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 un-
derstanding 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 po-
sition in a changing north, of people working as unskilled or semi-skilled
wage labourers, or independent trappers and fishers. Furthermore, Slobo-
din 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 employ-
ment in various offices of government administration and private enter-
prises 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 re-
tained a clear idea of being Gwich’in, Inuvialuit or white.

For a while, anthropologists (e.g. Helm 1961) suggested that Dene peo-
ples seemed to be particularly fast at incorporating foreign skills and val-
ues into their ways of life. Asch (1998) and others, however, have since
argued that this was an unwarranted conjecture, indicating that for in-
stance the seemingly exceptional mix of kinship terms in different genera-
tions 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 cul-
ture’ 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 prim-
itive 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 ethnography, for instance via the Inuvialuit Cultural Centre and the Inuvialuit Communications Society (e.g. Alunik, Kolausk 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 Inupiat 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 (m³/s) and winter discharge as low as 2,000 m³/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 con-
sumption 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 fur-
ther 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 settle-
ment. 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 intersection-
ally. 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 col-
leagues (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 multi-
dimensional change. While these politico-economic processes certainly
play a central part in the volatilities of the Mackenzie Delta too, I am hes-
itant 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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References


Krause, Franz. n.d. ‘Inhabiting a Transforming Delta: Volatility and Improvisation in the Canadian Arctic’. Unpublished manuscript.


Stevenson, Lisa. 2014. Life beside Itself: Imagining Care in the Canadian Arctic. Oakland: University of California Press.


