

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 hydro-social 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 (Celoría 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 transitional 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 interfluvial 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.

Franz Krause is an anthropologist interested in the role of water in society and culture. He works as Junior Research Group Leader of the DELTA project at the Department of Social and Cultural Anthropology and the Global South Studies Center, University of Cologne, Germany. Before his studies in the Mackenzie Delta, he conducted research in Finland, England and Estonia.

Mark Harris is the Head of the School of Philosophical, Anthropological and Film Studies at the University of St Andrews, UK. His research interests have focused on the people who live along the waterways of the Lower Amazon river and its tributaries. His monograph, *Life on the Amazon* (Oxford University Press, 2000) looked at questions of floodplain social life and their history in the region and beyond. His second monograph, *Rebellion on the Amazon* (Cambridge University Press, 2010) uses archival documents in Brazil, Portugal and Britain to study a peasant and Indigenous insurgency in the Amazon in the 1830s. His wider interests include ethnohistory; environmental anthropology; and knowledge in and methodology of the social sciences.

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