environment and in and around one's social and cultural worlds' (2010: 24). In this way, as Nuttall (2010) pointedly illustrates, anticipation may complement and broaden many of the discussions of adaptation. If adaptation revolves around responses, he argues, anticipation is about agency, intentionality and creativity; it is also about imagination, envisioning possibilities and choice, and about being doubtful, uncertain and fearful. In Nuttall's words: 'Anticipation is also about perceiving the world, relating to it, moving around in it, making sense of it, thinking about what to expect from it, and what possibilities can be gained from it' (2010: 25). Focusing on anticipation therefore emphasizes that people not only follow, and adapt and adjust to changes, but that they also enact, form and co-create changes, and their futures. It is in this context that I portray the volatile dynamics of delta life (cf. Krause 2017) as *movements*. This emphasizes not only their materially and spatially grounded temporalities, but also their trajectories, which *barrinhenses* learn to observe and anticipate. As movements, volatilities do not appear as the random and catastrophic transformations that casual observers may perceive in the delta, but as the directed and repeating, but never entirely predictable, way delta life evolves for its inhabitants.

Shrimp tide (II): Waiting for the water to get dirty

Seu Miguel looks up when I approach: 'The water is still too clean', he announces, anticipating my question. It's almost eight o'clock in

the morning when I meet him in the knee-high tidal waters in front of Barrinha. Using the upper part of a sliced plastic bottle, he throws water on his canoe's thwarts, washing off the remnants of yesterday's night fishing. Shortly after our arrival in Barrinha, he had left with his fishing team for a first exploratory trip. These early explorations rarely yield good catches, but are necessary to find out when exactly the actual shrimp tide begins and whether it is a good or bad one. While the observation of the position of the moon allows the arrival of spring tides to be calculated, not every spring tide is equally suitable for shrimp fishing and thus what *barrinhenses* call a 'good tide'.

A good tide's waters are turbid. The turbidity of water results from the interaction of tidal flows with mangroves. Mangroves flourish in areas periodically flooded by salty or brackish tidal waters. Their complex root system, extending above and below the water surface, slows down currents and traps silt and sediments. As assemblages of interacting plants, animals and micro-organisms (Schaeffer-Novelli et al. 2000), mangroves harbour an incredible number of life forms: fish and shrimp find protected nurseries and rich feeding grounds; crabs hide between the roots, burrowing into the mangrove's mud and feed on mangrove leaves; oysters, barnacles and snails, among other organisms, cling to the roots' hard surface; and microbes and fungi consume decaying material. When the strong spring tides that flow deep into the mangroves retreat, they carry with them considerable quantities of suspended organic and inorganic material – mud, sediments, leaf litter, phytoplankton, algae and so on – which turn the river's water into the muddy liquid that Seu Miguel and the other shrimp fishers eagerly await. Only when the water is dirty (*suja*) enough do the shrimps move from the deeper canals towards the 'beaches' (*praias*), the muddy shores in the intertidal zone, amphibious transitions covered during high tide and exposed during low tide. There, the shrimps linger in the *engodo*, a squishy, soft kind of mud, the shrimps' favourite mud, according to the fishermen. It was this soft mud that Seu Miguel had looked for the previous evening, when he left with his team of four men for the exploratory fishing trip. At the beaches, equipped with headlamps, barefoot in hip-high water, he and the other men dragged the *redinha* (lit. 'small net', a trawling net) over the muddy ground. 'When the net touches the shrimps lingering in the mud, they jump up and get caught in the *redinha*'s fine meshes', Seu Miguel explains. Last night, however, they caught only one kilogram of shrimps, and Seu Miguel deduces that the water was still too clean, and the shrimps had not moved to the beaches yet. Seu Miguel and the other shrimp fishers are still waiting for the water to get dirtier.

It is precisely this kind of anticipative waiting, so characteristic of everyday *croa* life, that characterizes the days preceding a shrimp tide. As Janeja and Bandak (2018: 1) argue, waiting is 'a particular engagement in, and with, time', where what is hoped for, eagerly or anxiously anticipated, has not yet arrived. The fishers' waiting for the shrimp tide is neither a 'doing nothing' nor a passive enduring, but rather a waiting full of preparation, perceptual alertness and anticipation. While provisions are made, teams organized and nets mended, the fishers' senses are constantly and intently focused on the water's texture, colour and movement. Again and again they check the water's turbidity, walk along Barrinha's beach to see if the first shrimps 'jump', and consider whether it is worth making an exploratory fishing trip. While passive waiting is characterized by a certain confidence in, or in some cases indifference to, the outcome, active waiting differs in that it keeps the outcome or what is anticipated open and therefore 'entails hope as generative of action' (Marcel 1967: 282 cited in Janeja and Bandak 2018: 3). It is the – often uncertain – interplay between such forms of waiting, the 'in-between' modalities of waiting, that, according to Janeja and Bandak, opens up to what they call the politics and poetics of waiting. Waiting, they argue, is not only to be found in the absence of action but is often an 'uncertain terrain' (2018: 16) full of tensions, where doubt and uncertainty coexist: 'it is a form of becoming emergent in the very oscillations between doubting and hoping but also of suspending both' (2018: 5). The anticipative waiting before shrimp tides is such a form of waiting, full of tensions, of impatient lurking and eager expectations as well as, at times, undecidedness and doubt. Whereas all waiting is, to some degree, anticipative of something, I use this attribute here to emphasize how this is not a passive and empty period for delta inhabitants. On the one hand, anticipation addresses the rhythmicity of these processes, part of which is the suspense in people's waiting for a phenomenon's re-emergence in new form (cf. You 1994). On the other hand, speaking of anticipation signals that this waiting does not entail fixed expectations, but people are clear that things may always turn out differently.

Even if everything points to a 'good' tide, the tension remains until finally the first good catches are brought home. In Seu Miguel's words: 'There are always tides with more and tides with fewer shrimps. Sometimes it is the new moon tide (*maré de escuro*) that is better, sometimes the full moon tide (*maré de lua*). One can never know it for certain in advance. Dirty water is an indication of a good tide but still never completely safe; ultimately, only good catches can confirm a good tide'. Even if one knows the movements and habits of animals and tides, and even if one knows how to anticipate these movements (Nuttall 2010), ultimately the outcome remains open. However, this uncertain outcome is not to be confounded

with overall negative feelings of doubt, uncertainty or even fatalism, but this same uncertainty of what is to come conveys feelings of enthusiasm and hope. Contrary to a closed perspective, which leaves little space for imagination, the uncertain outcomes of this world of constant becoming allow for actively imagining a range of possibilities. It is therefore not a 'waiting *for*', where one is stuck, having little power, but a 'waiting *on*', a waiting full of agency, where people are able to choose when to wait and when to act (Schwartz 1974 cited in Janeja and Bandak 2018: 21, cf. Simon, this volume).

'Enganar': tricking, cheating, deceiving

Shrimp tide (III): Tricking, cheating, deceiving

Two days later. The typical smell of raw fish hangs in the air of the *barracão* – the central hut – in the early morning. It is one of the few traces still hinting at the nightly hustle and bustle. The *barracão* is the nodal point through which all shrimps fished in Barrinha pass before they embark with Seu Zé on his journeys to different buyers all over the region. It is where catches are meticulously weighed and numbers of kilograms noted, where smaller shrimps are separated from bigger ones. From her kitchen just next to the central hut, Dona Joana, Seu Zé's wife, signals for me to come over. 'The first fishers came back around midnight', she tells me as I enter her kitchen. For this tide, she works with some other women as a *catadora* – shrimp picker. Their work starts with the arrival of the first fishers; depending on the catch sizes, it takes them three, four or even five hours to sort the shrimps. 'The waters are good', she continues, while pouring freshly brewed coffee into my cup, 'they caught around a hundred kilograms, with only three teams fishing. That's good for the first night'. She goes on with a detailed account of the amount each team fished. This information will spread in no time throughout the village and perhaps beyond. In the next few days, it will definitely be the favourite subject of conversation. 'Only Seu Adriano's team is not coming this tide', Dona Joana continues after a pause, pointing to one of the empty wooden huts at the beachside. Surprised, I ask why he would miss one of the 'good' tides. Having fished for more than forty years in the waters around Barrinha, Seu Adriano is certainly one of the most experienced fishers, regularly coming for shrimp tides from his village on the *maranhense* mainland, sometimes with up to sixteen men. 'As the last two tides were bad, he thought that this one would have few shrimps

too', Dona Joana responds to my question. 'Here you have it, this time Seu Adriano got it wrong, he was tricked!'

So far, I have pointed to the continuous becoming with no directionality and the resulting anticipative and attentive waiting so characteristic of everyday *croa* life. Seu Adriano's example, however, shows that people do not spend all their time in such a state of perceptual alertness, ready to jump to whatever coming possibility. Sometimes they are annoyed and become tired of the waiting and checking, and instead try to deduce patterns of what is to come. Thus, after having come to Barrinha twice, only to find a bad tide, Seu Adriano was quite sure that the coming tide would be bad too. If something happens repeatedly, people are likely to start to convert their observations into predictions, forgetting that what they experience is only one possibility among others. At other times, in spite of continuous observations and attentiveness, even experienced people interpret things the wrong way or come to the wrong conclusion. It is in these situations that what people call 'tricking' comes in. Tricking (*enganar*) is indeed very common in everyday life and relations on the deltaic islands, and transcends boundaries of human and non-human worlds: fishers trick other fishers by spreading false information; trees trick people by pretending to produce nice, big fruits when actually they provide none; and the sea might trick people by arriving at a different time than expected. The way that tricking is understood locally comes close to 'pretending something but doing it differently'. When someone is tricked, it is usually either because she was not attentive enough or because he relied too much on the observed. Tricking emphasizes the dimension of openness of movements, of becoming with no directionality, and at the same time illustrates that these aspects are not restricted to the non-human environment but deeply permeate all kinds of relationships on the deltaic islands. Tricking might be a reminder that one can never really rely on the anticipated. It might even turn into a sort of game, a playing with each other's observations and attentiveness, continually reintroducing the uncertain and openness into relationships.

A second short example of a line-fishing trip should make things clearer. The incident happened a few weeks after the shrimp tide that tricked Seu Adriano and helped me to better understand the various aspects of tricking, and its role in everyday life. One morning in mid-June, Maurício invited me to go line fishing with his younger brother and their aunt who was visiting. Just before leaving, an older and experienced fisherman came by and indicated a good fishing spot to us. Maurício, in spite of being much younger (twenty-nine years), was respected and considered

a good fisherman in the village, and of course had his preferred fishing spots too, but this time he decided to check out the spots indicated by the older man. It turned out that the older man's spot was not good for line fishing, so we continued on to Maurício's preferred spots, but because of the detour we arrived there quite late, when the tidal flow was already pushing too much. In the end, Maurício was convinced that the older man had intentionally directed us to the wrong spot, that he had tricked us. Shortly after we came back to the village, the old man passed by to ask how much we had caught. I first expected that Maurício would react angrily or accuse him of having tricked us. Contrary to my expectation, Maurício thanked the old man for the indication and greatly exaggerated the amount we had caught. Knowing that later in the evening the old man would visit a couple of other fishers, who were planning to go line fishing the day after, Maurício continued playing the game. Indeed, the next day these other fishers went to the same bad fishing spot that we had been to; the old man had spread the information as anticipated by Maurício, who of course was amused that his trick had worked out.

It is common among fishers in Barrinha to trick each other, for instance by playing on the quick spreading of information or, during fishing, by pretending to be making poor catches in good spots. Usually the aim is to keep other fishers out of preferred fishing spots. As the incident with Maurício shows well, it is part of everyday life to trick and be tricked; rather than getting angry, people usually continue the game and trick someone else in turn. Tricking works best in a context of uncertainties, as a person never knows for sure whether she was tricked or not and whether a trick was intentional. Maurício in this way does not know for sure if the old man really tricked him – was it intentional or a coincidence? He assumes that he was tricked, and the continuation or counter-trick only works because the old man too cannot know if his trick – if it was a trick – worked. Similarly, Maurício is amused that the old man spreads his false information, but the wide range of possibilities makes it impossible for him to know beforehand if his trick is going to work – that is, if these people are going to make bad catches too. Tricking in this sense is similar to stumbling: one only notices that one has stumbled after or during the stumbling; the same goes for tricking – you cannot know beforehand that you are going to be tricked.

Tricking requires not only agency, but also intentionality. In the deltaic world, such characteristics are not limited to human beings. Animals, plants as well as supernatural beings are considered as being endowed with power, agency and intentionality and thus might also trick other beings. Fish are often described as smart or brave, and they sometimes play with fishers. Plants are 'living beings as we are' that, for example, sleep,

and like to be taken care of. Some cashew trees that pretend to make good fruits when actually they provide none are described as 'liars'. Furthermore, people consider all sorts of environments as domains of 'owners' (*donos*), supernatural or enchanted beings, that take care (*cuidar*) of their respective environments and all beings living there. Especially in works on Amazonian *ribeirinhos*, there is an abundance of references to beings with similar characteristics (e.g. Galvão 1976; Tiphagne 2005; Wawzyniak 2012). Wawzyniak (2012), for instance, shows that river dwellers from Pará conceive the world as transformational, populated by a plurality of human and non-human agents who transform under certain circumstances one into the other. *Barrinhenses* frequently told me that 'everything has an owner' (*tudo tem dono*). Their accounts most often relate to the owners of watery environments (rivers, creeks, lakes, sea), who are variously called the 'mother of water' (*mãe d'água*), the 'mermaid' (*sereia*), Yemanjá[8] as well as the 'owner of the sea' (*dono do mar*) or 'owner of fish' (*dono do peixe*). Fishers frequently ask for permission and protection before entering the river or sea, and from time to time offer tobacco or sugarcane rum (*cachaça*) to the owners, most often to the mother of water or the owner of the sea, as far as I witnessed. Fishers also at times explained bad catches as punishment by the owners because they did not respect them. Most often this disrespect comes from the fisher's greediness, and owners show their discontent by giving few fish. Owners are not evil, but they protect their space, they decide whether to give fish or not, they might interfere if people do not treat them with respect and, as Seu Adriano's example illustrates, at times they trick people. In the deltaic world, where intentionality, agency and power are not restricted to the human world, tricking is one way among others of relating to other beings, transcending boundaries between human and non-human – including spirit – worlds.

The word *enganar* translates not only as 'tricking', but also as 'cheating' or 'deceiving'. Depending on the context, tricking, which is a playful rather than harmful interaction, easily slips into negative feelings of being cheated or deliberately deceived. This is the case, on the one hand, when too much alcohol or drugs are involved. For instance, crack, one of the most addictive forms of cocaine, has recently become available on the island and has turned into a serious problem, especially for some of the younger fishermen, who are rapidly drawn into vicious cycles. To get money and satisfy crack cravings, it thus happens that dishonest cheating gets out of hand and eventually leads to mistrust between inhabitants. On the other hand, feelings of deception are mostly apparent in uneven relationships with more powerful outside actors, including local politicians, ICMBio and Fishermen's Colonies.[9] Inhabitants have abundant experience of re-

peatedly unfulfilled promises and unfinished projects, or of outsiders coming for lunch and leaving without paying. Therefore, in these relationships distrust is dominant and *enganar* is no longer considered a reciprocal, playful interaction. Instead, delta inhabitants feel that these actors abuse their power and always intend to deliberately deceive the 'poor' and less powerful people (*eles só querem enganar nós pobres*).

Interestingly, if tricking leads to stumbling, it also brings about continuity. This happens, on the one hand, through systematic continuation of tricking: if people are tricked, they will not wait long to trick someone else. On the other hand, continuity emerges from extending tricking relationships to the most varied spheres. On the sandy islands, not only seasonal and tidal movements, but also all sorts of relationships are characterized by an openness of becoming and therefore require the same attentiveness and flexibility. Tricking constantly reminds people that becoming is not fixed, be it the becoming of environmental fluctuations or of relationships – between humans as much as between humans and non-humans. What is seen, observed or heard is only one possibility among others; what people expect based on their observations might happen, but they might also have been in the process of being tricked.

Shrimp tide (IV): Moving on

Last night was the seventh consecutive night of shrimp fishing. Tonight, if they still have the strength, some of the shrimp fishers living – more or less permanently – on the island will probably return for a last fishing trip. Most of the shrimp fishers from the mainland, however, already left Barrinha in the early morning, returning to their homes and families. The morning air is thus filled with an unfamiliar calm, contrasting remarkably with the bustle of recent days. No more hammocks in the backyards, no queue for water to fill plastic bins, no loud songs resonating through the wooden bars of the fisher huts. With the expectation of dirty waters just over a week ago, Barrinha, one could say, literally swelled with busy preparations, net repairing, team building, with fishers' arrivals, meeting and socializing, with the shrimps arriving, with excitement, eager anticipation and lively chatter. Now, a week later, as the dirty waters become clearer and shrimps start moving on, followed by fishers and other villagers, seizing the quiet days to visit or get things sorted in town, Barrinha shrinks again, calms down and takes a moment to rest, only to swell again with the next shrimp tide. It is as if the village breathes – inhales and exhales – with the rhythm of shrimp tides.

Conclusion

In this chapter, I have argued that if anything is constant on the deltaic islands, it is movement itself. For everyday life, the ever-present becoming requires observation and attentiveness as well as flexibility to jump to take advantage of opening possibilities. If observation of various movements allows anticipation and preparation for upcoming events, these are never really sure to happen; they constitute only one possibility among others. This leads to a kind of waiting that is both anticipative and attentive. People do wait for something to come, but whether it is going to arrive, and if so when exactly, remains open. I have further elucidated, through the example of tricking, that these kinds of open movements permeate all relationships between people as well as between humans and non-humans. Tricking emphasizes the fact that not only do environmental fluctuations follow a becoming that is not definitive, but all relationships are based on similar dynamics, and therefore people need to stay attentive, never knowing whether a trick is being played.

I have described everyday life in Barrinha as unfolding in the rhythms of shrimp tides, which confers to this place a particular dynamic, a sort of 'breathing' or 'pulse'. However, this pulse should not be understood as fixed and eternal, happening always in the same ways. Rather, shrimp tides can be thought of as what Tsing (2015: 24) refers to as 'polyphonic assemblages' – that is, the gathering of temporal rhythms of divergent lifeways – fishermen, shrimps, tides, mangroves, shrimp buyers and so on. These lifeways, be they human or non-human, as Tsing (2015) points out, shift historically, and assemblages coalesce, change and dissolve. Fishermen told me, for instance, that it is getting more and more difficult to catch shrimps, both because of big shrimp-trawling ships, which drag their huge nets over the seabed in front of the coast, depleting the stocks, and also because of a change in their own fishing techniques. The nets they use nowadays are much bigger, with finer meshes, catching smaller shrimps without allowing them to grow up and reproduce. Market prices and the availability of shrimp buyers also have a crucial influence. While previously several shrimp buyers were based in Barrinha, nowadays only Seu Zé is left. During my stay, it happened on one occasion that Seu Zé was not able to resell the shrimps because they were too small, and therefore he had to tell 'his' fishers to stop fishing. Finally, stricter environmental regulations also affect shrimp tides. The *redinha* net is already forbidden in the area of the extractive reserve in the delta, and the protected area administration currently tolerates it in Barrinha only because of Seu Zé's successful negotiations. In this way, the assemblages through which shrimp tides

come into being are only a temporal coming together, responding always also to worlds outside the deltaic area, to a larger economic and political context (cf. Scaramelli, this volume).

On the ever-becoming islands of the Parnaíba Delta, lifeworlds can indeed be seen as characterized by movement, or, as Krause (this volume) puts it, by volatility rather than stability. Having explored some of the local concepts, it becomes clear that delta inhabitants perceive the continuous intersecting movements as constitutive of the deltaic world, and thus as normal rather than exceptional or threatening. At the same time, people do not passively await the arrival or the effects of these movements, but actively participate in them. Their practices, their active engagement with movements, allow them – at times – to stay with the flow, to anticipate and prepare for upcoming changes, or to bring order in volatile movements, and also to playfully navigate uncertainties.

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Notes

1. Área de Proteção Ambiental.
2. From the 1980s onwards, rubber-tappers, supported by diverse movements, demanded extractive settlements, that is, areas for the exploitation of forest products where they could live and work without fearing expulsion and de-

forestation (Chartier and Nasuti 2009). The murder of the emblematic figure of Chico Mendes accelerated the process of institutionalization of this demand, and in the early 1990s the first so-called 'extractive reserve' ('resex') was created as one of the first models of 'sustainable development'. The Brazilian government recognized the 'resex' officially as an instrument of territorial policy and extended it from rubber-tappers to all sorts of 'extractivists'. In this way, Brazil nut collectors, *babassu* coconut breakers, artisanal fishermen and mollusc pickers, among others (Chartier and Nasuti 2009; Barreto Filho 2006), now referred to as 'traditional peoples', were granted long-term usufruct rights for collectively and sustainably managing natural resources (Pace 2004).

3. The Chico Mendes Institute for Biodiversity Conservation, bound to the Ministry of Environment, was founded in 2007 and is responsible for implementing and managing Brazil's protected areas.
4. Associação de Pescadores Artesanais e Marisqueiras Extrativistas.
5. 'Extractivist' (*extrativista*) is commonly used in Brazil (related to the 'extractive reserves' mentioned earlier) and refers to populations living off traditional extractive activities such as hunting, fishing and gathering of animals and plants. As the term is not common in English, and neither is it used in local everyday language, I instead use 'fishing' and 'gathering' in this text.
6. Residents of *quilombo* settlements, originally founded by escaped Afro-Brazilian slaves.
7. By the end of the 1970s, Parnaíba had become Brazil's 'third national tourist center' (Oliveira 2017).
8. In Afro-Brazilian religions (Candomblé, Umbanda) Yemanjá is the Orixá (Goddess) of water (ocean, river, lakes).
9. Similar to the Syndicates for rural workers, the Fishermen's Colonies (*Colônias de Pescadores*) are responsible for defending the rights and interests of workers in the artisanal fishing sector. They also allocate fishing licences, inform fishers about fishing rules and restrictions, and are in charge of paying pensions and social securities, such as the compensation during the annual period during which fishing is prohibited. However, the first colonies, built from 1919 onwards, aimed to organize fishermen as a reserve for the navy, to assist in controlling and defending the coast (Ramalho 2014).

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Chapter 6

Gleaning Time

Practice, Pause and Anticipation in the Sine-Saloum Delta, Senegal

Sandro Simon

. . .
I'yoo fe ɓaandé Ñaambo (Aye Bandé Niambo)
In we i ñoowtaa paañ (We live on shellfish)
In wee ñaama ñaamel ke (We eat its flesh)
Ndokwaa a koɓ ake (And we dress in its shell)

I'yoo de ɓaandé Ñaambo (Aye Bandé Niambo)
In we i ñoowtaa paañ ke (We feed on shellfhis)
In wee unsaa njikwaa (We sell its flesh)
In wee maxaa pin ke (And we build our houses from its shell)
. . .

– Taken from *Me njofaa i feembaañ buk'mo ñoowtaa / Je me nourrirai de coquillages!* by Issa Sarr Damaan (2019, translated by the poet himself)

Life in the Sine-Saloum Delta would not be the same without molluscs. They populate the material, social and semiotic realms of deltaic life, connecting to the future, the present and the past. They are at times everyday objects, at times living beings, at times symbols and at times mediators between beings. Delta inhabitants interact with them mainly through gleaning, manufacturing, consumption, trading and governing. Furthermore, molluscs foster communication between ancestral spirits and humans, and their shells are used for roads, dams, houses, incense, jewellery, amulets, as future-telling devices and, formerly, for pottery and medicine.

In his poem *Me njofaa i feembaañ buk'mo ñoowtaa / Je me nourrirai de coquillages!* Sarr Damaan (2019) highlights the importance of molluscs for identification and describes some of the roles they play in everyday deltaic life as well as some of the frictions between these roles. He does so by transferring the founding myth of his village into the present. This

Figure 6.1. Sorting molluscs on the way home from a day of gleaning in the Sine-Saloum Delta, June 2018. Photo by Sandro Simon.

founding myth describes how Bandé Niambo, a princess from Kaabu in today's Guinea-Bissau, arrived at the offshore spit today called Sangomar and founded the village, and how molluscs helped her to recognize that she had found the right place (cf. Martin and Becker 1979). The founding myth also indicates what Suleyman Fall,[1] in one of our conversations at the seashore, outlined as defining aspects of Serer Niominka identity: 'We are not just from here. We were always migrants . . . A border is something where you cannot cross. We Niominka did not know borders. The world laid open and we were curious . . .' (Fieldnotes, 24 October 2019). Hence, the history of the Serer Niominka has always been one of mobility and change – and molluscs have served as a sort of constant in their lives.

Key to the continuation of human–mollusc relations was and is the gleaning for molluscs in the mangroves and on the sandbanks of the Sine-Saloum Delta. Gleaning has a longstanding history in the delta, yet has also undergone profound changes in recent decades that relate to and mirror the region's socio-political, environmental and economic transformations, such as declining rainfall and salinization of terrestrial resources, hardening sandbanks and coastal erosion, conservation initiatives and increasing demand for seafood. Today it is the most important female livelihood activity in the delta.

Gleaning can be understood as a *waterwork* that stands in stark contrast to *waterworks*, the scalable mastering of water and its flows via infrastructuring and governance. Gleaning as *waterwork* is always situated and emplaced and encompasses a range of variations that all require attentiveness and skill as well as endurance. Rather than aiming at mastering 'the other', gleaners seek to master the self in a future-oriented way. They continuously attune their perceptions, movements and expectations to the (ar)rhythmically unfolding and incessantly changing opportunities and limitations of collecting molluscs, but also of processing and marketing them to establish a certain rhythmic continuity. Integral to this is the shifting between action and rest, engagement and omission, as well as plan and situated action (cf. Suchman 1987). Gleaning thus springs from the resonances between as well as the potential and actual disruptions of different rhythms across both the practice itself and its organization and the ability of gleaners to productively engage with those resonances and disruptions.

In deltaic lifeworlds such as the Sine-Saloum Delta, where flow and change in both temporal and spatial terms are incessant and where humans and non-humans (have to) rely on the (re-)alignment of the various elements of their transforming world in order to create continuity (cf. Ingold 2000), an inquiry into mollusc gleaning promises to be useful. It allows us to trace the relevance of and the relations between practice, pause

and anticipation in the creation of a rhythmicity that generates continuity in situations of volatility. And so examining mollusc gleaning not only helps us to learn about the life and the history of the Serer Niominka in the Sine-Saloum Delta, but can also foster our understandings of rhythmic life in river deltas more broadly (cf. e.g. Horisberger, this volume).

In this chapter, I begin by outlining the history of Niominka mobility and change and the relevance of rhythm. Then I focus on female mollusc gleaning and its rhythmicity through two lenses: first, I inquire into the amphibious, multisensory practice of gleaning itself and then turn towards its organization.

Circles and lines in time

From the eleventh century, the Serer from the River Senegal Valley migrated south to escape Islamization and assimilation by the Wolof. They split into different groups and intermarried with the Guelowar, an aristocratic family that had fled from Kaabu, in today's Guinea-Bissau. The people who today call themselves Serer Niominka (also Sereer Niominka a.o.) and live on the islands of the northern part of the Sine-Saloum Delta (in the southern part live the Manding Soce, also Socé a.o.) either stem from such a Serer migrant group and were 'Mandinkized' from the South, or they were Manding, Jola or Bak groups who were 'Sererized' from the North (Cormier-Salem 1999). Only partially in contact with and under the rule of the two Serer kingdoms, Sine and Saloum (East and North) and the Manding kingdom of Niumi at the mouth of today's Gambia River (South), as well as largely resisting Portuguese naval forays, they forged their own, albeit always hybrid and cosmopolitan, sociality (cf. Cormier-Salem 1999; Klein 1968). The water around them meant both roots and routes, something the Serer Niominka know how to attune to and something that can lead one east (inland), north (Senegal to Spain) or south (Gambia and further down).

Indeed, the watery routes or lines *from* the Serer Niominka also led and lead *towards* them. For decades, they traded and accumulated goods from afar or integrated strangers with special skills. Furthermore, neither Islamization from the mid nineteenth century, nor colonialization, governance through the Senegalese state or globalization halted before the delta shores. However, these influences remained always partial, malleable and contested as their connections across the water to the centres were unsteady and serpentine and as they encountered communities that were hard to grasp due to their mobility, diversity and flexibility. It was this confluence of dynamics of movements and (forced) exchange with

dynamics of separation and elusiveness that was highly formative for the Niominkas' sociality. The confluence was furthermore rhythmed to a certain degree by the ever-changing environment.

Resonating with the seasons and the tides, the Serer Niominka as a community have historically been expanding and contracting in a future-oriented circularity, experimenting with various forms of work and social and economic realities. Throughout the year, the Serer Niominka lived in accordance with five calendrical periods of around one to five months each that were neither imposed upon nor absolutely dependent on, but rather resonated with the ecological seasons (cf. Harris 1998; Krause 2013; Whitehouse 2017).

During these periods, they lived in their home villages, on the mainland, dispersed at sea or in temporary camps and shifted between water- and land-based work, between fishing, mollusc gleaning, trading and transporting, labour, salt mining, the extraction of forest goods and agriculture (cf. Pellissier [1968] 2008). Their engagement in transport, fishing and mollusc gleaning related to the movements of the sea: ports are most accessible at high tide, fish are most abundant around spring tide (i.e. full and new moon) and mollusc-seeking depends on the accessibility of sandbanks during daytime (i.e. low tide around midday).

Arranged according to these five periods, life would hence unfold in correspondence with ecological seasons and the tides as well as the plants, animals and human practices they afforded, and it was fundamentally characterized by the rhythmic suspensions and resumptions of different livelihood activities, forms of sociality and mobilities. (1) Towards June, everyone gathered in their home villages for the cultivation of rainfed rice for subsistence. Organized in families, women, men and children prepared the fields, sowed, waited for the rains to pass and the rice to grow, and then went back for the harvest. (2) Between sowing and harvesting, men would embark upon small fishing campaigns while the women were weeding the fields, producing palm oil and gathering forest fruits. (3) When the rice harvest was brought in, marriages and other feasts were celebrated and the young men would circulate around the other islands to compete with their neighbours in *i Djiom* (also *idiom* a.o. or *lutte*, a type of wrestling). (4) Then, towards January, the villagers dispersed again, sometimes leaving behind only the elders, children and the imams (cf. Pellissier [1968] 2008). (5) In these months, men would search for temporary work in the cities or embark on fishing campaigns and trade of all sorts of goods such as mangrove poles and shells for construction, salt, dried fish or merchandise along the coast and inland. Women would accompany husbands on fishing campaigns or would search for temporary work in the cities, such as street vending or housekeeping.

However, while ecological seasons and tides evolve according to cyclical, or short-pulsed rhythms, other more recent environmental changes proceed in linear, or much slower rhythms, and paint a picture of a rather uncertain future: declining rainfall and rising sea levels are fostering erosion, salinization and siltation, which – accompanied by population growth and overexploitation of resources – impact the reproduction and growth of fauna and flora. Large-scale environmental changes materialize in the deltaic lifeworld and are, for example, countered with moratoriums and bans on fishing and mollusc gleaning, protective dams, freshwater 'imports' via pipes, or mangrove replantation, interventions that are sometimes able to mitigate but unable to reverse these changes. Life and matter are still caught up in continuous change (*soupit*, as it is called among delta-dwellers), yet this change appears more and more threatening and terminal.

Two of the most severe 'terminal' or 'irreversible' changes were the dying of the rice in the 1970s and the breaching of the protective Sangomar spit in 1987. The death of the rice mainly related to the lack of fresh water due to decreased rainfall. The Sine-Saloum Delta has long been an inverse hypersaline estuary with little fresh water reaching the sea and with high salinity levels upstream due to evaporation, but from at least the 1950s on, the rain massively diminished (Pagès and Citeau 1990). Then, in 1987, Sangomar, the spit that served as a protective barrier in front of the northern part of the Sine-Saloum Delta and, as mentioned above, had been the landing point of the mythical princess Bandé Niambo, was broken through in a storm surge. It was not the first such breach, but unlike previous times, mainland and spit did not grow together again and Sangomar became an island. After the breach, tidal waves arrived earlier and with more force on the shores of the villages in the estuary. Over the following years, even more agricultural land turned salty, trees died, shorelines diminished, new smaller spits emerged and sandbanks moved and hardened. These changes deeply affect people and their relations with each other and with the environment – as for example with Awa Diop, who discovered a sandbank and since then has lent it her name: 'My sandbank has already diminished and hardened. Molluscs are smaller and fewer. . . . Thinking about my sandbank makes me both happy and sad. Happy for the times I spent there with my friends. And sad for all those friends who have passed as well as the future, when the sandbank will be gone' (Fieldnotes, 30 August 2018).

In addition to the death of the rice and the breach of Sangomar spit and the accompanying environmental changes, economic and political changes also impacted deltaic life. For example, salt prices collapsed and trade slowed down due to the prohibition against the cutting of green mangrove

Figure 6.2. A dead rice field and a young fisherman casting a net, juxtaposing land and sea and highlighting the increasing aquafication of deltaic work practices. Film still taken from the split-screen/two channel video 'Deux Horizons' (Two Horizons, 2019/20) by Sandro Simon.

wood and the exploitation of the shell middens for construction, as well as the tightening of border controls against 'smuggling'. With the terrestrial resources drying up, becoming less valuable or more 'protected', and with growing demand for seafood, the Serer Niominka abandoned their five-period annual rhythm and turned increasingly towards a two-period annual rhythm that aligned more closely and exclusively with the rainy and the dry season. They also turned more and more to the sea, relying ever more on aquatic activities such as fishing, transport and gleaning.

'*Nous avons douze métiers*' ('We have twelve professions') is a common saying in the Sine-Saloum Delta. Every one of these professions was or is intertwined with distinct movements, times and spaces as well as with distinct forms of social relations and materialities. Today, life is more aquatic and less diversified; many professions are vanishing while others 'solidify' or 'intensify' and are practised for ever more extensive periods of time. Motors allow for steadier travel, houses resist more rainy seasons and manufactured goods are continuously imported from the mainland. However, rhythmic movement within movement (Vigh 2009), anticipating, and attuning to possibilities and impossibilities are not only still pivotal, but also increasingly vital characteristics of a deltaic lifeworld that is caught up in increasing volatility. One profession in which these dynamics of intensification combined with an attuned rhythmicity can be traced especially well is mollusc gleaning.

Practising gleaning

Mollusc gleaning in the Sine-Saloum Delta is an amphibious, multisensory practice that relies on the synergic, emplaced body (cf. Merleau-Ponty [1945] 2002). It consists of an array of variations that relate to and involve the (ir)regular presence and absence, as well as the quality, of molluscs, other gleaners, spirits, mangroves, tools, and the water, wind and ground. Although the first steps are quite easy, effective gleaning requires endurance as well as skill and attentiveness towards other beings, forces and phenomena.

The specific variation in gleaning relates to the kind of molluscs one searches for. In the Sine-Saloum Delta, broadly three different types exist. *Pagne* (also *Paañe*, *Paañ* a.o., a cockle) is found mainly in the sand and is the most abundant mollusc. *Ijanga*, *Sangaraia*, *Toufa* and *Ohor* (all gastropod sea snails) are found both in and on the sand. And *Aju* (an oyster) is found on the roots of mangroves. While cockle gleaning is still exclusively the domain of women, some men have started to glean for oysters and sea snails.[2]

Gleaning is mostly done in groups organized by family, matrilineage or neighbourhood. As the sandbanks are located both near to and far from the villages, some are accessed by foot while others require the use of a pirogue (a type of wooden boat). There are larger, motorized pirogues

Figure 6.3. Sea snail gleaning. 2018. Photo by Sandro Simon.

handled by men where the passengers pay for the ride, and there are smaller ones, which people manoeuvre themselves by paddle and sail. After reaching a sandbank, the groups disembark and disperse and everyone works for her- or himself. When searching for oysters, in contrast, one might drive to a mangrove estuary, stay in the boat and pick the oysters from there.

The materials used for gleaning vary. There are calabashes or plastic buckets that one might tie to one's wrist with ropes; sieves, either woven from a local tree or made out of plastic oil canisters; rice bags with ropes and buoys as easily retrievable depots; gloves, plastic shoes, socks and raincoats, metal or wooden poles that vibrate when one hits something hard like a sea snail, and sometimes spoons to scratch the ground.[3] Which materials are applied depends mainly on what type of mollusc one is searching for and where one is searching.

The work starts when the tide is falling and ends when it begins rising again. During the time in between, individual gleaners have very different experiences in terms of gravity, temperature, wetness and dryness or hardness and softness, with the wind, the sun, the soil and the water all playing their part. When gleaning sea snails, they walk across sandbanks, in the water and with the tides for hours. When gleaning cockles, they often sit for hours in the water, shifting with it as it falls and rises; and when gleaning oysters, they often sit in a boat and float through the mangroves.

The sensual experiences thus also relate to the type of molluscs one gleans and the technique employed. Thereby, 'intensity' plays a role, too. On the extensive walks in the water and across sandbanks one picks up and digs out individual sea snails here and there; while navigating through the mangroves one twists oysters from the mangrove roots; and with the more stationary work of cockle gleaning, one digs into the ground, sieves enormous amounts of soil and amasses hundreds of cockles. However, in any case, gleaning is never 'complete' or 'perfect', as there are always molluscs that slip, or stay out there to be eventually found another day.

This simultaneity of seeking to 'detect' molluscs and at the same time allowing some to slip also points to the interdependencies between skilful and attentive gleaners, molluscs, soil and the moving water. For me, in the beginning, this balance was especially challenging:

> 'Come, work over here, Sandro', Khady shouts. I look around and realize that everyone but me has moved far westwards with the receding water. The wind and the waves had been going in the opposite direction from the current, and I had moved only slowly westwards. Furthermore, the water level does not fall steadily, it flows over, in and around, sometimes faster, sometimes slower. With the water nearly completely gone, I am quite stuck. Between me and the women, who still stand and sit in knee-deep water,

> stretch two dozen meters of mud, easy to cross when covered by water, but hard to cross now. I had directed too much of my attention towards the molluscs, had lost myself and failed to remain attentive to all the phenomena, forces and beings. (Fieldnotes, 10 June 2018)

This vignette describes how my inexperience led me to focus narrowly on finding molluscs (in this case cockles), which consumed all my senses and attention and meant that I failed to move with the current and to anticipate the changing flows of water. The women, in contrast, were moving smoothly with the flow. Their successful interpretative dialogue between the immediate and the anticipative, the motional and the positional (Vigh 2009) indicated emplaced and embodied skill and attentiveness as well as tacit communication among them.

At first sight, skill and attentiveness might seem to stand in a paradoxical relation. Mauss (1934) has described how, on the one hand, the more a technique is mastered, the less attention the practitioner pays to it, and how, on the other hand, a stimulus can renew the practitioner's attention. To inquire into these processes with respect to gleaning, we might need to understand gleaning as a diversified set of techniques that are fundamentally about falling into rhythm with one's plan, one's own body and all the other beings, phenomena and forces at play. This requires skill and attentiveness in the sense of a practice of exposure (Ingold 2016, drawing on Manning 2016), an attentiveness that is schooled and distributed and in which one constantly and rather implicitly reattunes to the changing environment. For me as a beginner who was caught up in intentionality rather than 'attentionality' (Ingold 2016), focusing on one thing (the molluscs) meant that I missed or overlooked other things (the other gleaners, the receding water). The seasoned gleaners, in contrast, mastered the self as well as the relations to the other gleaners, the water and the molluscs. For them, all the different aspects of gleaning appear to be continuously spatio-temporally present to a certain degree.

Successful gleaning thus requires skill, attentiveness – and endurance. For me as a beginner, to keep pace and to make it through a day of work was strenuous. I and other new gleaners had to tackle our tiredness by varying our working speed as well as through small pauses. In this way we mediated the intensity of our gleaning. Seasoned gleaners in contrast did not pause, and worked consistently. Despite the exhaustion, they also often experienced ease, as for example Saly Ndong stated: 'I work and work and work. Working hard is good . . . Working in the water gives me peace' (Fieldnotes, 13 June 2018). Hence, gleaning is not only about moving within movement (Vigh 2009) but also about finding ease and experiencing flow within this movement-within-movement. The rhythmicity of work is thereby key, as it diverts the focus away from work's necessity

towards its aesthetics and performativity (Dobler 2016). With the body as both the locus and the means of experience, gleaners combine the shared, situated co-moving with and within the shifting water and on the changing soil with a skilled tactility beyond the visual, and with strength and persistence and a diverse toolkit. Although reiterative, individual and often tacit, (successful) gleaning is therefore a practice where body and mind, as well as humans and the more-than-human, align and entrain with each other rhythmically. From this then springs movement, pattern and multiplicity, which again translate into continuity, relation and possibility. For the gleaners this ultimately means that the practice of mollusc gleaning allows them to experience a certain orientation, embedment and agency.

Organizing gleaning

After a day of work on the sandbanks or in the mangroves, I often felt tense, cold and exhausted. However, most days, the work would continue as we started to process the catch immediately after our return. On other days, we processed the catch from the previous day in the morning before leaving.[4] Cockles and oysters are cooked until they reveal their flesh, which is then separated and dried. Sea snails are usually cracked and the flesh is fermented and dried. They are most notably used to give flavour to meals, a sort of 'natural' version of the increasingly popular stock cubes such as Maggi or Adja. More recently, some men have started to directly sell whole sea snails to traders, who sell them to Chinese merchants. In any case, gleaning days were always full and exhausting.

What helped me to get up again the next morning after a strenuous work day was the prospect of some more relaxing days to come. 'All you have to do', I often told myself, 'is to make it through this *Mbissa*'.

With the high and low tides shifting every day and the sandbanks and mangroves being accessible only with not-too-high water, most people follow the twenty-nine-day lunar cycle and go out to the water in particular periods that they call *Mbissaké* (plural). *Mbissa* means that one works approximately on the days from half-moon to full moon, then takes a break, and continues working on the days from half-moon to new moon, and so on. Gleaning thus takes place when low tides occur between the not-too-early morning and the not-too-late afternoon, that is, when tidal and daylight cycles overlap to create a productive gleaning landscape.

The *Mbissa* only came to be in recent decades with the change towards an increasingly aquatic lifestyle and with gleaning turning from a subsistence, rather occasional practice, into the most important female economic

activity. Formerly, gleaning was performed mainly by older women who were staying in villages more persistently and who would go for a spontaneous stroll or embark on an occasional camping trip over a few days. On the one hand, molluscs were plentiful and big, and on the other hand, they were not necessarily needed in large quantities. Nowadays, gleaning is the most prominent form of female work and the *Mbissa* is an important ecological-socio-economic rhythm. It sets the pace for the days and weeks of the gleaners as well as for mobility and social relations. Hence, rather than being either an ecological phenomenon or a socio-economic phenomenon, *Mbissa* constitutes itself out of the interplay of those two realms.

Furthermore, the *Mbissa* is fundamentally characterized by the intricate relation between action and pause. Firstly, for every *Mbissa* it is taken into account that breaks, ruptures, spreadings, expansions and contractions are possible. No *Mbissa* is absolutely fixed to a certain number of days or starting and ending times. It is a malleable, multistranded rhythm that relates to tides, molluscs, and human individual and communal actions. Secondly, every *Mbissa* has its counterpart. Since this counterpart does not have a specific name by itself, I will here use the term 'off-time'.

While during the *Mbissa* gleaners have little time for anything else, in the days between two *Mbissaké*, life diversifies. Gleaners claim that they need the days in between two *Mbissaké* to recover, and they legitimize these breaks in respect to the hard work that precedes and succeeds them. These days, or off-times, are then productively used for other social, individual and economic activities (cf. Archambault 2015). The off-time of one rhythm – the *Mbissa* – becomes the on-time for an array of practices such as leisure and rest, feasts, various forms of care work, community organization, agriculture and so on. It is also the time to sell the gleanings from the previous *Mbissa*, either in the villages' markets, in markets on the mainland or to traders. With the money from the sales, gleaners pay off debts, for example. *Mbissaké* thus come and go, intensifying and loosening relations between gleaners and their wider community.

All these off-time practices are rhythmed and rhythmic: they are rhythmed by the *Mbissa* on the one hand, and relate to socio-political, environmental or economic dynamics such as price rates, seasons, religious calendars, election periods and to one's own body as well as other humans and non-humans on the other hand. In this sense, in the off-time, there is neither an absence of action nor a high-tension, doubtful and uncertain waiting (cf. Janeja and Bandak 2018), but an active waiting (cf. Marcel 1967) that does not 'slim' the present (cf. Bryant and Knight 2019). It is a period of waiting for a *Mbissa* to come that coexists with a variety of practices. In a situation of increasing volatility, where rains become more irregular, the land becomes drier and saltier, erosion increases and sand-

banks get harder, the *Mbissa* is set to come again and again. It is also this certainty that the *Mbissa* will 'return' that contributes to the unfolding of the other practices and their coexistence with the waiting.

A *Mbissa* is furthermore influenced by the presence and type of molluscs for which people search: for some time, oysters might be more abundant and people make extensive trips through the mangroves to glean them, while in other periods they glean sea snails just in front of their villages. More recently, however, the *Mbissa* has been undergoing a regular and absolute suspension.

As a response to overexploitation and to help the mollusc populations to replenish themselves, some villages implemented gleaning moratoriums during which the mangroves and sandbanks are 'closed'. These moratoriums were advocated by NGOs and state agencies and implemented by new, male-dominated governing bodies, which were installed in the wake of decentralization and are informed by nature-conservation discourses.[5] The moratoriums are fixed to calendar dates and intended to coincide with the rainy season, which 'should' last for three months. However, as rainy seasons become more irregular in terms of starting and ending times as well as in length, there is an increased likelihood of a mis-timing of the moratorium periods, and on multiple occasions the starting dates of these periods have been postponed at the last minute. Hence, especially for women, who are the most affected by the gleaning moratoriums, the alignment of their work with the dry and the rainy season has tightened even more, this time through governance, though this alignment remains contentious and fragile.

Gleaners often express an understanding of the need for the moratoriums and describe how the increase in popularity of gleaning has correlated with the decrease in stocks. However, they also have a larger repertoire of explanations and relations towards molluscs. For many of them, while the long-term environmental developments such as erosion, hardening sandbanks and decreasing stocks are pointing in one direction, the presence or absence of molluscs is more cyclic: whether a sandbank holds sufficient molluscs or not depends on how often it is frequented by the women and others during a *Mbissa*. Formerly, the sandbanks were not shared between villages, but now, in the times of scarcity, nationalization of water bodies and the increased use of outboard motors on pirogues, many are. Mollusc abundance also depends on the *Pangool*, the spirits of the ancestors. *Pangool* are linked to families and can be benevolent or malicious. If benevolent, they can, for example, allow for good harvests and catches. They can cross all boundaries of soil, water and air, yet they reside predominantly in the forest, where shell middens are also located. Consequently, many middens and/or forests constitute sacred, normed and protected spaces

and locations for ritualistic offerings. However, such beliefs and practices have already strongly diminished, as will be outlined below.

Thus, molluscs are of two worlds: although they are commonly seen as animals that eat, reproduce, move and depend on water and soil, their presence and absence also relate to the *Pangool* and can furthermore indicate both calamity or fortune. For example, when one would find an exceptionally large number of molluscs on the shores of Sangomar, the landing point of Bandé Niambo and home to the ancestral spirits that relate present gleaners to her via her matriline, one would know that there will be a calamity such as a death in the village. The presence of molluscs indicates the imminent absence of a person. And when one would find no molluscs, this would indicate that the spirits needed offerings and ritual appeasement. Extreme presences and absences of molluscs were hence signs for broader socio-spiritual turmoil, while a more continuous presence was a sign of intact relations.

Today, the relations between humans and spirits have become increasingly volatile and fragile in the Sine-Saloum Delta. While it goes beyond the scope of this chapter to inquire into this process more deeply, the general dynamics can be briefly outlined. While many mollusc gleaners count, among other things, on the ancestral spirits, they are limited in their communication with them. Their relations with the spirits, sometimes mediated via molluscs, are increasingly difficult to actually practise or enact. There are different dynamics that foster this difficulty, for example the rise of Islam and the decline of animism, the commercialization and popularization of gleaning and the naturalization of the environment that goes hand in hand with a governmentalization of space. Shifting religious norms as well as state actors, NGOs and male-dominated civil society initiatives that resort to, advertise and enforce universal-naturalistic development and environmental protection paradigms all play their parts in this.[6] In the process, a situational-positional and negotiable approach to molluscs and spirits shifts towards a non-negotiable approach. Molluscs commonly served as media and mediators, or as a 'milieu' (Deleuze and Guattari 1987) that allowed for a meandering between spirits and humans, but now boundaries and time periods are becoming increasingly planned, straightened and solidified.

Within these developments, the *Mbissa* still stands out. Different from 'engineered' moratorium periods or fixed, governmentalized spaces, but similar to the five- or two-period annual rhythm, *Mbissaké* come to be in an engagement encompassing both humans and non-humans and have a future-oriented, movement-bound character, where 'beats' and 'pauses' are linked by anticipation of something to come and by the fading of that which has taken place (cf. You 1994).[7]

On and off, in and out, action and pause are not pairs of separate entities determined from 'above' or 'outside', but intricately related and constitutive of each other. For my research, these interdependencies were crucial, yet challenging to investigate.

In the beginning, the richness of the practices in the off-times was difficult to grasp and, due to my initial wish to focus on gleaning, I tended to anticipate the next *Mbissa* rather than inquire into these other practices. Consequently, I also sensed a feeling of rushing towards the future, which indeed 'slimmed' the present (cf. Bryant and Knight 2019). Over time I realized the relevance of the off-time and started to engage with and in it (cf. Janeja and Bandak 2018). I hung out and chatted with the women in the hammocks, went to search for wood in the forest, helped to cook or visited feasts, meetings and saving groups. The days and their names and dates slowly untangled for me, and I looked at my watch less often. From time to time, however, I would still get restless and ask my interlocutors when we would go back to gleaning.

Often, I would get very different answers. One woman could say 'tomorrow', another 'after tomorrow', another 'when I am done with my other work', and yet another 'when the tide is right again'. And so I learned that the *Mbissa* is not absolutely temporally fixed. It is a continuous and clearly contoured possibility, but also has permeable temporal boundaries. Many off-time practices are organized with and around it, and at the same time, there is also room to 'enlarge' or 'cut short' a *Mbissa*, or to skip a day of gleaning within a *Mbissa* if one needs to recover or has to deal with other obligations, for example in the case of deaths, reunions, illnesses of family members, baptisms or marriages and other feasts. And the moment when one re-enters a *Mbissa* too can depend on such obligations and other personal activities.

Hence, gleaning constitutes a backdrop to (female) deltaic life and the anticipation for it remains continuously present. This manifests in all the off-time practices that come and go more or less unexpectedly and in ways over which individual gleaners sometimes have little control. This backdrop is also present in all the moments of 'enlarging', 'cutting short', 'skipping' or 'postponing' *Mbissaké*. Gleaning hinges on women's autonomy of action and, rather than on a 'waiting *for*', on a 'waiting *on*' (Minnegal 2009; Schwartz 1974, cited in Janeja and Bandak 2018): an agentive waiting where a person or a group can largely choose when to 'enter' and thereby co-constitute a *Mbissa*. In this effect, the anticipation of a *Mbissa* is not so much about predicting the world but about perceiving, relating to and exploring it (cf. Nuttall 2010).

Also relevant is that gleaning is seen as a profession among many others. It provides identification, be it for retired, active, (momentarily)

inactive, or prospective gleaners. And it is perceived as work that is accessible to almost every woman, but which is also strenuous and requires continuous engagement that leads to experience and skill. Furthermore, gleaning is appreciated as an economically profitable activity. In many families, in times where (male) fishing becomes more unreliable, (female) gleaners are the main and most dependable breadwinners. Many women, despite being proud of their work, still wish their daughters would pursue another profession. But when things do not work out for women, when marriages or professional careers fail, when children are born (early) or when expenditures such as school fees are due, the sea, sandbanks and mangroves, the tides and seasons, the spirits, the other gleaners and the molluscs are there to engage with.

As these different examples of engagement and disengagement show, gleaning remains possible throughout longer individual trajectories as well as throughout shorter ones. Each *Mbissa* constitutes itself out of a multitude of actions and pauses on the part of those who engage with it. A certain rhythmicity remains key to its continuation – a rhythmicity that takes form through the attunement of the human and the non-human and encompasses not only the multisensory practice of gleaning itself but also its organization: 'I have not yet started the *Mbissa*', I would sometimes hear, when I encountered women occupied with other activities. Although skipping a day happens here and there, many women try to go out gleaning for several days in a row and prefer to conclude other activities beforehand. Also, they prefer to skip only single days and bemoan ruptures due to unforeseen events such as deaths or meetings. And they state that gleaning over time brings forth experience and skill. Staying in rhythm over several days and across several *Mbissaké* – with all the off-times this includes – thus provides orientation, a certain flow as well as skill and experience. By relating action and pause to each other, an agentive, future-bound navigation through them becomes possible, as my self-motivation, 'All you have to do is to make it through this *Mbissa*', also reflects. And so the *Mbissa* can be understood as a continual experience of rhythmicity, an opportunity to bring together one's own body and plans with other beings, forces and phenomena, and ultimately to constitute a certain continuity within a volatile deltaic lifeworld (cf. Scaramelli, this volume).

Gleaning and concluding

In the Sine-Saloum Delta, where the Serer Niominka have been forging their own, cosmopolitan and flexible lives in an increasingly volatile environment, molluscs are a constant. They and their shells help people to

provide food, earn money, prepare for what comes, build shelter and feel protected. They serve as mediums and mediators of movement, relation, memory and meaning, and they connect to the future, the present and the past. The practice of gleaning thereby reproduces this life among molluscs.

In gleaning, habituated skill and attentiveness fall together as a practice of exposure (Ingold 2016, drawing on Manning 2016), a practice of skilful meandering in the between that builds upon a 'becoming with' (Haraway 2008), or upon the correspondences between all involved – molluscs, gleaners, spirits, tools, mangroves, soil, water and wind. For me, the unskilled novice, to distribute my attention and apprehend correspondences proved difficult. For example, by focusing narrowly on molluscs I failed to anticipate and move with the water's current and finally got stuck in the mud, or, by focusing on gleaning and too little on the other off-time practices, I experienced a feeling of rushing towards the future and a 'slimming' of the present (cf. Bryant and Knight 2019). The situation was different for the experienced women I accompanied: they largely succeeded in finding a rhythm that took up and resonated with all the beings, forces and phenomena and their differently paced comings and goings, (ir)regularities and openings and closings. And so their gleaning days were characterized by rather smooth, attuned movements and satisfying catches, and were complemented and thereby completed by off-days.

The gleaners' practice furthermore highlights how gleaning as *waterwork* stands in stark contrast to *waterworks*: where *waterworks*, the governing and infrastructuring of water flows, is about mastering water, *waterwork* such as gleaning is about the emplaced and embodied practices around, with and within water, and about mastering the self via a continuous attuning to the moving environment. It is a following of 'matter-flow' (Deleuze and Guattari 2004, cited in Ingold 2013) and a way of manipulating, (re-)shaping, mixing or amplifying it (Ingold 2013) instead of attempting to conceptualize, make and manage it. Where planners, engineers and administrators look *upon* the world, gleaners are *of* as well as *in* the world and rhythmically navigate between plan and situated action (cf. Suchman 1987). And because gleaning as *waterwork* situates itself in the world, it also contributes to the progeneration of life, the continuous unfolding of an entire field of relationships between humans and non-humans (Ingold 2000).

Gleaning encompasses different variations with different sensualities and different 'intensities' or levels of 'extractivity'. Common to all of them is that they are never 'complete' or 'perfect', as some molluscs always slip

through, which itself contributes to the continuity of the livelihood and the mollusc population, on which it depends.

Within this rhythm of productive repetition that brings forth difference and multiplicity (Deleuze and Guattari 1987; Lefebvre [1992] 2004; Davis 1996), gleaners can also experience work not solely in terms of the necessary, but also of the aesthetic and performative (Dobler 2016): gleaning in the water can provide flow and ease. Contributing to this is that the outcome of a gleaning day is open: indeed, people rely on the income made from gleaning and try to make a good catch, but there is no clearly defined object to produce, not one task to be fulfilled, no quota to reach and also no strict time period to be spent doing (or not doing). This openness and possibility inherent in the practice of gleaning in turn also resonates in its organization.

The increased popularity of gleaning hinges on the 'narrowing' of the variability of work practices in the Sine-Saloum Delta, largely due to 'terminal' or 'irreversible' and at the same time increasingly volatile environmental changes, and the increased market prices. With the emergence of the *Mbissa*, an occasional and extensive gleaning practice made way for a rhythmic and increasingly intensified gleaning. The rhythmicity consequently also permeates the wider societal realm and co-shapes, for example, credit relations and trade.

Delta dwellers are able to continue gleaning and the *Mbissa* only because the *Mbissa* is malleable and fuzzy-edged and because there are offtimes and pauses. Gleaners embrace rest and recovery in the time between two *Mbissaké*, the time of fading and anticipation. They engage in an active waiting (cf. Marcel 1967) and pursue a variety of other activities. Throughout this time and also during the suspension of the *Mbissa* in the three-month period of the moratorium, gleaning remains present as a backdrop and a returning possibility. And so gleaners are both in the actual now and in the possible then by the means of an 'anticipatory retrospection' (Merleau-Ponty [1945] 2002).

This 'anticipatory retrospection' is supported by rhythmicity. Gleaners are caught up in and co-constitute this rhythmicity; a rhythmicity that encompasses humans and non-humans and produces continuity, relation and possibility through movement, pattern and multiplicity. Gleaning thereby exemplarily highlights the rhythmicity of general deltaic life. Indeed, this deltaic rhythmicity relates to and is changing with the larger socio-political, environmental and economic dynamics. But it is embodied, emplaced and intrinsically rhythmic practices such as mollusc gleaning that mediate and ground these changes in lived life and allow delta-dwellers to engage with them in generative, meaningful and agentive ways.

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Notes

1. All names have been changed.
2. My research focuses on female gleaners.
3. Some men use diving goggles and dive for sea snails. Women very sporadically use such goggles as a tool in addition to their poles to allow them a better view below the surface of the water.
4. Male gleaners, in contrast, mostly sell or give the catch to women to process.
5. The most relevant local governing bodies for water resources today are CLPAs (Conseils locaux de la pêche artisanale). They are defined as apolitical, non-profit professional organizations that unite local actors involved in small-scale fishing around the sustainable management of fishery resources (Ministère de la pêche et des transports maritimes 1998). Initiated in the late 1990s, CLPAs were at the forefront of the move towards decentralization of natural resource governance (Sarr 2012). In the Sine-Saloum Delta, despite being responsible for both female and male aquatic practices, men today largely dominate them. CLPAs were supported by the US American development agency under the USAID/COMFISH project and the USAID/COMFISH Plus project (2011–2018).
6. The actions of the state actors, NGOs and male-dominated civil society initiatives resemble what Callon (1984: 207, 208) has termed 'interessement', or '. . . the group of actions by which an entity . . . attempts to impose and stabilize the identity of the other actors it defines through its problematization' with the help of various devices (e.g. science, law, political force or physical objects).
7. I draw 'anticipation' and 'fading' onto Husserl's concept of 'protention' and 'retention' (1966, 2001). While 'fading' corresponds rather closely with the filled 'retention', I do not, for now, make a distinction between an immediate,

empty and vague 'protention' and a 'reflective anticipation' in the sense of a 'foreseeing expectation' (Schütz 1967: 57, 59) but rather map them as a continuum under the term 'anticipation'.

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Chapter 7

Lived Histories of Flows and Sediments in a Turkish Delta

Caterina Scaramelli

Introduction

In June 2017, Osman and the village head (*muhtar*) picked me up from the bus station in Bafra, a bustling market town and municipality in the Kızılırmak Delta's agricultural plain. Osman greeted me casually, as if I had just returned after a day trip, even though I had been away for over a year. The two men were driving back from Bafra's industrial park, where Osman had loaded the trunk of his car with rice bags. Osman dropped off the headman, and half of the rice load, at his administrative headquarters, a small one-room office near the town marketplace. We drove on, past the outskirts of the city and towards the fields, farms and marshes of the lower delta, to the village of Doğanca. It was rice-planting season, and Osman was impatient to return to his rice paddies.

In the past three decades, new rice fields, including Osman's, have replaced much of the delta's coastal marshes, swamps and wet meadows. Over the twentieth century, the lower delta's marshes, swamps, lagoons, forests and wet meadows had been transformed – through infrastructural, political, ecological and demographic interventions – into a vast agricultural landscape of crops and vegetable growing, livestock herding, fishing and reed cutting. In the 1990s, the few remaining lakes, marshes and swamps of the lower delta, including the lake and marshes near Osman's farmhouse, were declared a wilderness protection and wetland conservation area (Scaramelli 2018). I first came to the delta in 2012, as I was trying to make sense of the emergent category of the 'wetland', a global object of conservation (Scaramelli 2021). But the 'wetlandification' of the delta – its remaking (on the part of natural scientists and environmental conservationists) into a valuable site of wetland biodiversity – was only one of the

Figure 7.1. Disentangling fishing nets on Cernek Lake, Spring 2015. Photo by Caterina Scaramelli.

many transformations of place that delta residents have variously been swept into, participated in and resisted.

Scientists have frequently invoked histories of the Kızılırmak Delta that centre on the damaging ecological effects of wetland drainage (e.g. Yeniyürt et al. 2008). Wetland loss, they claim, needs to be countered with civil society engagement and with more developed environmental policy, aimed at conserving wetlands while also continuing to maintain them as productive agroeconomic environments. This discourse, however, has omitted histories of environmental and agroeconomic change, as well as delta residents' experiences of migration, family, place-making, work and displacement.

The delta's environments (its animals, plants, microbes, soil, water, sediments) have been made and remade by its human residents. In turn, the materiality of the delta landscapes – fluid, mobile and saturated with water – has profoundly shaped their lives. For farmers like Osman, who grows rice and tends to over a hundred buffaloes, living in the delta means taking part in a constant remaking of land and water. It also means participating in broader transformations, like those brought about through resettlement policies, agricultural infrastructural development, international environmental agreements and national and international markets. Finally, living in the delta means making and maintaining a liveable home amidst the ever-changing flows of seawater, river, marshes, underground water, capital, subsidies, seeds, fossil fuels, fertilizers, pesticides and agricultural technology, and also the movements of birds, buffaloes, fish, reeds, migrants and scientists.

Osman and other delta farmers talk about the fluidity of land, water, plants and animals in a way that is attached to their experiences of migration, displacement, home and work. This is not because an inherent and essential materiality of wetlands' water (cf. Orlove and Caton 2010) overdetermined and constrained social practices and histories. Fluidity is not merely a property of water and sediment flows, but it is expressed and shaped by people's practices in a changing environment. These different movements converge in, and make, the delta. Ethnographic accounts of Turkish farmers have largely disregarded the ecological and environmental contexts of their lives, focusing instead on issues of kinship, religion, labour, economy and moral subjectivity (Delaney 1991; Hart 2007; Magnarella 1970; Stirling 1965). My analysis is inspired by the longstanding work of Africanist historians and anthropologists, who have long made the claim that regional and family histories and politics are inseparable from broader processes and narratives of environmental and agrarian change (Fairhead and Leach 1995; Moore and Vaughan 1994). Farmers' everyday experiences of uncertain and precarious delta livelihoods, as the introduction to this volume argues, are implicated with, re-

spond to, and are agentive in the social, infrastructural and environmental transformations of the delta.

This chapter considers everyday work and life in a delta village as it has been mutually shaped both by long-term geological formations, histories of hydrological infrastructure, wetland drainage and irrigation, and by migratory movements of people in, through and out of the Kızılırmak Delta. Does this fluid ethnographic narrative add up to a *delta* as a category of place and hydro-sociality, and what might this spatial scale afford? In this volume, Tanya Richardson argues that deltas are not a given, but rather are a particular way of apprehending environments. Following her invitation, I ask: for whom is the Kızılırmak Delta meaningful as a spatial category? Deltas are particular kinds of spaces, because they foreground the transformative movements of water and sediment. A focus on the delta scale, then, can productively underline complex transformations of place by highlighting the varied cultural and political roles of water flows and sediments as they have made and remade place.

In the Kızılırmak Delta, the 'delta' is used as a shorthand by different people to invoke different scales of analysis, temporalities and politics. My farmer interlocutors did not hold a stable notion of the delta. They shifted, fluidly, between different practices of place-making in an uncertain and unstable watery environment. A deltaic scale invites us to attend to multiple convergences of water in the watershed, and to move beyond the boundaries of municipalities and provincial districts. At the same time, farmers engaged with water seepages, infrastructures and histories in ways that were informed by their class positions, biographies and senses of belonging.

Lived experiences of migration, dispossession, resettlement, loss, class mobility and temporality are at the centre of farmers' accounts of environmental change in the delta. These histories were fluid – but water also mattered in non-metaphorical ways to the agrarian landscapes in which they unfolded. In this environment, people contended with water in multiple forms: storms, mud, dikes, floods, water pumps, shifting levels of salinity, toxic seepages, water wells, pipes, cisterns, drainage canals and riverbanks. In the conclusion, I draw from this ethnography to rethink the fluid and shifting scales of the delta as a place, an administrative unit, a geological formation and, in conversation with Richardson's chapter in this volume, an anthropological concept.

Draining the lower delta

From a geological perspective, the lower Kızılırmak Delta is a new landform. In this volume, Richardson reminds us that studies of deltas as

dynamic processes of alluvial deposition and sedimentation emerged in nineteenth-century geological and hydrological sciences. The lower delta plain formed around ten thousand years ago, and continued expanding thanks to the accumulation of sediments carried by the Kızılırmak River into the sea. The delta emerged through complex interactions of alluvial sediments, waves, currents and winds (Özesmi 1999; Yılmaz 2002). The construction of the large-scale dams of Altınkaya (1980–88) and Derbent (1984–90) reduced the flow of sediments in the river, from 21.1 million tons/year in 1960 to 0.46 in the 1990s. The Black Sea started rapidly eroding the delta's coasts. Upstream, thousands of people were displaced from the land and villages flooded in the dam reservoir. Several hundred families were relocated to the agricultural plain and cotton fields that had been created in the wake of the drainage of Lake Amik between the 1930s and 1970s, in Turkey's southeast.

Today, the Kızılırmak Delta is an environment of wetland lakes and lagoons, sand dunes and hardwood forests, interspersed with the expansive agroeconomic landscape of rice and vegetable fields, pastures, houses, roads and drainage and irrigation infrastructure. Ecological and hydrological transformations of the delta, however, have been motivated by broader political projects. During his tenure as Minister of Commerce and Public Works (1910–12), Bedros Haladjian signed a contract with the Societé Generale of Ottoman enterprises. The French financial company was to undertake irrigation and river stabilization work in the river-delta plains of Bafra and Çarşamba, both on the Black Sea coast. This agreement was part of a longstanding Ottoman policy of creating new settlements and agricultural land in malaria-prone environments, conceptualized as a 'cleaning' of the swamps. Ottoman officials associated swamps with unhealthy and unproductive land peopled by unruly nomadic populations (Gratien 2018).[1] Draining marshes and swamps, and turning them into farmland, had also been an important strategy for agricultural growth in the Ottoman Empire during the nineteenth century, one that involved expanding to previously uncultivated areas, as opposed to adopting new agricultural technologies (Kasaba 2009).

By the early twentieth century, then, nearly all Ottoman wetlands had been demarcated for drainage, at least on paper. However, land reclamation was an expensive and complex undertaking, and it proved to be largely ineffective in combating malaria (Gratien 2018). Standing water in the canals of drained marshes created more breeding sites for malaria-carrying mosquitoes. The drainage of swamps and marshes created new, cheap agricultural land where officials encouraged the permanent settlement of peasants in marshy and water-saturated areas where mosquitoes thrived. Many swamp drainage projects would remain unrealized until

the second half of the twentieth century, when the Turkish State Hydraulic Works (DSI), an agency founded in 1951, would begin to reclaim land in earnest all over the country (Evered 2013; Scaramelli 2018). The Societé Generale commissioned plans and cost assessments for the drainage of the coastal lagoons, marshes and wet meadows in the Kızılırmak Delta, but the project was never realized. On 15 September 1915, amidst the forced displacement and deadly marches eastward of the Ottoman Armenian population, Haladjian was killed together with other Armenian parliamentarians (*New York Times*, 'Armenian Officials Murdered by Turks', 29 September 1915).

A map of 'the marshes of Bafra', dated 19 December 1925, shows a delta landscape saturated in water. Wet meadows (*çayırlık arazi*) and marshes (*bataklık arazi*) extended from the coastal dunes and surrounded the lakes. The sandy, marshy coastline was interspersed with forests. The biggest coastal lake, Balık Gölü, had an average depth ranging between 1.5 and 2 metres.[2] Surrounding the lakes were extensive forests, marshes and swamps. Upstream, past the cultivated fields surrounding the city of Bafra, were forested hills, and more fields along the meandering Kızılırmak River. The Kızılırmak River flowed from the mountain gorge above the town of Vezirköprü past the centre of Bafra, and through the plain into the Black Sea, with several small islands forming in its deltaic meanders. In the lower delta were more scattered villages and fields. In marking the marshes, swamps and wet meadows to be drained (*kurutulacak arazi*), state officials also emphasized the emptiness of the land. The forced displacement of Ottoman Greek and Armenians between 1914 and 1923 had left behind abandoned fields and houses torn down by Turkish militias to erase Greek and Armenian memories on the land, and villages repopulated with resettled populations from Greece and the Balkans (Meichanetsidis 2015).

Thicker lines on the map demarcated the areas of planned hydrological intervention. New embankments would stabilize the river as it flowed through the town of Bafra, the cultivated fields and the wet pastures marked for drainage. The lower delta's marshes, coastal forest and wet meadows were all delineated as 'marshes to be drained', and to be terraformed into fields and permanent settlements. This plan, and the many designs and infrastructural interventions that followed, produced new agrarian land that was appealing to landless farmers in other regions of Turkey, and provided a place to resettle exchanged populations and refugees. All these resettled farmers, however, would contend with the unpredictable effects of fresh, brackish and saline water seeping into the deltaic landscape.

In these changing environments of water and land also emerged new infrastructures and extractive economies. A railway line, built in 1931,

connected the sawmills in Bafra to a small port on the Black Sea. Trees logged in the Kunduz Mountain forests, above the formerly Greek town of Vezirköprü, were rolled down the mountain to the Kızılırmak River, and then floated on the river to the mills downstream. The railway started at the Bafra mills, and the train made stops in the delta villages of Sarıkoy, Nohutluk and Üçpınar, before reaching the end of the line at the docks of Kumcağız. Workers unloaded the planks onto characteristic Black Sea çapar barges, and then onto larger ships. On the weekends, delta farmers, workers and their families boarded the crowded train to go to the beach. The railway was dismantled in 1950, when highways and trucks replaced rail and river transportation (Yılmaz 2015).

The transformation of the lower Kızılırmak Delta was exemplary of a broader trend of environmental transformation sutured to Ottoman imperial and, later, Turkish national visions. Ottoman officials sought to turn the watery, marshy and malaria-ridden lowlands of the empire into productive agricultural land for a sedentary population of tax-paying subjects. From the early nineteenth century, landowners were encouraged through various subsidies and other economic incentives to acquire large tracts of land in exchange for its drainage and improvement; new sedentary farming populations were given deeds to marshy plots of land to drain and cultivate (Gratien 2018). This was not merely a project of agricultural improvement and expansion, but one of creating new settled, productive and tax-paying imperial subjects.

Agricultural land-making on drained swamps and marshes also enabled a politics of population resettlement. In the late nineteenth century, after the Crimean War (1854–56), Muslim refugees from Crimea, the Balkans and Eastern Europe and Circassian populations from the Russian Empire were often resettled in sparsely populated coastal or lakeside marsh and swamp areas. The underlying aim was for agricultural settlement to bring civilization, progress and prosperity. Marsh drainage was also intended to create new land to settle displaced populations who, through population exchanges and international agreements, would become new Turkish subjects. The Kızılırmak Delta exemplified these environmental transformations in the wake of shifting political contingencies.

Throughout the first half of the twentieth century, the coastal marshes and swamps of the lower Kızılırmak Delta were drained and deforested and turned into agricultural fields and new farming settlements. New delta villages were populated with incoming migrants in search of new land and, alongside this economic migratory movement, with formally exchanged populations (Scaramelli 2018). Between 1914 and 1921, thousands of the delta's Greek and Armenian inhabitants were rounded up and killed in their town squares and churches, or sent on brutal

forced marches to the southeast, many dying on the way (Akçam 2012; Meichanetsidis 2015). The remaining Greeks left concurrently to the 1923 agreement between Greece and Turkey (Kirişci 2008; Zurcher 1997). Their built environments and life histories were elided, but remain sedimented in local memories and in the land.

Ongoing remaking of land, water and people in the delta continues to make it a shifting and mobile place. The ethnographic account that follows is fluid and in flow, like the wetlands, connecting fast and slow environmental transformations in the delta to farmers' family histories of migration and settlement, and their everyday practices of work and home in the delta.

Feeding the water buffaloes

One day, in the summer of 2014, I woke up at dawn and looked out through my bedroom window. My hosts, Emine and Ismail – farmers in their early sixties – were already up, in their muddy work clothes; they were walking from the house across the yard towards the water buffaloes' barn. I grabbed a pair of woollen trousers and a cotton shirt I had borrowed from their daughter Ayşegül, who was my age, and ran down the stairs and past the front yard to join them. Ayşegül remained at home: she started a fire in the wood stove, cleaned the kitchen and bathroom, swept the front yard, watered the flowers, folded the laundry, prepared breakfast and attended to many other household tasks. The house was located about three kilometres from Osman's on the other side of the village, and it was right off the village's main paved road. Just around a turn of the road, a few minutes' walk from the house, was the boundary of the wetland conservation area.

Ismail was already at work in the concrete shed where they stored bales of hay and bags of feed supplements. My task was to push the empty wheelbarrow to the silage pile and carry a load of silage to the hay shed. Silage, a mixture of corn and other chopped vegetable matter, was fermenting under two layers of tarpaulin. Ismail and I removed the wooden planks, stones and car tyres that held it in place, and then rolled back the plastic tarp, heavy and humid and slick. Ismail worked fast with a fork to fill up the wheelbarrow. The mound of silage, broken by Ismail's fork, released a sweet-and-sour whiff and felt warm to the touch – it always reminded me of the aroma of green bean pickles, one of the delta's staples. In a way, both were fermented fodder: pickles for humans, and silage for our bovine companions.

Silage had only been introduced to the village about fifteen years previously, Ismail explained to me. Before, farmers had grazed their water buf-

falo herds in the common pastures, and fed them with hay in the winter, while the buffaloes rested in the barns. But back then, Ismail recounted, there was more common pasture available, before rice quickly took over. At the end of the twentieth century, there were not nearly as many buffaloes as in the mid-twentieth century: livestock herding had been steadily declining since the 1960s (Arna 2008; Ermetin 2017). Ismail and Emine had acquired their small herd – about fifteen or twenty buffaloes – thanks to a state subsidy programme that was started in 2009. The subsidies were distributed through a provincial water buffalo breeders' union. Within a decade, the number of water buffaloes in the delta had tripled, from three thousand to almost nine thousand (Ayan 2007).

For environmental activists and academic experts, as well as for local businessmen, the water buffaloes represented, at the same time, both the rural past of the Kızılırmak Delta and its future – restructured through 'modern' breeding practices and integrated into national markets. Ismail and Emine reaped some of the economic benefits of the subsidies, but the programme also constrained them to keep working to maintain the herd. In many conversations over the four years that I knew them, they told me that at their scale of operations, they calculated that the profit they made was not worth the intense work that the buffaloes required and the amounts of hay they had to purchase. But buffaloes still represented a possibility for a viable economic pursuit in the future, one supported by state institutions. Furthermore, the buffaloes connected many farmers to a way of life, and to a set of skills and knowledge that they had known since childhood.

Feeding the buffaloes in the morning was the perfect time to talk about these matters. I balanced the heavy wheelbarrow, walking slowly across the yard to the concrete hay shed, and then poured the contents onto the pile of hay Ismail had prepared. He measured a couple of platefuls of feeding supplement from a bag and added another bale of hay. We each grabbed a fork, and started mixing the hay, silage and feed on the concrete floor, following a meticulous procedure. Ismail worked incessantly, and with extreme precision. After all the mix had been bagged in empty feed sacks, the floor would be carefully swept. Everything in the farmhouse was neat and orderly, every job properly and quickly finished, tools cleaned and stored away. Ismail helped Emine carry the heavy sacks, one at a time, on her back, to the barn, which she had just finished cleaning, shovelling piles and piles of manure mixed with urine, water and hay, into a hatch that opened onto a ditch near their corn field. For many other delta farmers, similar routines, tied to the livelihoods of the farm buffaloes, punctuated and structured everyday life and formed a sense of home in the delta. The unfinished project of terraforming in the lower delta has

made it possible for water buffaloes to continue living in the delta's remaining wet meadows, marshes and lakes.

Making home in the delta

Like many other Turkish landless peasants, in the 1960s Emine and her family left their mountainous village, near the town of Aybastı (Ordu), for the lower plains of the Kızılırmak Delta. At the time, Emine was nine years old. They were attracted, as Emine and Ismail recounted, by the promise of agricultural development and wage work in the newly drained swamplands. New technologies and the expansion of infrastructure, starting from the large dams upstream on the Kızılırmak River, had transformed the landscape. In the 1940s, Ismail's great-uncle had worked as a shepherd in the lower delta. At the time, he could have acquired land for free, Ismail said, but he could not stand the mosquitoes, and returned to Ordu. When Ismail's uncle arrived in the delta twenty years later, in the 1960s, the land was no longer free. The family could only afford to buy small parcels of bad land. Ismail came to the delta as a young boy. Emine and Ismail experienced living in an environment of seasonal flooding and impassable swamps – a place for fishing, hunting, gathering reeds and grazing water buffaloes. They helped transform it into less volatile fields, canals, roads and settlements.

Emine and Ismail married when she was fifteen and he seventeen years old. They toiled as paid labourers in others' fields, tending corn, wheat, sugar beet, peppers and leeks. Two years after their wedding, Ismail began to work in construction – in Istanbul, and then in Iraq and Saudi Arabia. In the 1980s and 1990s Ismail worked on the two large river dams on the Kızılırmak. Through this work, the family of six gradually saved up to buy their own small parcel of land and some livestock. Ismail and Emine were not unusual in their movement from mountains to delta, to cities, and back to the delta's villages: many of their neighbours shared similar stories. Their siblings had moved to Istanbul, and their squatter land had become valuable property for the booming real estate market.

'If I had also moved to Istanbul with my siblings, I would be rich', Ismail told me one day. The neighbourhood where his siblings had settled, he explained, had become engulfed by new high-rises. Moving to Istanbul now was out of the question: they would not be able to afford even a modest apartment in a cheap district, and jobs were not as good and reliable as they once were, he said. Ayşegül had never left her parents' home, and their three other children all lived nearby. The eldest son worked as a university pharmacist, and two daughters, both married, lived in nearby

villages and towns. The eldest granddaughter was training to become a nurse – a source of great pride for her parents and grandparents. In my conversations with farmers like Ismail and Emine, they were often pondering and questioning past decisions about settling, buying land and cultivation – uncertainty that was emergent from uncertain landscapes and profound ecological and agroeconomic changes.

The agrarian delta had proven to be a disappointment for many farmers who had resettled there: as many farmers explained to me, the delta soil was new, and so it was not fertile. Others remarked on the hardship of flood irrigation, which they remembered in their youth. Irrigation had not made the work easier, they explained. Now they had to contend with irrigation fees and with the expensive and toxic fertilizers and pesticide applications. Farmers living in areas that did not have access to the irrigation conduits used small electric pumps to draw water from the drainage canals.

Fluid histories

Delta histories, as the farmers told them, were interspersed with stories of water ecologies. The delta was constituted by changing matter, shaped by different kinds of water materiality. These stories involved saturated land, swamp forests, irrigation canals, mud, wells, paddies, rain, fog and sea. Wetland histories continued to percolate, and to exceed the agricultural grid of drainage and irrigation canals. For example, Ismail and Emine's neighbourhood was called *Çorak*, which means, literally, brackish, barren. Every day, farmers took their water buffalo herds to graze in the wet meadows near the lake. In the past, Ismail recounted, this was children's work, and sometimes they rode on the buffaloes' backs. Water buffaloes provided milk for yogurt and cream, meat, and before the arrival of tractors in the 1960s, they helped to plough the fields. From April to October, most of the water buffaloes were grazing freely in the delta, and in the winter they were kept indoors in the farmers' barns.

The delta's wetlands were also a source of valuable commodities for national and international markets. Ismail's younger neighbours recalled foraging for wild orchids (*Orchis mascula*) to sell their precious tubers, which were used to make *salep* powder – a thickener and flavouring substance for desserts. Delta people also gathered leeches, used for folk-medical treatments. Orchids and leeches were sold to local merchants, and then entered national markets. Reed cutting, once used to build the thatched roofs of delta houses and barns, provided a source of income for many landless delta farmers, who worked seasonally to gather reeds from

the delta lakes for a Turkish firm that exported them to Northern Europe (see Özesmi 2003). Often, fishermen also worked as reed cutters. They could navigate the seasonally changing labyrinths of reeds and water in the delta lakes and wetlands.

One day in the late summer of 2014, I went to pick blackberries with an Istanbulite couple who was visiting their relatives in the village. We walked across our neighbour's fields, planted with green peppers, and then balanced on an unstable board placed across a large drainage canal. I noticed, to the right and left of the bridge, water pumps taking water from the canal. The water was turbid, filled with green algae. Water pumps, as Jessica Barnes (2012) has written, produced a shifting landscape of waterflows with multiple human and non-human participants. Pumps also marked socioeconomic inequality. One of my companions explained: 'some farmers are too poor to buy irrigation water. And others have cleared fields in areas that haven't yet been reached by the irrigation union, and maybe they never will'. We talked about the unknown mixings of herbicides and fertilizers percolating through their fields, pesticide and fertilizers that farmers apply to their crops watered down with water containing agricultural chemicals. Everyone knew that irrigating fields with drainage water led to diseases both in humans and in the soil, my companion explained. Yet the farmers in this part of the delta were not connected to the irrigation canals, essential for growing their water-thirsty cash crops. If they did have access to the irrigation mains, they were trying to reduce the high cost of irrigation.

We continued walking on the side of a dusty gravel road, picking blackberries from the thorny, dusty bushes alongside the drainage canal. We arrived at a small concrete house, and greeted old Fatima, who was walking about, propped on her cane. She was waiting for her nephews to come and do her farm work, as her husband was too old and sick to work. We sat down on a carpet in Fatima's yard, and she offered us *nokul* sweets. Fatima's husband's father was born in Albania, she recounted. He had arrived in Turkey at the end of the Balkan Wars, apparently, she said, escaping after committing a crime. The story was convoluted, and it involved a murder somewhere in the Balkans. Eventually Fatima's father-in-law settled in the Kızılırmak Delta. He bought the land where we were sitting from a Kurdish family, one of the largest landowners at the time, Fatima explained.

As for Fatima's father, he had come from a mountain village near Aybastı, like Ismail and Emine. He was a carpenter and house builder by trade, and was hired to make fences to mark the property of the new delta's landowners, who had acquired property after the founding of the Turkish Republic. Fatima recounted that her father also bought land from a local Kurdish landlord. These were unoccupied swamps and marshes

(*bataklar*), and also land 'abandoned' by the Christians, she said. This was a veiled reference to the violent displacement of Greeks and Armenians, but Fatima quickly changed the subject. The head of a Turkish militia known for the violent killing of Christian residents, Hasan Topal, is still celebrated as a patriotic hero in the delta. Fatima's father-in-law, she told me proudly, had also fought in Topal's militias.

Stories about life in the delta, and about the farmers' families' arrival in the delta, were stories of remaking place and families through the movements of the population that came to be subjects of the Turkish Republic. These accounts brought together changing broader politics of resettlements and changing family forms with changing ecologies. They were deeply entangled with stories about environmental change: from the brackish mudlands of the Çorak neighbourhoods, to clearing fields, seasonal floods, and the advent of municipal road infrastructure, concrete houses and irrigation and drainage canals. These stories, then, were not about a delta that was once dynamic and gradually stabilized. On the contrary, they were about strategies for creating a home, working and accommodating change, as people themselves become agents of sweeping environmental, agricultural, economic and political changes.

The way home

After four years conducting fieldwork in the lower Kızılırmak Delta (2013–17), I thought I had a good grasp of the predictable routines of the rice-planting and harvesting work in the village's fields, and of the controlled flows of water necessary to make it possible. Earlier in my fieldwork, I had preferred to stay put in the village of Doğanca, near the wetland conservation area. There, I believed, I would become immersed in the dynamic and complex movements of the delta's waters: its shallow lakes, underground percolations, canals, reedbeds, clouds and rain, wet meadows and the urban infrastructure of tap water that now connected Bafra to its surrounding villages.

But the delta's wetlands, as the sections above evidenced, were co-produced with the work of agricultural development, and inseparable from it. The comings and goings of village farmers through the market town's offices, banks, shops, warehouses, markets and factories made rice cultivation and water buffalo breeding possible. To understand the hydrosociality (Krause and Strang 2016; Swyngedouw 2009) of the delta, the contested social lives of its waterflows, I had to attend to practices and places that did not seem immediately connected to the wetlands. This meant, for instance, following Osman on his many errands in town.

Let me follow Osman in the market town one typical day in June 2017. After dropping off the *muhtar* at his office, we drove on to the barbershop, where Osman got a quick haircut and shave while I waited in the car outside. This was a familiar routine. He emerged clean-shaven around a bushy black moustache, with the back collar of his light blue shirt sprinkled with hairs. The barbershop visit had lasted five minutes: Osman was, as always, impatient to move on to his next task. He would only allow himself to linger in the Türkçell phone store in town to chat for hours with a childhood friend, banter with the young assistants and down a few glasses of tea. But today we were running late.

We stopped back at the marketplace to buy tomatoes and peaches. This was the market where women from Doğanca and other delta villages came twice a week to sell their eggs, vegetables and buffalo yogurt, cream and milk. We continued driving past football fields and corner shops, meandering through thickly constructed apartment buildings in grey concrete, and picking up a few *Ramazan pidesi* loaves, still steaming hot. We were driving on what had been the sawmill's railway between 1931 and 1950. The city ended, and we were surrounded by tobacco, pepper and corn fields on gentle hills. While driving, Osman opened the plastic and paper bags from the bakery and invited me to take a piece of the steaming loaf, to snack on the way. He abstained from joining in, as he was keeping the fast. His wife's home-made bread was tastier and more durable, he said (and I agreed). But village women no longer baked a large enough quantity of loaves of bread in the farmhouse wood ovens. As older women themselves admitted, while extolling the virtues of sourdough loaves cooked in wood ovens, buying market bread instead of making their own had saved them countless hours of work, freeing up time for other tasks around the farm and the house.

The hills gave way to the lower delta plains, and the vast rice fields began. We were speeding down the meandering road at 100 km/h, and I asked Osman to slow down. 'I have been driving on this road every day for years', he replied. 'I could drive with my eyes closed', he continued, smiling, slowing down only slightly. As we entered the village of Doğanca, we stopped by the agricultural credit cooperative office. Osman owed them a payment, the director said, pulling out a thickly scribbled spreadsheet from his books. Begrudgingly, Osman took out a roll of banknotes from his trouser pocket, and counted them out to pay what he owed, very slowly and deliberately, almost reluctantly. He acted as if this had been unexpected news, and not, as I suspected, the reason we had stopped at the credit office in the first place. Then, as a rebuke for the large credit payment, he insistently haggled with the director to reduce the price of a tin box of black olives, and eventually succeeded in paying two-

thirds of its asking price. The director of the cooperative also offered me a glass bottle of olive-scented cologne, and a pen with the cooperative logo. We left the office satisfied with our transactions, but Osman dismissed my questioning about the details of his agricultural financing and subsidies.

This is what Osman and his family's farm looked like during my stay there: rice fields surrounded the compound, which included three other houses, belonging to Osman's brothers and unmarried daughters, and his sons with their spouses and young children. Osman's and his brothers' houses were the largest and wealthiest on the street. His house was painted blue, and decorated with faux-marble slabs, which a flock of domestic geese had developed a taste for. Eventually, the nibbled-down decorations, gnawed away by the birds, were removed from the ground floor.

Next to the house was a large concrete shed for the tractors, the water buffalo barn and a separate space for the Holstein cows. The old village school, a one-room building, still stood near the front gate, with its roof caved in and overgrown with weeds. Behind the farm was what remained of a swamp forest, which has gradually been cut down to make space for fields and canals. The forest teemed with little egrets and storks; in the spring, water buffaloes and horses grazed in the flowery meadows in the forest clearings. Less than one kilometre from the farm, a dirt track ended at a large drainage canal, deep and wide enough to navigate a small dinghy. The canal led to thick reedbeds, opening onto Cernek Lake, which was within the boundaries of the delta's protected wetland conservation area.

I stayed in Osman's house as a guest for the first time in the summer of 2014. By the time I joined Osman's household, all but one of his nieces had already married and moved out. Many of Osman's nephews and their peers, all approximately my age, had married. Babies were born. Toddlers started school. Young couples furnished their new apartments, often just on the floor above their parents, even as they continued to take their meals in the parents' (or, from the perspective of women, their in-laws') kitchens. A niece graduated from high school; another came home from college and was looking for work as a graphic designer. One of Osman's sons took over the buffalo breeding operations on the farm, and the other, who lived in a different province, prepared to take the state exam to become a judge. Life in the delta is not statically tied to the watery rhythms of wetlands and the seasonal and economic rhythms of cash-crop fields. Lifecycles, the pursuit of education, changing markets and the contingency of people's choices and preferences mark a fluid relationality to the delta's agricultural ecologies.

Knowing rice

In the early summer, in the lower Kızılırmak Delta, the few wealthy farmers, like Osman, who owned rice paddies, or the many others who leased fields from the state, worked as sharecroppers or toiled in the crews of day labourers, were in the fields all day long. In the nearby villages, green rice seedlings were already poking out from the murky waters of the paddies, but Osman and his brothers' planting had been delayed by unpredictable rain. They needed a few dry days to finish preparing the paddies with large laser-guided land-levellers attached to their tractors, and then release the flow of water from the delta's irrigation canals into the fields. Only then would they throw rice seeds in the shallow water of the paddy.

Every year, Osman planted different rice varieties, all hybrid seeds which, since the 1980s, have largely replaced open-pollination seed varieties (Atalan-Helike and Mansfield 2012). Osman assessed the seeds depending on how they had fared on the market, their yield in the lower delta's fields, new crop blights, changing subsidies and his relationship of trust or mistrust with specific seed companies' representatives. He also kept up to speed with the latest technological advances as far as he could afford to: his laser levellers, for instance, were only four years old. He was planning to expand the water buffalo operation.

Rice work took up many of our conversations in this early summer season. As encompassing as rice labour was, this was not a traditional undertaking passed down for generations: rice production only took off a couple of decades before, when drainage and irrigation infrastructure expanded in the lower delta. The network of water provision was made possible by the construction of large dams upstream on the river in the 1980s and 1990s. However, the very infrastructure that created canals also led to their slow demise. As sediment was trapped in the dam lakes, the delta began to visibly retreat, eroded by wind and sea currents. Salt water began to permeate the irrigation canals, and rose higher in the water table (Yılmaz 2002). The delta's soil became more saline, a change that was noticeable by farmers as they created new fields and planted water-thirsty crops like rice, corn and peppers.

Osman and his family had been early adopters of rice cultivation in the early 1990s. While driving around the village fields on his tractor or scooter, Osman talked to me about the delta as a lively and dynamic agrarian landscape, detailing transformations of land tenure, soil, water, capital, work, chemicals, seeds and technology. Osman often remarked that while I, as a scholar, had to specialize in one field of expertise, being a farmer meant dabbling in all scientific disciplines – including anthropology.

However, scientists at the nearby university, who were active in wetland conservation and sustainable agriculture projects, often assumed that delta residents were largely ignorant, and in need of being educated in more sustainable, efficient and healthy agricultural practices. This view assumed farmers were free and responsible for their own improvement, and not constrained by governmental subsidies, market economies, agricultural credit, land tenure, water provision and the quality of soil (Scaramelli 2018). Here, rather than engaging with the politics of knowledge and of land degradation, a classic topic of political ecology (Robbins 2012), I stay with the farmers' perspectives of what constituted good work (Whitehouse 2012), which is central to their experiences of environmental change in the delta.

Before sunset, we often drove on Osman's scooter on bumpy dirt tracks across the rice fields to check on the work of his sons and nephews. The youngest, who was my age, worked as a teacher in another city, but he came back every year for the two weeks of rice preparation work, and Osman praised his precision with the laser leveller. One day, on our usual inspection drive, Osman pointed towards some rice paddies in the distance, and told me that the family had recently purchased them, expanding their already large land ownership. The previous owners had sold the land as they migrated to larger urban centres, Osman recounted. He would often describe the swamp forest, teeming with birds and flowers, that grew there before it was transformed into agricultural land.

During one of our errands in Bafra, Osman looked up at the concrete apartment buildings, and, with a sigh, wondered aloud whether they were making a mistake. If they had invested in urban real estate instead of in land and the latest agricultural technology, he said, they would be rich from the rent revenues, and would not have to work as hard. Knowing rice, for Osman, meant knowing how to work hard, day and night when needed, and to make difficult decisions in the face of uncertain climates and markets.

The home garden

While the men were at work in the rice fields, inside the farm compound, Osman's wife Fatma and her sisters-in-law and nieces were tending to the house gardens. The soil was finally warming up after a long winter and spring frost. Cucumbers, tomatoes, peppers, leeks and aubergines were already growing in the small makeshift greenhouse, and needed to be transplanted. For days, Fatma had been asking Osman, her sons and her nephews to plough the small house garden, so that we could transplant the seedlings. When Osman did find the time, manoeuvring the tractor

with agility in the small plot of land, Fatma was not entirely happy with the spacing of the furrows, but there was no time to start over.

Gardening work – back-breaking and repetitive, following Fatma's instructions – was the perfect task for the visiting anthropologist. It allowed me ample time for chatting while working side-by-side and gave me a good view of the farm road to observe the comings and goings of relatives, neighbours, farm workers, sheep, dogs, geese, ducks, water buffaloes and horses. Making the house garden was relatively invisible work, even though it occupied hours of a woman's workday and allowed the farm to subsist on the market sale of rice, as eating the home-grown vegetables saved considerable expenses.

I wore Osman's youngest son's chequered shirt and worn jeans, which I fastened with a leather belt. To complete the outfit, I would find a clean pair of socks among the daughter's work clothes, kept in a broken refrigerator in the backyard, and slipped on a pair of Fatma's purple plastic shoes. Before stepping into the harsh sun, I put on a baseball cap, decorated with the logo of the New England college where I had worked, or borrowed Osman's straw hat, which fell over my eyes. Admittedly, no man or woman in the village would even consider wearing this bizarre outfit, but it worked for me.

With a hoe, I began breaking the hard clots of soil and digging shallow holes to plant seedlings. Behind me, Fatma moistened the soil, dragging a heavy watering hose. Later, we would walk back along the row to transplant the seedlings, and water them carefully. In some rows, Fatma instructed me to plant a small handful of beans and corn. I pinched the corn away from the cob, and counted seven or eight beans into each hole. Some of the beans came from the neighbours' gardens, some from Fatma's own beans, others had been passed down for generations as they were preserved year by year for the next planting, and some were commercial hybrid varieties. Fatma sent Osman and me to the agricultural chemicals store in Bafra to buy more beans. These came in a small plastic bag and were coated with bright purple herbicide. On another day, I walked to a neighbour's house to pick up a large bag of *bamiya* (okra) seeds, already soaked in water.

'The soil here is not good', Fatma told me as we took a break from working. I sipped some water, but Fatma was keeping the fast, and she wiped the sweat from her brow. 'We added a layer of soil taken from where canals were dug, nearby', she explained. 'But that still won't make it into good, fertile land. The soil is very hard, difficult to work. It's very difficult to get rid of those weeds'.

I knew that well: every morning I extirpated a dark green, furry-leaved weed and grass that grew in the potato and pea garden, but its roots were

deep, and hard to dig out without also cutting through the potatoes, peas and onions. The day after, they were already sprouting back.

Behind me, Fatma sprinkled fertilizer (*ilaç*, meaning medicine or drug) in the holes. At first, she prevented me from touching the toxic powder, but eventually handed me the bucket. I held my breath; my eyes burned and my fingers itched as I sprinkled the sticky powder on the plants. After planting was completed, my hands were covered in blisters, and my back hurt. My hat, designed to withstand leisurely strolling through a quaint college's lawn in the American Northeast, had been bleached by weeks of sun exposure and sweat. My neck, arms and back were sunburned.

Then, again, it was time to water the fast growing seedlings. We assembled heavy plastic pipes, the same we used to irrigate corn, and connected them to the well. When I pressed the electric switch that activated the pump, water gushed out through a broken connection in the tubing before it could reach the field. After fumbling with the pipes, we repaired the broken link, and cool water reached the plastic hose, attached to the last of the pipes. It took us half a day to water the small field, dragging the heavy hose row by row. The sun was unforgiving, but the work had to be done. Fatma continued to observe Ramadan even as she toiled in the scorching heat, and I occasionally patted her forehead with a wet cloth as she rested in the shade or a flower bush.

'Try to convince your uncle Osman to install those drip irrigation pipes in the field', she said.

'I don't have time now, my niece', Osman replied. 'We are working day and night to plant this rice. We are already two weeks late, and it is an enormous cost.'

One night, it unexpectedly rained, further delaying the irrigation of the rice fields before planting rice, and also flooding our garden, after all our work with the irrigation hose. 'The beans you planted are all rotting now', Fatma told me, worriedly turning to look at the storm outside the kitchen window.

Fatma lived in the farmhouse year-round. But many other women from the most well-off families (including some of her sisters-in-law and her nephews' wives) took residence in the town of Bafra with their children or grandchildren during the school year. In this way, their children could attend better schools in town instead of the village school, which many farmers considered to be inferior in terms of education quality. When the families could afford it, students enrolled in private preparatory schools (*dersane*) to work towards the famed Turkish university admission exam. And, in town, high-school students remained under parental supervision. When the mother of a high-school-age child was not able to move to Bafra, the student could lodge in a student dormitory, or stay with relatives. This

was not a new practice. Fatma herself, thirty years earlier, had lived in an apartment in Bafra during the school term with her two young sons and their cousins. Looking after all the little boys and girls was as hard as farm work, she told me.

All families in Doğanca had close relatives who lived permanently in Bafra, Istanbul, Ankara, Izmir and other urban centres. Some relatives had left for Germany in the 1970s, and a few had returned, investing their savings in nice apartments and gardens. Migration was not unidirectional: many farmers returned to Doğanca upon their retirement from urban wage-work. Others returned at certain stages of their lives. Many others moved between Doğanca, Samsun (the provincial capital) and Bafra. In this sense, even as I remained steeped in the everyday rhythms of work, sociality and water on the wetland, I was aware that the agro-economies and hydrosocialities of Doğanca and the lower delta were entangled with and produced by other places and commodity markets, near and far.

Rhythms of delta water

In the summer of 2014, I learned about a new water canal, built to replenish Cernek Lake's increasingly shallow waters. The canal would take fresh water from the irrigation dams on Kızılırmak River, upstream – the dams that Ismail had helped to build. However, as a professor of agricultural engineering explained in the context of a university field trip to the delta, the canal was still empty (see Scaramelli 2018). The two governmental agencies responsible for water infrastructure and for nature protection, he explained, could not adjudicate who should oversee the regulation of the canal to provide the amount of water needed to maintain the lake ecosystem, which would involve ascertaining how much water of what kind and quality was required, and where and when it was needed. The question of regulating waterflows to and in the lake was made even more complicated by ongoing debates over *who* and *what* the lake, and the water made to flow into its basin, were *for*.

While most knew the roads and walking paths connecting houses, fields, pastures and hamlets in the lower Kızılırmak Delta, only a few, mostly men, had an intimate knowledge of its changing waterways. The lakes were a favourite subject of the many nature photographers who came to the delta on the weekends. The gravel road that ran parallel to the Black Sea coast skirted the shores of the Cernek Lake. Farmers, riding horses in the shallow waters, holding their mobile phones high above the water, herded their water buffaloes across the lake.

Cernek was connected to other lakes, but the navigable waterways were hidden in the reeds, and were known only to those who worked in the lake: fishermen, hunters (despite the formal restriction on hunting in the conservation area), buffalo herders and reed cutters. As Sandro Simon has written in this volume, harvesting molluscs requires an embodied and tactile skill to know the rhythms of waterflows and one's bodily movement on the water. The Kızılırmak Delta's lakes had been co-produced with large-scale irrigation and drainage infrastructure; nevertheless, to fish in the lakes meant to know them in a tacit and experiential way. While the delta's fishermen told me they sometimes do feel at peace while casting their nets from their small dinghies, withstanding freezing cold wind and ecological uncertainty, their existence remains economically precarious, and wealthier, land-owning farmers shun the fishers as uneducated and untrustworthy.

The lakes' waters were dynamic: they changed with the season, with the year's climate and, particularly, with the changing drainage and irrigation infrastructure in the delta. In the summers, the lakes became shallower, even more so since a drainage canal was redirected from the lakes into the sea. Pastures dried up, and the water buffaloes would wallow in the lakes. In the winters, the lake waters froze. The rice paddies and corn fields were planted with cover crops. In the spring the meadows were soaked and dotted with flowers, and the trees in the swamp forests stood immersed in water. In the early summer, the irrigation union regulated the flow of water through irrigation canals to the farmers' fields.

I do not take the material properties of water, its physical capacity for flows and movement, and its chemical property of mixing as givens. Neither do I use water as a metaphor for social relations. Water *itself* does not provide an overdetermined metaphorical or material blueprint for wider notions of environmental change and movement (Helmreich 2011; see also Richardson, this volume). On the contrary, I contend, political processes, economic transformations and biographies become the narratives that farmers draw upon to describe the movements of multiple waters in the delta.

Scholars have often centred histories of marsh reclamations on a narrative trope: that dynamic and mobile flows of water, species and livelihood are fixed through neat and orderly boundaries of land and terraform (e.g. Blackbourn 2007; Cattelino 2015; Mathur and da Cunha 2009). This is an accounting of dynamic water agency giving way to terraformed stability. But in the Kızılırmak Delta, the agroeconomic landscape produced at the moving edge of the disappearing wetland is not a static place, neatly divided between land and water. Rather, as Franz Krause (2017) has argued, we can think of places like the delta as spatiotemporal rhythms, embody-

ing 'shifting configurations of water, mud and dry ground, of people and their practices, and of moods and aspirations'. People, species, markets, water technologies, houses, political boundaries, economies and science remain in flux – their rhythms are uncertain, and unknowable. And water continues to seep through the delta, often in unexpected and sometimes undesirable ways.

Conclusion: delta as a marker of place

Natural scientists, geographers, ornithologists, ecologists and agricultural engineers have all taken the Kızılırmak Delta as their main subject of analysis, centring on the hydrological, ecological and agricultural processes that are interconnected *within* the delta. From a geographer's perspective, the delta is dynamically constituted in the interaction between sediments – carried by a river – and the sea. In a way, different typologies of deltas correspond to different relationships between water, sediment and time.

This delta-scale view fails to account for the circulation of people, water, capital, politics, species and technology across, and beyond, the delta. The delta is constituted within national and transnational flows and processes, from the movement of the river's sediments to global markets, national development subsidies, and transnational population exchanges and migration. A focus on the delta as such, then, often suggests an interest in the scientific study and governance of the natural and cultural resources contained within its geographical region, as Richardson writes in her contribution to this volume. For example, the Kızılırmak Delta, as a spatial unit, defines the boundaries of the irrigation union's work, which operates on the hydrological plain. The delta is also the central category used in the wetland area's management plan, despite the fact that the conservation area only includes the coastal wetlands, and not the delta in its hydrological entirety.

The delta as an agroeconomic unit of production – a delta plain watered by the same river and irrigation network, and with similar soil characteristics – is also overridden by other administrative units. For example, one day I visited the local agricultural bureau office in Bafra. I chatted with the director about agricultural productivity in the delta, and he shared data about crops within what he referred to as the Kızılırmak Delta. His data, however, pertained to the Bafra municipality, and not to the whole extent of the geographical delta. The director showed me that the yearly report of the provincial agricultural bureau describes the delta floodplain as 'one of the most fertile of Turkey', and the 'second-largest delta of the country'.

Within the report, data on agricultural production were subdivided across the different municipal districts and towns, overlaying them onto other spatialities of soil, water, infrastructure, climate and markets.

The delta's emergence as a seemingly self-apparent site of agricultural production (fields, farmers, roads, factories and agricultural credit) and of the production of nature (the conservation area) has been made possible by delta-scale infrastructure of water that, paradoxically, has also led to the demise of the delta itself, preventing river sediments from countering the scouring movements of the sea. Similarly, anthropologist Atsuro Morita (2016) has argued that the Chao Phraya Delta in Thailand shifted, during the twentieth century, from an aquatic landscape of canals and flood-adaptive architecture to a terrestrial landscape of roads and cities – a transformation that remains ambiguous and unstable. Does a delta only exist as sedimented terraform? Does a delta extend into the sea, and how far should we follow its currents? We can think about the land carried away by the eroding action of the waves as still part of the delta, as historical and geological memory. And the rice fields made possible by the accumulated sediments behind the large river dams are, in a way, a *latent* delta.

In the Kızılırmak Delta, farmers' narratives of migration, of work and of agricultural development are entangled with, and inseparable from, their experiences of broader ecological change in the delta. These are connected to the unpredictable rhythms of different kinds of water through the delta, which punctuate stories and experiences of farmers' everyday life in the delta. State planners helped envision the marshes and swamps of the delta as an economically productive agrarian landscape, and Ismail and Emine were not simply swept into this transformation: they were agents and participants in it. Their stories about living through seasonal floods, of rotting seedlings, mouldering houses and frightening swamp forests were also narratives about family-making and class mobility. In their stories, different and incommensurable delta scales converge, fluidly. Their stories exceed the delta, even as they are central to its production as a landscape. In this volume, Alejandro Camargo has called attention to processes of stagnation – things that accumulate when water does not flow – and their political effects. In the Kızılırmak Delta, however, farmers experienced stagnant class mobilities, but they experienced water seepages and flows – as well as agro-economies and relationships between land and water – as in movement, ever changing.

Ismail's questioning of missed opportunities in Istanbul punctuated his ongoing pride in the barn, courtyard and chicken coop that he has built himself. Emine compared the hard work of her youth, raising four children while working as an agricultural labourer in the flooded lowlands, with the easier tasks of tending to the small herd of buffaloes. Osman's

rice fields in the former swamps were, to him, a complicated puzzle, which involved orchestrating a coordinated effort of water, labour, soil, climate, seeds, chemicals and markets. But Fatma maintained that the work was moral, too: part of their wealth would be donated, as *zakat*, to pious organizations; all the hired workers would break bread with the family, and farm dogs would drink milk fresh from the water buffaloes. During Ramadan, everyone would fast, even in the heat of the summer. The uncertain rhythms of deltaic waters were only part of an uncertain life that should nevertheless be moral, through the caring tending of the land, plants and animals, generosity towards neighbours and those in need, and raising respectful and honest children.

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Notes

1. The concern with unruly marsh people characterized many other state and imperial powers in the late nineteenth and early twentieth centuries (Gruppuso 2018).
2. During the time of my fieldwork, the wetland was characterized by three large and interconnected bodies of water. These lakes change form depending on the seasonal rhythms of waterflows, including the flows of irrigation drainage. Fishermen know how to navigate from one lake to the next, following hidden canals opened through the reeds.

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Chapter 8

Available, Yet Unavailable

Anchoring Land in the Ayeyarwady Delta, Myanmar

Benoit Ivars

In May 2018, I met with U Kyaw Gyi,[1] a landless (*le me'*) farmer living in Daungyi, a remote village tract[2] located in the Bogale Township of the lower Ayeyarwady Delta (see the map provided in Figure 8.2). U Kyaw Gyi and about twenty other farmers were trying to regain access to land (an area of 454 acres[3]) that had been confiscated from them more than two decades earlier. In a letter dated April 2018 and addressed to the Central Reinvestigation Committee,[4] in charge of studying land confiscations (*myei thein"*), my interlocutors described their dispossession as follows: 'We have been clearing the forest (*taw"*) and cultivating the land since 1983. . . . But in 1990, our land was confiscated and turned into a state farm. After our land had been confiscated, we could not pursue the education of our children and became landless labourers, working for other landowners'. In 1990, the military-led government re-delineated an area of 1,028 acres of cultivated land in Daungyi (including the 454 acres mentioned above) for the creation of a state farm under the then Ministry of Agriculture and Forest (MAF) (currently the Ministry of Agriculture, Livestock and Irrigation, MoALI). For state authorities, these lands were still vacant and thus could be allocated for the making of a model farm. Some farmers who had previously been working on the land could continue to work on 'their' plots as tenants under the state farm management, while others, like U Kyaw Gyi, became landless.

Following the transition to a quasi-civilian government in 2011,[5] U Kyaw Gyi and other evicted farmers began to entertain the hope that 'their' land would be returned to them. 'Based on President U Thein Sein's speech of 2012', U Kyaw Gyi said, 'if we can prove that a plot has been

Figure 8.1. Farmers staging a ploughing protest on contested land in the Ayeyarwady Delta, June 2019. Photo by Benoit Ivars.

farmed previously, it should be returned to the original owners'. Since 2012, they have repeatedly applied to different levels of authority calling for their recognition as 'original owners' and the reallocation of 'their' land, but unsuccessfully. Part of the complexity stems from the fact that the 1,028-acre land area under the state farm has been worked by other cultivators, including some 'original owners' who were able to maintain their access as tenants. In 2015, the MAF/MoALI agreed to return 575 of the 1,028 acres of land under state farm control to the previous owners. These lands became available again, and tensions arose locally regarding who should benefit from the reallocation.

In this chapter, I reflect on a case of land confiscation or grabbing, as illustrated by the story of U Kyaw Gyi, by looking at the temporal trajectory of landholdings – that is, how land becomes unavailable to some delta inhabitants but available to others. Rather than taking land tenure instability as a homogeneous condition of the lives of delta inhabitants, I examine the production of these instabilities. Most cases of large-scale land grabs in the delta occurred in places where previous governments implemented land reclamation/rehabilitation schemes with the aim of opening new land for cultivation.[6] This was characteristic of what I refer to as 'paddy-land territorialization',[7] that is, the successive attempts by the governments in Burma/Myanmar to expand rice cultivation in the delta, a region known as the nation's rice bowl. Although land instability is a common feature in Myanmar, in the delta it takes a specific trajectory linked to the development history of this region, notably its enactment as an economic unit of (rice) production. In this chapter, I seek to resituate land-grabbing cases in the delta, and more generally the land tenure instability, to the specific history of paddy-land making in the region.[8] I focus on the shifting legal and political settings and how these have influenced, and continue to influence, the temporal availability of land, that is, the period and the conditions under which a farmer can access and cultivate a plot of land.

To do this, I use the notion of anchoring to grasp the ways in which rural inhabitants in the Ayeyarwady Delta navigate an uncertain land tenure interface. The term *anchoring* generally speaks of the 'temporariness' of social and ecological relations in dynamic environments such as river deltas. In these environments, which are primarily characterized by movement, opportunities such as those pertaining to land resources come and go, in a dynamic that is rather uncertain. People rely on various anchoring practices or devices to realign the elements in their environment. These devices contribute to the creation of stabilities which, however, remain temporary, something that echoes the idea of anchoring, that is, an inscription that is transitory. Alejandro Camargo (this volume) puts the emphasis on stagnation and the temporal dimensions of hydrosocial flows in deltas.

New deposits in the river and the resulting 'new' lands have an uncertain time horizon linked to hydrogeomorphological dynamics. Access to these lands is thus constrained both spatially and temporally, only possible for certain durations and at certain speeds. In other words, the materiality of the land determines its availability. The river, through processes of erosion and accretion, plays a key role in rendering land available or holdable. In the case of the lower Ayeyarwady Delta's paddy-lands, the dynamics that cause land to become 'available' or 'unavailable' are more related to shifting policy and institutional settings. As the experiences of my interlocutors in Daungyi demonstrate, some plots of land become available, then unavailable due to new directives and policies of land allocation, and then available again, yet under certain conditions and for a certain period of time only.

Anchoring land

In this chapter, I use the metaphor of anchoring to analyse how inhabitants of the Ayeyarwady Delta seek to reconfigure their access to land amidst institutional and political flows, and how they navigate their way towards achieving a sense of continuity. Anchoring refers to a continuous process of searching for a 'hold' that allows people to reorganize their inscriptions in a socio-ecological environment that remains dynamic and uncertain (see for instance the work of Palmer [2005] or Verdasco [2019] on anchoring in anthropology). Anchoring implies the creation of 'inscription devices', a term that Tania Murray Li (2014) uses to analyse the making of land as a resource available for global investment. Similarly, I argue, farmers in the Ayeyarwady Delta need to build on such inscription or anchoring devices (land titles, testimonies, official letters, etc.) to make or to keep land 'holdable'. The term *anchoring* refers to the practices and hard work people engage in to create some form of continuity in their access to land.

Anchoring is a concept that, I posit, can usefully account for some of the fluidity and instability of delta life. Certain resources, housing sites, economic practices, social relations or skills may serve as anchoring points for delta inhabitants to create some stability in their lives. These anchoring points may cease to be 'available' at some point in time, or may simply cease to be effective, prompting people to look for new ones. In this sense, anchoring and its flip side, de-anchoring, emphasize the temporariness of the multiple relations in which people engage. In settings such as deltas, marked by transience and volatility (Krause 2017), anchoring echoes the situation of farmers on fluvial islands who are continuously working to (re-)create conditions of access to newly emerged land (Camargo 2017;

Ivars 2020). It also applies to those farmer-fishers who, in the context of changing hydrologies, develop new livelihood practices (Vogt et al. 2016), or as Horisberger (this volume) shows, to the shrimp fishers of the Brazilian Parnaíba Delta who have to be attuned to the rhythmicity of the tides in order to catch shrimps. Anchoring speaks to dimensions of adherence or holding, dimensions that remain precarious in the context of river deltas. Complex hydrological and geomorphological, as well as political, social and economic dynamics critically influence the availability of things, and hence the ability of inhabitants to hold onto these things, including land resources, shrimps or molluscs (see Horisberger and Simon, this volume).

In the case of landholdings, anchoring notably echoes the systems of rules, laws and norms that regulate and structure access to land both spatially and temporally. As David Fisher (2016) points out, legal regimes that enact land as a resource to be harnessed entail specific temporalities. Property rights determine, for instance, a certain temporal horizon that defines how long a landholder can hold onto his land. During this period, the property rights, for example a land title, enable the landholder to be anchored and legitimated as a land owner and user. But these rights are not absolute (e.g. Li 2017). They may be conditional on an obligation to work the land for a certain period or under certain conditions, which may change over time (Blomley 2017; Li 2014). New laws, institutions or political orders can influence the temporal horizons of the landholding and hence the ability of a landholder to hold onto his land. Anchoring here refers to the ability of landholders and non-landholders alike to move through different political and legal settings that contribute to (re-)defining the temporal availability of land.

In Burma/Myanmar, with the enactment of the Land Nationalization Act (1948/1953)[9] and the Tenancy Act (1965), it became illegal for farmers to sell, lease, transfer or mortgage their land (an interdiction that remained valid until 2012). Farmers became state tenants who received land use rights (*lok-kaing-kwin'*) and were supposed to cultivate the land on a continuous basis. After 1962, Burma's socialist military regime (1962–88) introduced a quota system, which obliged farmers to sell a fixed amount of their crops to the government at a fixed price. Farmers could maintain their landholding by keeping land in cultivation and by fulfilling their quota duty. The inability of a farmer to provide his quota could lead to the confiscation of the land and its reallocation. At the village level, land committees, and later the People's Committees, could allocate vacant (available) land. The continuous cultivation of land and the fulfilment of the quota were therefore two main elements that defined land anchorage during this period.

Following the 1988 uprising, which marked the end and failure of socialism (e.g. Warr 2000), the new military-led government suspended

the quota system before re-establishing it in 1989 in a lighter form, finally abandoning it in 2003. During the State Law and Order Restoration Council (SLORC) – after 1997 the State Peace and Development Council (SPDC) – numerous cases of land confiscation occurred, notably in the delta region, to the benefit of private entities and entrepreneurs, as well as government agencies and influential individuals who had connections with the military regime (e.g. San Thein et al. 2018). This notably took place in relation to the Wasteland Instructions (1991), which stated that land seen as vacant or fallow by the state could be reallocated in concessions for a period of thirty years. With the transition to a quasi-civilian government in 2011, so-called 'land grabs' became a national political issue. The U Thein Sein government (2011–15) enacted two land laws in 2012, the Farmland Law, and the Vacant, Fallow and Virgin (VFV) Land Management Law (e.g. Oberndorf 2012). It also announced its intent to investigate land claims, which would also become a political priority of the National League for Democracy (NLD) government elected in 2015. The possibility of seeing confiscated lands returned to their original owners rekindled the hopes of rural inhabitants in the delta and beyond.

The case of U Kyaw Gyi borrows from different elements of this history. In 1983, when he was still a landless farmer, he came to Daungyi and cleared some forest land as part of a state-led land development scheme. But in the 1990s, his land was reallocated on the basis that on paper it was still vacant. Since 2012, together with other dispossessed farmers, U Kyaw Gyi has sought to regain access to his land, by positioning himself as an 'original owner'. In this chapter, based on a year of ethnographic fieldwork in the Ayeyarwady Delta in 2018–19, I seek to unravel the historical and political contingency of land tenure instability as experienced by U Kyaw Gyi and other farmers in the delta. In the first section, I discuss the conditions under which U Kyaw Gyi could access 'his' plot, and hence outline the context of his initial anchoring to the land. The second section draws out the more grounded trajectory of the dispossession, and in particular the uncertain temporal horizon that characterizes the plots cleared by U Kyaw Gyi. Finally, the third part looks at the anchoring strategies used by 'original owners' in Daungyi to re-access 'their' land in the context of the political space opening up in Myanmar since 2011.

Making 'new' paddy-land available

Land tenure instability and related large-scale land grabs in Myanmar are far from being restricted to the delta region. Various studies have demonstrated the extent and diversity of large-scale land grabs across the coun-

try (e.g. Hong 2017; Hudson-Rodd and Sein Htay 2008; Kramer 2015; San Thein et al. 2018; South and Katsabanis 2007). Kevin Woods (2015) shows how the Myanmar military government's push for biofuel production quotas in Shan and Kachin States by way of large-scale agribusiness resulted in land grabs. The growing number of land acquisitions aiming at conservation – or 'green grabbing' – also threatens ethnic minority communities' relation to land (Woods 2019). The general context of legal and institutional pluralism that characterizes the land sector in Myanmar notably explains the instability experienced by many rural inhabitants across these highly differentiated agro-ecological regions (e.g. Boutry et al. 2017; Mark 2016; Suhardiman, Bright and Palmano 2019). What is, however, specific to large-scale land grabs in the delta, I argue, is the historical and agro-economic trajectory of the region, and in particular the implementation of land reclamation/rehabilitation schemes since the mid-1970s that aimed to boost rice cultivation. While these initiatives contributed to making new land available, allocation of these lands has been and continues to be contested by different actors, leading to long-lasting conflicts (e.g. Ivars and Venot 2020; Mark 2017; Mark and Belton 2020). The fact that land allocation schemes have been caught up in political and institutional changes notably explains the uncertainties regarding the legal status and availability of land.

The Ayeyarwady Delta, known as the rice bowl of the country, has been described by Michael Adas as a rice frontier, referring to the transformation of the region during the British period (1852–1941) into an intensive and commercially oriented rice landscape (Adas 1974). By the 1930s, the delta had become the world's largest rice-exporting region. The progressive reclamation and appropriation of land led to a situation of land scarcity, something that Michael Adas captured as the closing of the delta rice frontier. On the country's independence in 1948, almost half of the land in Lower Burma (which comprises the delta area) was under the control of non-cultivators, notably moneylenders (including the Indian Chettiars) who had abandoned their land during World War Two and did not come back (van Schendel 1991: 133). In the delta, both the Communists and the ethnic Karens contested the authority of the central government. This political instability, combined with the deterioration of water-management infrastructures and the disruption of the rice-marketing system, led to a significant drop in cultivated areas and rice-production levels (Richter 1976). The many abandoned lands, at least from the point of view of the state, reverted to mixed grass and low bush (International Bank for Reconstruction and Development 1953: 11) and hence became available again. These lands added to the land that had not been reclaimed during British colonial rule, as in the case of forest lands located in the lower delta or

the flooded lands of the middle delta which embodied both fishing and agricultural potential.

For the post-independence governments, the idea of rejuvenating the delta rice bowl often set the scene. Indeed, the delta lands provided nearly half of the national rice production. In a country where rice is not only the main staple food of the population and a major basis of livelihoods, but also a source of considerable income for the state, the delta paddy-lands (*le myei*) are fundamental in both enabling food production and sustaining the state's institutions. In the early 1950s, the Burmese government introduced the payment of subsidies for each acre brought back under paddy cultivation (Tinker 1959: 233). In 1956–-57, a vigorous four-year paddy program was initiated to reclaim paddy-lands, notably through embankments and drainage canals construction (Walinsky 1962). Since the early 1970s, government efforts to reclaim abandoned and waste land further hinged on the construction of water-management infrastructures, for flood protection and drainage (e.g. Ivars and Venot 2019).

In the mid-1970s, Burma's socialist military regime (1962–88) initiated a series of projects known as Paddyland in the delta. These projects, supported by the World Bank, aimed to rehabilitate existing cultivated land (a total of 245,000 acres, or 98,000ha) as well as to reclaim abandoned and waste paddy-land (a total of 115,000 acres, or 46,000ha) (World Bank 1976). They included the construction of large-scale water-control infrastructures (polders[10]) to protect land against flooding and saltwater intrusion. The rehabilitation and opening of new areas for rice cultivation aligned with the central state authorities' intent to tackle what they perceived as a national agricultural crisis (Lubeigt 1987), marked by a steady decline in the rice surplus at their disposal. In the delta, the government identified over 700,000 acres (283,000ha) of 'good rice land' that remained unused after independence (Saw Hlaing 1979). This was part of a discursive framing presenting the delta as holding a potential for the expansion of rice cultivation, something that was instrumental in the making of 'new' paddyland, and hence opportunities for local inhabitants.

This was so, for instance, in the case of U Kyaw Gyi, who was in his twenties in 1982 when he migrated to the Daungyi area, one of the sites targeted for land rehabilitation as part of Paddyland I (World Bank 1976). U Kyaw Gyi was born in a rice-growing village located further north, within the township of Bogale. In Daungyi, the state had officially classified 14,800 acres of land as abandoned and waste, and 9,000 acres as existing cultivated land in 1976. One of the particularities of the area is that it intersects with the Pyindaye reserved forest. The land already cultivated by local farmers in the 1970s was previously forest land, which had been gradually converted to farmland. The case of abandoned and vacant

land was more complex. Although the state viewed the land as unused, part of it, which was covered either by grass or mangrove forests, could be temporally cleared and cultivated by local farmers. In most cases, this occurred without declaring the land to the authorities, so as to escape the quota procurement system. But there was another aspect that influenced the availability of land and partly justified the state's interest in increasing its presence in this region.

After independence, the delta was an area of activity for anti-government groups such as the Karen National Defence Organisation (KNDO) and the Burma Communist Party, who challenged the authority of the central government (Smith 1999). In Daungyi, the presence of the KNDO was well known, especially in the Pyindaye reserved forest, which served as a refuge site. As told to me by a former member of the village tract People's Council, 'no one could reclaim the land because of rebels. The forest [*taw"*] grew again. In order to reclaim and cultivate a plot of land, farmers had to ask permission from the village leader, who could state whether it was safe or not'. Until the early 1970s, the government armed forces considered the Daungyi area to be 'black' – that is, entirely controlled by anti-government groups.[11] Burma's socialist military regime sought to eliminate these insurgents, notably by clearing the mangrove forests in the lower delta (see also Boutry et al. 2017: 76). For instance, one man described to me in detail how he was enrolled, in the 1960s, as a labourer under the Cooperative Department to clear mangrove forest in Htaw Paing (south of Daungyi; see Figure 8.2). The purpose, he said, was to convert the area into farmland and enable the creation of a new village settlement intended to accommodate the families of former government employees and military personnel originally from Rakhine State.[12]

In 1969, the government armed forces (Tatmadaw) launched a campaign known as the Four Cuts (*hpyat lei" hpyat*) to clear the delta region (and the country in general) of anti-government groups, an operation that ended in 1974. The Paddyland projects which chronologically followed their conversion of the delta into a 'white' area – that is, under full government control – can be viewed as contributing to the government's intent to transform the delta 'from a white area into a hardcore area' (Maung Aung Myoe 1999: 157). The reclamation/rehabilitation of paddy-land was also in line with Burma's socialist military government's intention after 1971 to recentre on agricultural development (e.g. Steinberg 1981). In sum, the successive governments in Burma/Myanmar saw the delta paddy-lands as a key resource to harness. The so-called Paddyland projects contributed to the state's objective of re-establishing its presence in these formerly contested areas and increasing its control over land and people. On the delta

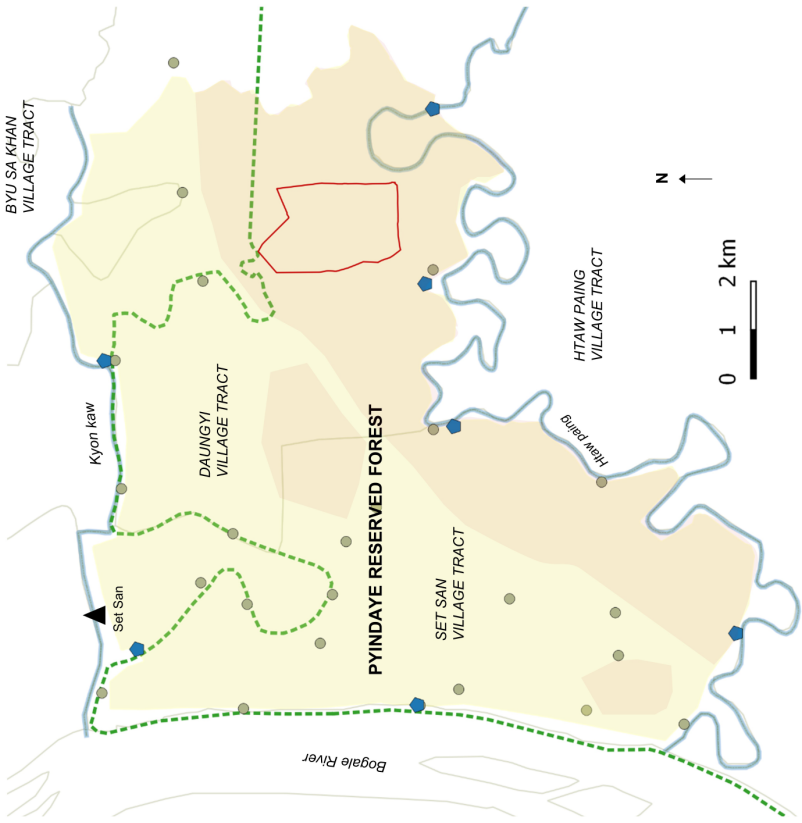

Figure 8.2. Map of Daungyi Island illustrating the status of land prior to the polder construction in the 1980s, and showing the location of the state farm. Figure by Benoit Ivars.

scale, representing nearly four million acres of cultivated paddy-lands, the Paddyland projects' areas may appear negligible in terms of land acreage. They constituted micro land frontiers that led to very localized processes of territorialization. It is in this highly politicized landscape that U Kyaw Gyi and other farmers were able to access their plots of land.

Cultivated, but still vacant land

In Daungyi, due to delays in the implementation of land-clearing activities by the responsible government agencies (see World Bank 1976: 77–82 on the land reclamation and settlement procedure), it was the farmers who undertook the task of clearing available land – that is, land classified as vacant and abandoned under the project and which was not already claimed – following a 'first come, first served' logic. As of 1983, U Kyaw Gyi had cleared around ten acres of land, which was previously covered with a mix of grass and mangrove trees. For four years, he said, he could cultivate his plots with the agreement of the village tract and township authorities. During this period, he fulfilled his quota duty. In 1987, amid further political turmoil, a military person came to the village and asked if there was still vacant land in the area. 'He was told that all the land was already cultivated', said U Kyaw Gyi, 'but in the next days, this military person set a deadline for us to move, and our land [in total 1,028 acres] was forcefully taken by putting up flagpoles'. Farmers whose land was located within the demarcated area were nevertheless able to continue to cultivate their plots as tenants by paying a share of their production (15 to 20 baskets of rice per acre). Between 1987 and 1989, the government suspended, at least officially, the quota system in the context of political tensions that led to the military coup of 1988. The payment of rent on this land, however, resembles a continuation of the quota practice in a period of great instability, bitterly experienced by some inhabitants in Daungyi.[13] None of my interlocutors had met the military person face to face. What they knew about him was the information they received from the village tract Law and Order Restoration Council (LORC) authorities, who were collecting the rice baskets. It remained relatively unclear who had benefited from the rent collected from farmers in the area in 1988–89 (the military person, the village tract heads, and/or higher-level authorities).

In 1990, the landholding situation in the area claimed by the military person changed again. This time, as one of my interlocutors recounted, it was a local agent of the MAF who came and claimed that the 1,028 acres of land would be re-delineated as a state farm (*naing·ngan taw saik kwin''*)

to serve as a model farm area. Once again, the land, although cultivated, was said to be vacant by the local MAF agent. Some of my interlocutors, who are former village tract-elected leaders and elders, argue that farmers who had reclaimed land in the area in the mid-1980s received temporary cultivation rights for one year only. In theory, they had to register every year at the village tract and township administration offices in order to continue to cultivate the land. This is consistent with the provisions of a MAF directive from January 1985 which stipulated that the reclaimed land was tenable for a year only (World Bank 1986: 24). In the absence of a final allocation decision, land could be reallocated every year, being 'legally' available.[14] Other interlocutors said that the area had already been designated as a state farm, but that farmers had been able to cultivate the land in a timely manner before the state farm was implemented. Another hypothesis to explain the uncertain status of land tenure is that part of the land was still legally forest land and had not yet been legally degazetted and recategorized as farmland. Although my interlocutors claimed to have been paying their quotas to the government, their rights were not officially registered.

The farmers who could not continue to access their land after 1990 do not recognize the temporary nature of their tenure rights. One of them asked me, 'Since we had cultivated the land and fulfilled our quota obligation, why should we leave our land?'. Some of the 'original owners' could continue to work their plots as tenants under the state farm management. The MAF contracted several dozen farmers to work the land as tenants in return for a payment of five to twenty baskets of rice, depending on the land quality and whether they received inputs (seed, fertilizer) from the MAF. However, not all farmers were able to continue working 'their' land, either because they were not privileged due to lack of political connections at the village-tract and village level, or because their economic conditions did not allow them to do so. In order to become tenants, farmers had to provide guarantees (houses, boats) that had to be approved by the village tract authorities. Some of my interlocutors who were non-native, and therefore recently affiliated to the village political and social networks, blamed their landholding trajectory on their lack of connections: 'We were poor and easier to manipulate', one of them lamented. But other farmers, who were in a better economic situation and/or received patronage from village-based elites, could continue to hold onto their lands as tenants. Thus, for some farmers there has been a certain continuity and stability in a political landscape perceived as uncertain, while for others, like U Kyaw Gyi, the political transition did not provide opportunities to maintain their land anchoring. Most of them became landless labourers working for other 'landowners'.[15]

Anchored into the political transition

With the opening of the political space in Myanmar since 2011 and the government announcement to investigate land confiscation cases, new land-anchoring opportunities emerged. In Daungyi, the value of farmland has increased significantly since the enactment of the 2012 Farmland Law, which enables farmers to legally sell their land. Apart from rice cultivation, the delta environment in this area does not offer many livelihood alternatives. The fishery sector remained under the control of village-based elites, who appropriate most of the surplus. For the farmers who lost 'their' land in 1990, as well as those who could continue to work on the land, the possibility of having the land reallocated opened up a space of opportunity and uncertainty. For original owners, like U Kyaw Gyi, claiming back the land is a matter not only of reparative justice, but also of future opportunities for themselves and their descendants, who are also landless. In this section, I describe three aspects of what I refer to as anchoring strategies, through which dispossessed farmers try to regain access to their land: (1) the political horizon of being an 'original owner' and 'landless' farmer in a form of alignment with the discourse of the new quasi-civilian governments; (2) the multiplication of anchoring points through the numerous letters addressed to various personalities and governmental authorities; (3) the presence of the anthropologist, which is partly explained by the opening up of the political space, who her/himself becomes a potential anchor for actors in search of legitimation.

Being original owners as the political horizon

In 2012, the residents of Daungyi started to hear about the new quasi-civilian government's willingness to investigate land grab cases and the possibility to have the confiscated land returned to its original owners. Positioning oneself as an 'original owner' became part of a strategy of legitimation (see Huard 2020). U Kyaw Gyi and other farmers whose land had been seized in 1990 pointed out the fact that they had cleared and cultivated the land first. They refer to the image of 'vacant' land – using the term forest (*taw"*) abundantly – which they had striven to put to productive use. For at least four years they had been cultivating the land and fulfilling their quotas and it was unfair that they could not continue to work on their land, instead being partly replaced by other farmers who accessed 'their' land as tenants. They also emphasized their condition as 'landless' farmers. After their eviction, they had to shift their plots repeatedly, offering themselves as a labour force to the highest-bidding landowners, being out of work at certain times of the year, renting a plot when they could, and

embracing other livelihood options. This, however, did not allow them to maintain their standard of living as landowners, according to U Kyaw Gyi; some had to take their children out of school so that they too could work as wage labourers. These arguments are directly aligned with the new political orientations of the quasi-civilian governments, which have made the issue of land confiscation and inequality a central political issue ('Social Inequality. . .' 2016). Landlessness rates in the delta reach up to 60 per cent of the population, more than in the Dry Zone where households enjoy better labour mobility and livelihood opportunities in other sectors (Groupe de Recherche et d'Echanges Technologiques 2019: 3).[16] Furthermore, the dispossessed farmers contest the validity of the state farm that was to serve as a model farm, referring to yields that are no better within the state farm than outside it. Other farmers, without necessarily claiming the label 'original owners', also presented themselves as legitimate beneficiaries of potential land reallocation. This was particularly the case for the farmers who had become tenants on the state farm land between 1990 and 2015. As one of them put it, they had also contributed to keeping the land in productive use, sometimes for more than two decades, and depend on the land for their livelihood.

In 2015, after multiple solicitations to the village tract and township-level Farmland Administration Body (FAB) in charge of land management,[17] the village tract authority informed the villagers that reallocation of a total of 575 acres of land located within the state farm (out of a total of 1,028 acres) was going to take place.[18] The village tract administrator (VTA) (*ok-chok-yei"-hmu*), an elected representative who also acts as the president of the village tract FAB, was in charge of the land allocation process. Among the eighty-three farmers who received land as part of the reallocation plan,[19] my interlocutors distinguish three categories of beneficiaries: (1) the original owners whose land was geographically located in the released area; (2) original owners whose land was geographically located in the unreleased area (454 acres) that remains under the control of the state farm (e.g. U Kyaw Gyi, who received three acres of land but whose 'original' land is located in the unreleased area); (3) farmers who were not original owners but who had been tenants within the state farm. The result of this allocation fuelled local frustration, especially among the original owners who belonged to the first category of beneficiaries. They complained to the VTA that they had received less land than they were entitled to because part of their 'original land' had been given to other farmers. Some farmers who were not included in the list of beneficiaries, but who claimed to be original owners, also contested the allocation results. Officially, they were not 'in the village' at the time of the reallocation. Unofficially, some said that they were simply unable to cover the registration fees needed to

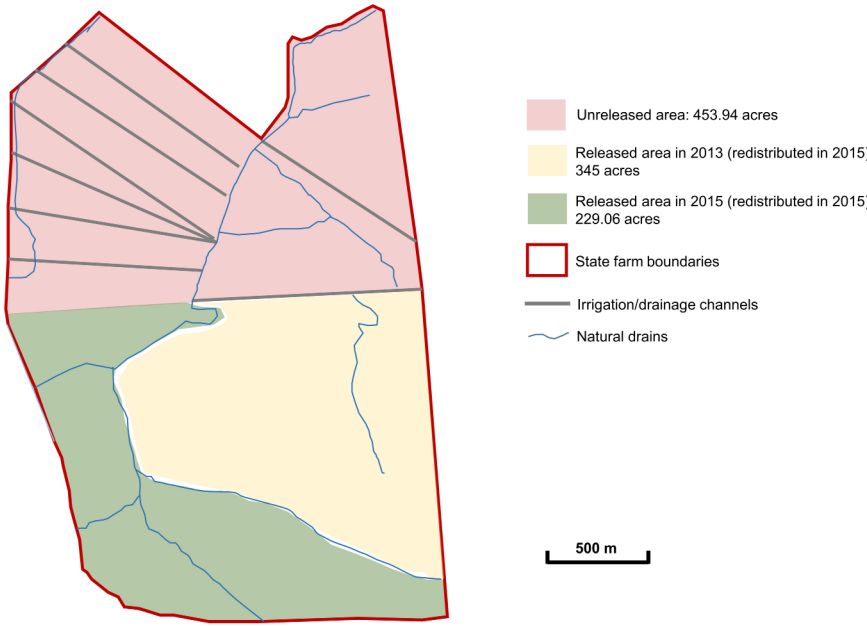

Figure 8.3. Land status within the state farm as of 2018. Figure by Benoit Ivars, based on official maps collected from villagers.

get their names on the list during the procedure. Some non-beneficiaries argue, for instance, that some farmers contributed five- or six-digit fees to the village development fund to cover the administrative costs of the procedure – in other words, to ensure that they got the amount of land they wanted.

On the ground, the land allocation led to tensions between different categories of beneficiaries, as well as between beneficiaries and non-beneficiaries. One point that fuelled the tensions was the opportunity for the farmers who had received land to secure their access by obtaining Land Use Certificates (LUCs), something that was made possible after the enactment of the 2012 Farmland Law. The distribution of LUCs, which serve as land titles, would enable those farmers to obtain permanent rights to the land. In order to show their discontent and fear, some beneficiaries resorted to land invasion and encroachment on neighbouring plots that they coveted. These actions were intended expressly to keep the options open for land reallocation and to call for a new investigation by the authorities. In 2016, the VTA was forced to intervene, and initially announced that the beneficiaries had received only temporary cultivation rights for a period of one year only. Since there was no final land allocation decision, a situa-

tion somewhat reminiscent of that in the 1980s, farmers could not obtain land titles. However, tensions continued and the VTA announced the confiscation of the land before further investigation. In 2017, land was again allocated, this time to 'original owners' whose 'original' land was located within the area released by the MoALI in 2015. Other categories of former beneficiaries, comprising a total of about forty farmers, were excluded, U Kyaw Gyi among them.

Multiplying the anchoring points

For U Kyaw Gyi and other farmers who were not included in the list of beneficiaries in 2017, another anchorage space had to be found. For them, an opportunity remains with the 454 acres of land that are still under the control of the state farm. This was, as my interlocutors claimed, the promise of the village tract and township FAB: to allocate the remaining land to the farmers who did not benefit from the previous land allocation. However, this promise had not been fulfilled, and when I met U Kyaw Gyi in 2018, their case had not progressed. Of the forty farmers excluded in 2017, about twenty have since stopped being actively involved in the land-claiming process. Indeed, the provisions for obtaining the registration and the cost associated with their requests proved daunting. The procedure required numerous trips to the township capital (a three-hour journey), meetings with officials and interminable waits at the government offices. Since 2015, in order to become beneficiaries, they had been struggling to obtain written testimonies from the VTA or village elders (*ya' mi' ya' pha'*) proving that they were 'original owners'. One of their difficulties is that they have no written evidence of their claims, such as tax receipts (official documents issued by the government proving that they were officially registered as land tillers and paying tax on their plots). Although some of my interlocutors claimed to have received these documents, they lost them after the passage of Cyclone Nargis, which devastated the region in 2008. The identification of 'original' owners and land acreage relied upon oral and written testimony from current and former village-elected representatives as well as elders. The loss of physical evidence due to the cyclone made land-claiming operations more difficult for some residents. For others, who had political connections with village tract and township authorities, the aftermath of Cyclone Nargis turned into an opportunity. They too claimed that they had lost their land documents and that they had cultivated the land in the past.

In 2017, the same land-claiming efforts had to be repeated. The VTA organized meetings with the farmers at the village tract level, as well as with the General Administration Department in Bogale, the township capital.

U Kyaw Gyi, who leads the claimant group, wrote another round of letters to different levels of government authorities, including one dated 5 April 2018 to the central committee in charge of reinvestigating land grabs. In this letter, the claimants complained that land under the state farm had been released and reallocated but that around forty farmers who were 'original' landowners had been excluded. As a result, they presented themselves as the rightful owners of the remaining 454 acres of land that remained under the state farm management. These letters are still unanswered. The farmers have also been using the press and radio to voice their grievances. In 2018, the group again sent letters to the regional FAB, and a letter of instructions was supposedly sent back to the township level for investigation. One of my interlocutors lamented that although a field report was to be sent by June 2018, no investigation took place, and continued: 'The VTA who is the president of the village tract FAB is responsible for monitoring the procedures . . . But he and the township authorities are slowing down our requests'. Nevertheless, their most promising approach is still to continue to solicit as many stakeholders as possible, hoping to be recognized as the legitimate owners of the 454 acres.

The anthropologist as the next anchoring point?

The researcher who navigates these spaces of conflict and instability is necessarily her/himself caught up in the narrative. When I visited Daungyi for the first time in 2018, my interest was not the land tenure issue. I was initially interested in the presence of water-control infrastructures (polders) and how the inhabitants had been able to adapt their agricultural practices in relation to these infrastructures. During my first exchanges, I was nevertheless quickly questioned about land disputes in the delta. In one of my first encounters I was urged to meet with a certain U Kyaw Gyi. When I first met U Kyaw Gyi, I was the only one to answer questions. My interlocutors were suspicious, because it was not the first time that people from outside the village had been interested in the land case (which was not my original intention). I thus presented one of the letters I had obtained from the Regional Minister's office of MoALI (formerly MAF), which was a form of authorization for me to travel in the delta and carry out my research. This letter, vague enough to allow me to study water management as much as land tenure, was also illustrative of the possibilities offered to the researcher by the opening up of the political space in Myanmar since the 2011 transition.

As I had no knowledge of the land situation before my meeting with U Kyaw Gyi, I could not make the connection between the state farm and the MoALI. I was therefore quickly identified as someone 'who should

know things', and it is obvious that this influenced my relationship with U Kyaw Gyi and my other interlocutors in Daungyi. I was in turn presented with a series of letters and documents that illustrated the history of the disputed area. I was accompanied to meetings with the village elders, key witnesses in the story, who were the anchoring points of U Kyaw Gyi's narrative. Over the course of the days and discussions, it became clear that I myself took on the role of a sort of anchoring point, a resource for some of my interlocutors who saw me as someone who could advance 'their truth'. I insisted several times that I was not a promise-bearer, but that I could document their story. I was then rapidly faced with a social demand that I was not sure how and whether I should answer. The story that I narrate here of land tenure instability is that experienced and shared by the actors involved in the conflict, and in which I was myself caught up. It should not obscure the fact that the land situation has been more stable for many other actors in Daungyi, as elsewhere in the delta. In the case of the land confiscation in 1990, it is clear that some of the 'original owners' were also able to continue working the land successively as tenants and then obtaining direct access to land, after the reallocations of 2015 and 2017. Land tenure instability that characterizes the position of farmers along this micro land frontier is politically situated. The dimension of instability should therefore not be essentialized to the detriment of others, such as that of continuity of land access. Some farmers have been able to hold onto their land, to maintain and/or shift their anchorage in order to further their access. For others, lack of political support or uncertainty about the legal status of land has led to forms of dispossession. This resonates with the statement made by Franz Krause (this volume) when he says that inhabitants of the Mackenzie Delta in Canada are not simply passive victims of the volatile dynamics in their environment, but instead appropriate them and contribute to shaping them too. The ways in which socio-ecological dynamics, and in particular their instability, are experienced and negotiated in a delta are always situated in time and space. In the process, some benefit, while others experience losses. An anthropology of delta life must then contextualize and situate these uneven experiences of instability or 'volatility', in order not to normalize them as an inherently and equally-lived aspect of life in deltas.

Conclusion

In this chapter I have sought to illustrate the historical and political contingency of land tenure instability as experienced by some inhabitants of the Ayeyarwady Delta. The case of U Kyaw Gyi shows how, in the space

of thirty years, a farmer in the delta can become successively landless, a landowner, and then landless again, before finding a plot of land and losing it once more. This instability, which I have shown is historically and geographically situated, became an opportunity for some inhabitants, while for others it acted as a constraint that eventually led to a form of dispossession. The ability of those who lost 'their' lands to reposition themselves as the legitimate and legal tenure-rights holders notably relied on the mobilization of anchoring points. Oral and written testimonies from elders and village leaders, official letters and stories all served as anchoring points to regain access to land. In a fluid political and institutional environment, anchoring hence refers to people's work and strategies to recreate possibilities of access to land.

If anchoring practices, in the case of the Ayeyarwady Delta land, echo an institutional fluidity that is not strictly 'deltaic', the term *anchoring*, I argue, can be a fruitful way to approach the provisionality of life in deltas. Thinking in terms of anchoring is to acknowledge that delta life is generally characterized by opportunities that are temporally and spatially constrained. The instability or 'volatility' experienced by delta inhabitants, as Franz Krause and Mark Harris indicate in the introduction to this volume, is more often 'the status quo', and material certainties and structures the result of 'people's initiatives and hard work'. Anchoring refers, in this sense, to a conjunctural inscription in the delta space, and to the fact that delta inhabitants depend on the creation of anchoring points, by which they can achieve some continuity in their lives. This continuity is not absolute, but results from a constant process of realigning or re-anchoring with other elements in an environment that remains in motion.

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Notes

1. A pseudonym used to preserve anonymity.
2. The Myanmar administrative structure consists of village tracts, townships, districts, states/regions and the union/central level. A village tract is made up of several village settlements.
3. One acre is equivalent to 0.40ha.
4. The Central Committee for Rescrutinising Confiscated Farmlands and Other Lands created under the National League for Democracy (NLD) government elected in 2015. This committee, replicated at all administrative levels, is tasked with investigating 'land grab' cases.
5. The country has been ruled by three successive military regimes since 1962: the socialist military government of U Ne Win (1962–88), the State Law and Order Restoration Council or SLORC (1988–97) and the State Peace and Development Council or SPDC (1997–2011).
6. This is not to deny that many land losses in the delta occurred through intra-village politics and small-scale land transfers.
7. As Vandergeest and Peluso (1995: 388) put it, territorialization is 'about excluding or including people within particular geographic boundaries, and about controlling what people do and their access to natural resources within those boundaries'.
8. It is arguable that land and water materiality plays a role in the trajectory of landholdings in the delta. Land reclamation policies were notably based on the promises that delta land was suitable for rice cultivation. Following Franz Krause (this volume), I consider that land instability or 'volatility' in the delta results from the intersection of various parameters, which are not limited to institutional and political elements alone, or to the political ecological history of the area.
9. Under the 1953 Land Nationalisation Act, 6.77 million acres of paddy-land, mostly located in the delta, had been expected to be nationalized, but as of 1959 when the act was suspended by the Ne Win caretaker government only 1.4 million acres had been distributed (i.e. around 20 per cent of the land) (Richter 1968: 102).
10. A polder is an artificial expanse of land reclaimed from the sea by dykes and dams and whose level is lower than that of the sea.

11. The government armed forces (Tatmadaw) divided the delta region into three areas: 'black' areas, which were under the control of anti-government groups such as the KNDO or the Burma Communist Party; 'brown' areas where these groups were active, but where the government armed forces had a presence; and 'white' areas, which were fully controlled by the government.
12. Rakhine (Arakan) is a state located on the west coast of Myanmar.
13. In Daungyi, the early 1990s were years of tremendous political instability, as mentioned by the *Burma Alert* (Vol. 2, November 1991). My interlocutors reported cases of land confiscation in the context of new military operations to clear the area of KNDO groups who had re-entered the region. Some cultivators originally from the village of Kathabaung were for instance accused of having collaborated with KNDOs and had their land confiscated by the then village tract LORC president and his two secretaries. Such land seizures were explained as decisions made by higher-level authorities. The president of the village tract LORC was originally from Rakhine State, and had close relations with locally established military persons. According to my interlocutors, there had been an influx of Rakhine people in Daungyi since the 1980s. The amount of confiscated land varied from a few acres up to three hundred acres from a large landowner, who was rumoured to be a spy (*kyaw yoe*) for the KNDO in the area. The members of the village tract LORC benefited directly from the confiscated land, either by placing their relatives as tenants on the land, or by selling the land, a practice that was illegal until 2012, but nevertheless widely carried out.
14. Kevin Woods (2014) also shed light on what can be deemed as 'legal' land grabs in the case of land awarded based on the 1991 Wastelands Law and the two new land laws enacted since 2012.
15. In Myanmar, the state remains the ultimate owner of all land. The term "landowner" applies to the farmers having permanent land use rights over land.
16. According to a study conducted by the Japan International Cooperation Agency (JICA 2010), about 53.1 per cent of the population of Daungyi were landless in 2010, 22.6 per cent were landowners, and the rest were non-farm operators. These figures, although similar to those observed in the delta region (between 50 and 60 per cent landless, e.g. Boutry et al. 2017; Tripartite Core Group 2008), give an overview of the land situation in Daungyi.
17. Committees created to apply the terms of the 2012 Farmland Law at different administrative levels.
18. According to my interlocutors, an area of 345 acres had been initially released in 2013 (see Figure 8.3). However, the information was not shared by the township authorities. The tenant farmers continued to work under the state farm management until 2015.
19. In practice, only 520 acres have been officially redistributed. The remaining 55 acres of land would have been either sold or reserved by village elites, and thus were not included in the reallocation plan.

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Conclusion

Confluences and Distributaries in Delta Life

Franz Krause and Mark Harris

Towards a deltaic lens

Life in river deltas has become a matter of global concern. Threatened by rising sea levels and subsiding surfaces, starved of sediments and susceptible to extreme weather events, trapped in disadvantageous economies and governed by unaccountable, often postcolonial administrations, deltas and their inhabitants are known to be in crisis (Jensen and Morita 2020; Nicholls et al. 2020). Propounding insights into the lives of delta inhabitants around the world, this book has shown that these people are indeed struggling on various fronts, yet significantly, these fronts do not easily align with the dimensions of the global delta crisis. Instead, the ethnographies have foregrounded how the delta itself is not a given in people's lives, but is made by their activities and the currents they interact with: flows into, out of and through delta people's homes and livelihoods.

This book has treated the delta as a question, and has proposed some answers. Using the entry points of hydrosociality, volatility and multiscalar rhythms, the contributors have found, first and foremost, that there is no single and stable answer to the questions of what a delta is, what challenges it poses, or what characteristics its population possesses. Nevertheless, the volume has clearly shown that attention to life in river deltas yields analytical insights into the dynamism of more-than-human sociality, which may prove useful in other settings too. In this sense, deltas can be seen as laboratories of variability and temporality, where sociocultural and material volatilities provoke certain phenomena in particularly salient ways. These phenomena are likely to occur elsewhere, too, but it is through a deltaic lens that we have been able to discern them lucidly and with distinction. It is this lens that we also offer to colleagues working in

other settings where uncertainty, transformation and more-than-human relations matter.

Ethnographies of delta life

We call this deltaic lens 'confluences and distributaries', pointing to its open-ended, non-linear and process-oriented sensibilities. Tanya Richardson describes how the Danube Delta only became known as a delta, and even then only in particular circles, through a long process of nation-building, mapping, development and conservation. The inhabitants, in contrast, have long referred to their surroundings as the 'reed beds', foregrounding the landscape they encounter rather than the geomorphological abstraction mapped by state and commercial agencies. Lukas Ley documents how frequent flooding in coastal Semarang, Indonesia, is not only due to infrastructural neglect, but is also a necessary by-product of the logic of the modern city. Systematically excluded from the prospects of prosperity, people find themselves literally at the downstream margins of the 'Stinky River' that beautifies the city by draining its wastewater into their neighbourhoods. Alejandro Camargo illustrates how flows converge and stagnate in the Colombian La Mojana, where they provoke multiple, mostly negative consequences for the area's inhabitants. As sediment, fish and mercury are trapped in the delta, it becomes a focal point for activities and processes originating in a much wider region and taking place over a much longer history, from artisanal gold mining to land conflicts. Franz Krause traces how economic shifts intersect with identity politics and hydrological volatilities to create an ever-transforming Mackenzie Delta in Canada. Its inhabitants excel at continually reinventing livelihoods, traditions and relations with the landscape.

Nora Horisberger details how a fishing village in the Brazilian Parnaíba Delta grows and shrinks according to the tides that promise valuable shrimps. Rather than a mechanical process, this resonance emerges through the skilful and work-intensive attunement of the fishers to deltaic processes, an attunement that is constantly vulnerable to being led astray and falling out of sync. Sandro Simon discusses how mollusc-gleaning rhythms in the Senegalese Sine-Saloum Delta emerge in a historical conjuncture of ecological, economic and cultural trajectories. Each gleaning period is preceded by an interval of waiting that stands in a productive tension with the conditions and opportunities of the mollusc economy. Caterina Scaramelli narrates how a farming family's making ends meet in the Turkish Kızılırmak Delta brings the delta into being at various scales. Delta inhabitants are not victims of the political and material tides that

wash through the delta, but agents who actively appropriate and negotiate opportunities and setbacks. And Benoit Ivars shows how inhabitants of the Ayeyarwady Delta in Myanmar attempt to secure their access to land in a context where not only is the land itself highly mobile but the political and institutional framework also keeps shifting. People develop various strategies for anchoring their land rights to material and semiotic points that promise relative stability in a volatile world.

Redescribing deltas from the inside out

All these stories are specific to their respective deltas of origin. Yet it is conceivable that similar stories also unfold in places that are not river deltas in a geomorphological sense. A deltaic lens may be applicable beyond deltas. This becomes more evident when, rather than merely considering the individual contributions to this collection, we also highlight their mutual confluences and distributaries. For example, one key confluence concerns the move to redescribe deltas from the inside out. Instead of taking a geographic unit for granted, many contributors discuss how a delta becomes – or does not become – a relevant category and scale for its inhabitants and other people. Richardson makes this point most elaborately, displacing 'delta' as the sole and primary way of referring to the area between the Danube and the Black Sea. She indicates that resisting naturalisms is a perpetual task for anthropologists, for whom it can be too easy to uncritically adopt dominant framings of a place that originate elsewhere. Simon makes a similar move when contrasting the 'waterwork' of mollusc gleaning with the waterworks of infrastructure and governance. Moving out from the skilled and situated practice of gleaning and the networks of mollusc trade creates a different field of relations than starting from large-scale irrigation and shipping infrastructures. This 'waterwork' field is not only different in spatial extent, but also much more dynamic and people-centred than that of 'waterworks'.

Following daily lives on a Turkish farm, Scaramelli finds that the people she accompanied there had different and shifting notions of what and where the Kızılırmak Delta was. She notes that the delta-level water management infrastructure, which reinforces the conventional delta scale in both agricultural production and nature conservation practices, has paradoxically resulted in a demise of the geomorphological delta through its manipulation of sediments and erosion. Scaramelli adds that for the anthropologist, too, recourse to the delta scale can have analytical purchase, for instance to avoid other taken-for-granted categories like municipalities or provinces, and to foreground the histories and dynamics of water and

sediment flows, infrastructures and policies as they mesh with people's lives.

In Scaramelli's contribution, the deltaic space comes into being through historically contingent more-than-human relations, many of them with places and people outside the delta. As Richardson reminds us, this space does not have to be a delta at all. In fact, Horisberger emphasizes that the people in the area between the Parnaíba River and the Atlantic inhabit 'floating' islands that appear and disappear like sandbanks, rather than a delta. And Ley argues that the flood-prone districts of coastal Semarang are best understood as a heterotopia, a space set apart from the rest of the world, yet intimately mirroring it. Moreover, the relations that participate in making a delta may include contributors like plants, which the Parnaíba Delta inhabitants call 'living beings as we are', capable of guidance and exchange, but also of cheating and lying. Similarly, older people in the Sine-Saloum Delta know that mollusc abundance depends, among other things, on the benevolence of ancestral spirits who must be appeased with offerings at the shell middens, as Simon explains.

Amphibious multidimensionality

Water is one of the key more-than-human participants in the making of delta life. However, as Ivars makes clear in his discussion of the delicate land tenure in the Ayeyarwady Delta, waterflows and associated sedimentation and erosion come to matter in conjunction with political processes and institutional arrangements. Camargo elaborates how the temporal heterogeneity of waterflows entangles with social relations in La Mojana to intensify problems with well-being, land distribution and livelihood security. He points out that stagnation is not the opposite of flowing water, but part of its rhythmic movement; slowing down and speeding up characterize the hydrosocial relations of delta life. Similarly, Scaramelli emphasizes that the fluidity of these relations experienced by Kızılırmak Delta farmers is not due to an essentially watery materiality, but is shaped by people's practices in a transforming, more-than-human environment. Only as these farmers experience and narrate waterflows in relation to biographies, economic shifts and political histories does water movement gain significance for them.

If life in river deltas is a particular configuration 'at the confluence of land and water', as Gagné and Borg Rasmussen (2016) have called water-related sociality, or in the words of Da Cunha (2019), a field that consists of wetness everywhere before it is separated into water and land somewhere, this life is necessarily amphibious, both in the sense of its po-

sition in-between (see Ingold 2015: 147) land and water, and in the sense of the futility of attempts to pin it down. It is therefore no surprise that many delta inhabitants do not call their home landscape a delta, but refer to it as floating islands, as is the case in Brazil, or as reed beds in the Ukraine. As Richardson argues, it is highly problematic to assign a specific ontology to delta life, as this would imply a detached and ordered view from above, backgrounding the more unruly social and material processes that make up delta life. In particular, the terrestrial undertones of the 'delta' designation – foregrounding its agricultural potential, the ecological significance of wetlands, or perils for urban development – run the risk of omitting the amphibious and volatile processes of delta life, as is evident in various discussions provided by Camargo, Ivars, Ley and Richardson.

Thus, the pressures and challenges of delta life cannot be reduced to any one field or driver. Camargo, for example, highlights how fishing, mining and farming in La Mojana are intimately linked and affect each other though their confluence and stagnation in the delta. The mercury from mining accumulates in fish, more of which, in turn, are caught because inhabitants are crowded out of farming by powerful ranchers who appropriate newly emerging land, which, in turn, displaces fish habitats. The La Mojana inhabitants' crisis as a whole is an amphibious, multidimensional phenomenon. In the same spirit, Krause argues for an intersectional understanding of the volatilities that characterize life in the Mackenzie Delta. Colonial, climatic and commercial developments, to name three significant ones, must be considered alongside each other to begin to appreciate the dynamism of delta life; addressing these processes separately and then adding them together does not amount to the same analytical insight.

Deltaic political economy

Several contributions emphasize the political nature of deltaic relations. Delta life is not by default marginal, downstream, dispossessed and precarious, but often systematically marginalized, downstreamed, dispossessed and rendered precarious. Ley, for example, elaborates how the predicaments of inhabiting coastal Semarang are due, in large part, to the political-economic forces that confine people to spaces of increasing wetness, excluding them from protected and prosperous elsewheres and hindering their mobility in spite of a highly fluid and mobile landscape. Flooding then becomes a problem of confinement and 'quarantine', rather than of rhythmic waters. Coastal dwellers are quarantined not only in space, but also by the state narratives that consider flooding a breach of law and order, an attack on state sovereignty, and by the capitalist

logics of exclusion and dispossession. In this situation, there can be no unified strategy against flooding, but residents attune their own resilience measures both to meteorological events like storm surges and to political and infrastructural processes like the sudden repairing or installing of flood-defence schemes. Delta inhabitants' confinement to the downstream, receiving end of water pollution and political hierarchies is also evident in La Mojana, where Camargo illustrates how political and economic forces limit people to toxic livelihoods at the confluence of mercury, overfishing and land grabs. This resonates with Ivars' observations among Ayeyarwady Delta farmers, whose access to land is jeopardized not only by manifold institutional and political dynamics, but also by the fact that floods may annihilate the physical markers in the landscape and cyclones may destroy their land-title documents.

This political context often contributes to the making of deltas into resources for national development and international markets. Examples of this process include the state development strategies for the Ayeyarwady Delta identified by Ivars, aiming to boost rice production through large-scale land reclamation efforts, which triggered many of the existing land grabs, uncertainties and conflicts. It equally echoes through the biographies of Kızılırmak Delta inhabitants, brought to the region as part of a civilizing mission of agricultural development and nation-building, who found the promises of prosperity broken in the often problematic agricultural conditions of the delta, as chronicled by Scaramelli. The economic history of the Mackenzie Delta, characterized by the boom-and-bust extractions of furs, whalebone and hydrocarbons, speaks to the imperial and colonial use of river deltas and their inhabitants as resources to be exploited at any cost.

Inhabiting volatile landscapes

A further confluence in this volume concerns the conspicuousness of the ever-shifting delta landscape. Again, mobile landscapes are not limited to river deltas, but their salience for delta life is striking across all contributions. Among other examples, this includes the increased sedimentation and associated rise in floods in La Mojana; the interlocking volatilities in the freezing and thawing Mackenzie Delta; the pronounced movements of people, animals and sands in the Parnaíba Delta, where 'movement is indeed probably the only form of permanence' (Horisberger, this volume, p. 128); and the uncertain temporality of alluvial land availability in the Ayeyarwady Delta. In fact, contributors here propose understanding delta life as volatile, characterized by uncertain and often rapid transformations that go beyond the polar opposition of stability and change. Ley, for ex-

ample, juxtaposes this volatile approach to the solid structures of the city, both physically and in terms of social stratification and spatial fragmentation. The volatility of coastal Semarang has no place in the city proper; the delta is too fluid even for stabilization plans ever to solidify.

While deltaic volatilities are frequently striking, they also imply periods of often anxious waiting, anticipating events and developments; people are never quite certain how they will turn out. This anticipatory suspense is brought out most clearly in Horisberger's analysis of shrimp fishing in the Parnaíba Delta, where fishers eagerly observe and prepare all possible indicators of a coming fishing opportunity, but can never be confident how the fishing will develop. With the same clarity, Simon explains the importance of the phases in between mollusc-gleaning periods in the Sine-Saloum Delta, which come into being in a productive tension with people's active participation in the mollusc economy. These anticipative and productive forms of waiting in a volatile world starkly contrast with the quarantined waiting that Ley finds in coastal Semarang, where the inhabitants' attention and skills are sidelined by an unresponsive administration perpetuating a colonial logic of urban development that sacrifices its coastal periphery to the city's functioning. Here, waiting is unproductive, even detrimental, and goes hand in hand with the depoliticization and victimization of delta inhabitants in the context of humanitarian interventions.

Both kinds of deltaic waiting are imbued with uncertainty, although the quarantine kind leaves much less space for delta dwellers' agency than the anticipatory kind. Camargo refers to the uncertainty brought about by the ongoing accumulation of matter in the delta, which currently galvanizes various conflicts and illnesses, but – because it is continually increasing – may influence a variety of further social and political arrangements in the future. Horisberger, in turn, details how deltaic uncertainty pertains to people's limited trust in tides, animals, plants and fellow human beings: all of them can provide crucial cues but may also – just as easily – deceive delta inhabitants. Where anticipation is key, deceiving and tricking are part and parcel of an uncertain world-in-formation. Equally important are attempts by delta dwellers to forge relative steadiness in such a volatile world. Examples of the latter include the way women in the Sine-Saloum Delta relate to molluscs as a constant and reliable security to fall back on when other options fail, and as a leveller relative to more uncertain sources of livelihood. For the Ayeyarwady Delta, in turn, Ivars develops the notion of 'anchoring' to account for the farmers' efforts to link up, in a fundamentally volatile context, with relatively stable entities – including documents, places, institutions or particular persons – in order to secure their access to land. Even though the farmers consider none of these entities to be permanent solutions, their relative reliability provides hope and leverage.

Rhythms and resonances

As we have elaborated in the introduction to this collection, an insightful entry point into delta life is to approach it in terms of its multi-scalar rhythms. Many contributions have given substance to this claim, also illustrating that rhythms are not a romantic term highlighting social-ecological harmony, but that rhythmic correspondence is a tense and often conflictual process (cf. Ingold 2018). Krause suggests using the rhythmic dynamics of many deltaic processes as an opportunity to consider things together – as different rhythms entrain and are entrained by each other – rather than separately. In tracing some of the processes that have shaped life in the Mackenzie Delta, he proposes an approach based on rhythms as an entry point that is not only familiar to the delta dwellers' perspective, but also capable of describing delta life beyond the conventional opposition between stability and change. Rhythms and a rhythm-based approach also feature prominently in other chapters in this book. They include Horisberger's attention to the always-becoming, ever-uncertain dynamics of shrimp fishing in an extremely mobile environment; Simon's illustration of the emergence of the mollusc-gleaning rhythm, not only organized around tides, daylight and closed seasons, but also responsive to the disappearance of alternative livelihoods and ultimately affecting many other temporal dynamics like credit and trade; and Scaramelli's elaborations on the malleable correspondences between watery and economic rhythms with the life cycles of delta inhabitants, who are not defined by waterflows but make choices in relation to the dynamic affordances of a wider world that includes, but is not limited to, water and the market.

As confluences and distributaries, these observations underline our argument that delta life is necessarily emergent and more-than-human. While all arguments in this book are developed in close correspondence with the authors' insights into specific lives in particular deltas, none of them claims that deltas are fundamentally unlike any other place in the world, or that delta life features unique aspects unknown to other forms of social life. Nevertheless, it is clear that all of them gained critical insights into social life by engaging with delta inhabitants, so much so that we have called deltas real-life 'laboratories' for learning about hydrosociality, volatility, multi-scalar rhythms and other important issues. A delta-inspired perspective, as summarized in this conclusion, can serve as a constructive lens to approach other research settings, too, as they relate to water, transformation and more-than-human sociality. Taken together, the close ethnographic accounts and critical theoretical elaborations in this book suggest two steps in the anthropological project of coming to grips with an always-becoming world. First, they share what the authors have

learned about life in specific river deltas as more-than-human sociality in an ever-transforming world that participates in bringing about what a delta is. And second, they elaborate a deltaic approach to studying social and material transformations more broadly.

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