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# Clashing Scales and Accelerated Change

Two Cases from Norway

**Abstract:** Sometimes attempts to reduce volatility have the opposite effect. A naturally flexible system which is regimented and disciplined to a fixed shape loses its ability to adjust to shifting circumstances. This is a recurrent theme in the anthropology of globalisation, where the dynamics between the fixed and the fluid are no less important than the more commonplace local–global contrast. Modernity produces infrastructures, institutions and practices that are unable to adapt smoothly to changing ecological conditions, giving priority to standardised models rather than solutions tailored to fit assemblages with unique characteristics. This article discusses two cases from Norway – a controversy over a bridge in an ecologically vulnerable area and a mudslide leading to considerable material damage and the loss of ten lives – as a means of looking into the scalar gaps and the relationship between stability and volatility in a society committed to technological control.

**Keywords:** crisis, natural disaster, Norway, quick clay, scale, volatility, wetlands

A sudden mudslide with catastrophic consequences that could have been prevented, and a protracted, simmering conflict over an infrastructural development in an inland delta, interfering with ecologically fragile wetlands and recreational opportunities. These are the two empirical cases, both of them ongoing in Norway at the time of this writing, around which the argument of this article is built. Through an analysis of these quite different cases, I intend to show how attempts to control inherently volatile environments may exacerbate instability and increase volatility rather than reducing it. The clashing scales of central planning and local life, and the incompatible knowledge regimes of modelling and experience, are at the root of the controversies unfolding. The argument is theoretical, and the empirical material drawn on mainly consists in published sources and social media discussions.

Key terms are ‘volatility’ and ‘crisis’. These are different kinds of concepts. Whereas both indicate destabilisation and uncertainty, volatility may refer to natural, often annual cycles of, for example, drought and flooding, as well as a general lack of predictability. As pointed out in the introduction to this special issue, volatility denotes not only uncertainty but also flexibility. Certain systems – ecological, social or biocultural – are by nature volatile, continuously shifting and adjusting according to circumstances. Crisis, on the other hand, represents an unwelcome interruption of routine and predictability, the outcome of which is uncertain. The Greek word *krísis* (κρίσις) has the same etymology as ‘criterion’ and ‘criticism’, as pointed out by Roberto Barrios (2017: 153), referring to Koselleck. In ancient Greece, crisis usually referred to a



pivotal moment in a trial or an illness. The term was occasionally used to refer to social ailments but more commonly it referred to a medical condition characterised by a high fever. The notion of a 'critical condition' in English and other European languages refers to a similar situation. In ancient Greece, lacking antibiotics and vaccines, two possible outcomes were envisioned: you died or you recovered. There is a finality to crisis that is missing in volatility, which may be a sustained condition of stable instability. The convergence between the terms can be seen in societies that are chronically unstable. Henrik Vigh (2008) thus argues that the concept of crisis has limited value in Guinea Bissau, since instability and insecurity are the order of the day: 'decline and conflict are not seen as passing phenomena in Bissau' (Vigh 2008: 6). A volatile chemical compound is likely to dissipate as gas, and a volatile financial market is defined through substantial swings. It does not necessarily enter a state of stable equilibrium.

In the present context, both ecological volatility and ecological crisis have elements of human agency articulating with natural forces through mutual feedback. In the river deltas studied by Franz Krause and his team (Krause and Harris 2021b), natural volatility is exacerbated, and its consequences magnified, owing to pollution, increased population density, infrastructural developments or intensified economic activities such as logging, fishing and agriculture. Crisis occurs, seen from an anthropocentric perspective, when humans suffer or are deprived of resources as a result; or one could, as some of the contributors to this special issue do, emphasise the broader ecological impact of planned changes intended to reduce inherent volatility (see especially Strang 2023, Keller 2023). The dynamic relationship between volatility and stability is especially visible where the latter is taken as an ideal, the former as a problem. Mukherjee and co-authors (this issue) point out that the shifting and moving delta islands called chars in Bangladesh, inhabited by people making their living there, challenge 'notions of people as essentially sedentary and land as permanent and disrupt the view of land and water as fundamentally separate'. Thus it is only under specific regimes of knowledge and control that volatility becomes a problem to be solved.

Since one of the cases to be examined concerns a 'natural disaster', this term also needs to be interrogated. As shown by Ilon Kelman (2020), the destruction caused by natural events such as hurricanes and earthquakes is not in itself natural, but the outcome of social planning or lack thereof. Summing up the main perspectives in disaster anthropology, Barrios describes a disaster as a process 'in which human practices enhance the destructive and disruptive capacities of geophysical phenomena, technological malfunctions, and communicable diseases' (2017: 155; see also Oliver-Smith and Hoffman 2020).

The two otherwise quite different cases I analyse in this article raise related issues concerning scale, flexibility and growth. One focuses on a controversy around an infrastructural development in a delta, while the other is a disaster, which sheds light on the point made above about natural disasters never being fully natural. Both cases unfold in south-eastern Norway. Both concern the unintentional side-effects of human interventions in their surroundings, with the overheated Anthropocene as the immediate context. For this reason, they may yield some useful theoretical insights of comparative value about some ways in which attempts to reduce volatility in a complex system

may instead increase it because the logic of control and predictability removes options and reduces flexibility, which was defined by Gregory Bateson as ‘uncommitted potential for change’ (1972: 501).

## The Lågen Delta Controversy

In the overheated Anthropocene, traces of human activity are everywhere, transformations of the environment taking place at an ever increasing speed. The ‘great acceleration’, which began after the Second World War (McNeill and Engelke 2016), has accelerated further in the last three decades (Eriksen 2016). Around the turn of the century, there were no longer any pristine beaches left in Mauritius; all had been ‘developed’ or turned into private property. It has become a proverbial truth (but underpinned by science) that there may be more plastic than fish in the ocean as early as 2050. Seventy percent of all birds are raised by humans, mainly chickens, and owing to human expansion, 60 percent of all vertebrates have disappeared since 1970, largely because of economic and infrastructural developments leading to habitat loss (Elhacham et al 2020). A world map indicating changes in forest cover during the last fifty years is similarly sobering. At the current pace of deforestation, there will be little left of the tropical forests in the second half of this century. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report sums up: ‘In the past 50 years, the human population has doubled, the global economy has grown nearly fourfold and global trade has grown tenfold, together driving up the demand for energy and materials’ (IPBES 2019: 13).

Efficiency and continued growth remain shared goals among economic and political elites worldwide, including those who have appropriated the rhetoric of green values, translating them into green growth. OECD policy unambiguously favours green growth, as witnessed in a series of policy statements (OECD 2021). Owing to the effects of compound growth (as in compound interest), growth curves become exponential if unchecked. In a thought experiment, Jeremy Grantham has shown persuasively that eternal growth is absurd and impossible. His premise is that the volume of the Egyptians’ possessions at the beginning of their civilisation amounted to just one cubic metre of ‘stuff’. With an annual growth rate of 4.5 percent, they would have required more than 2.5 billion solar systems to store their possessions (provided there was no recycling) after 3,000 years (Grantham 2011). The anthropologist Alf Hornborg reaches a comparable conclusion, without needing to take recourse to the notion of three millennia of steady growth. In a world of limited resources, he argues, extractive industries are inherently destructive, and the growth economy is a recipe for ecological disaster (Hornborg 2019).

This should not be taken to mean that investment bankers, industrialists and politicians across the world are motivated by a suicidal impulse, but rather that development projects that may seem perfectly reasonable and beneficial to humanity produce unintentional consequences which, cumulatively, undermine the conditions for contemporary civilisation. I shall return to the subject of growth, flexibility and destruction after presenting the empirical cases.

### ***The Highway and the Wetlands***

The Gudbrandsdalslågen River (or just *Lågen*, pronounced Lowguhnh), starting as a trickle in the high mountains of central Norway and defining the agricultural region Gudbrandsdalen (Gudbrand's Valley) flanked by snow-capped mountains and ski resorts, has its estuary, in the form of an inland delta, near the city of Lillehammer, ending its journey in Mjøsa, the largest lake in Norway. Since 1990, the Lågen Delta has been designated as a nature reserve, the common way for industrial modernity to bracket its environmental effects and divert attention from systematic destruction to selective protection through the use of fences and boundaries separating the realm of nature from that of human activities. This particular area is known not only for its ecological fragility, but also for the presence of breeding waterfowl, some on the red list, and more generally the kind of biodiversity associated with the shrinking wetlands of the world. About 35 percent of the world's wetlands have been lost between 1970 and 2015 (Ramsar 2018).

Like other deltas, this one is inherently shifting, dynamic and volatile, flexible in its adjustments to changing seasons, precipitation patterns and the variable water flow. Its volatile character represents a striking contrast to the fixed nature of a projected highway bridge crossing the natural reserve.

The E6, the main road connecting Oslo with Trondheim and the north, has been expanded and improved since the 1980s. The section to the immediate north of Lillehammer is a traffic bottleneck, prone to slow queues for impatient motorists on busy days (e.g. on Sunday afternoons when thousands are driving back to the Oslo region after a weekend in their mountain cabin), and an improvement of the road has long been planned. The infrastructural development has for years been projected by a complex alliance including regional and national politicians, private business interests, the Ministry of Transport (*Samferdselsdepartementet*), the Directorate for Transport (*Samferdselsdirektoratet*) and the state-owned company *Nye Veier* (New Roads). As early as 2017, the Norwegian Public Roads Administration (*Statens vegvesen*) recommended to shift the main road to the west of the river, which would require the building of a kilometre-long four-lane bridge intersecting the natural reserve. The final decision was taken, technically, by the County Governor of Innlandet county, in spring 2020, although his decision was the result of sustained lobbying and pressure from other and de facto more powerful actors, including local politicians, commercial interests and the construction company itself. The position of County Governor is largely ceremonial, and incumbents are typically experienced politicians who have decided to step down. Yet, they perform important administrative duties on behalf of the State and locally elected politicians, often obliged to propose Solomonic judgements of compromise between conflicting interest groups.

There are two main arguments in favour of building the contentious bridge. First, the variable water level of the river may, in theory, lead to periodic flooding of the present, lower bridge (which is located south of the delta), especially during the spring thaw when huge volumes of water are released owing to the melting snow in the mountains. Second, faster and smoother transportation would enhance efficiency and stimulate economic growth.

In March 2020, an association named *Lågendeltaets venner* (Friends of the Lågen Delta)<sup>1</sup> was founded in Lillehammer, with the aim to ensure protection of the nature reserve by preventing the construction of the bridge. They argue that it will disturb the ecology of the delta in ways that are 'likely to violate both national and international commitments' and promise to sue the State if the County Governor does not stop the plans. On their Facebook page, the activist Lars Kjelkenes Giæver pointed out early in 2021 that the delta has been mentioned 163 times in the regional newspaper *GD* since 2015, out of which 81 were in 2020. In addition, the controversy has received coverage in the national press and on national radio. Giæver argues that the great attention to the issue shows the potential of civil society to influence politics at a high level.

The association has organised public hearings and debates where both sides were heard, written numerous letters and held a meeting with the County Governor, as well as with the Minister of Transport. It has also been very active in the debate section of *GD*, prompting responses from local politicians, businesspeople and bureaucrats throughout the pandemic, from spring 2020 to spring 2022.

The controversy cannot be expressed as a binary, and it should not be depicted simply as a conflict between locals and government, although the question regarding the bridge is an either/or matter – it will be built, or it will not. Commercial actors in the Lillehammer region are favourable to the improvement of the infrastructure, and there are environmental organisations operating at the national level that oppose it, so there is no simple conflict between the local and the national interest. To illustrate the complexity of the matter, it may be mentioned that an MP representing the Centre Party (*Senterpartiet*) in the region, Bengt Fasteraune, simultaneously argues in favour of increased speed, efficiency and growth, *and* a strengthening of local autonomy and the districts (Fasteraune 2020). His concern with the projected road is that too few exits to the local communities are planned. His party openly opposes environmentalist concerns while simultaneously representing rural interests.

Another example indicating the complexity of the case is an intervention from a group of local residents, which combines arguments about biodiversity and recreational facilities with concerns with the local quality of life (access to services, pollution, noise, etc.). Their view is that the Friends of the Lågen Delta only seem to care about the northern part of the reserve, where the bridge is projected, while the possibility of a bridge crossing the lower delta, in their view, would be just as destructive (Berge et al 2020). This group thus scales the matter down to a micro level beyond the purview of even the Friends of the Lågen Delta.

An objection to the kind of local engagement manifest in both factions of environmentalists, typically expressed by national-level politicians and spokespersons for commercial enterprises, describes it as short-sighted NIMBYism (Not In My Back Yard), where the myopia of the immediate life-world prevents a larger view of things. According to this logic, it is virtuous to make personal sacrifices for the sake of the greater good. A response to this criticism is that *everybody* lives in a community – globalisation has not produced global people – and that this kind of *ad hominem* argument can detract from the actual issues, which concern the protection of a fragile ecosystem (on NIMBYism, see also Eriksen 2018b; Vandehey 2013).

Taking a perspective that combines the large scale with the small scale, the well-known and respected biologist Dag O. Hessen (2020), who grew up in the region, argues that the threat to the biodiversity and recreational value of the delta is ultimately caused by the growth and efficiency imperative encouraging forms of treadmill competition that are ultimately both futile and destructive, leading to ‘arms races’ that can be ecologically destructive (Hessen and Eriksen 2012). Hessen points out that few seem to ask *why* increased speed should be considered necessary for human well-being, quoting the philosopher Peter Wessel Zapffe (1899–1990), who wrote sarcastically already in the 1950s that ‘far too few are able to enjoy the breathtaking solitude of [the fictional] Eagle Valley. Things will improve when we get a road out there’ (Zapffe 1969: 42).

On the one hand, the Lågen Delta affair may seem to illustrate the healthy state of local democracy and civil society in Norway. After all, politicians and high-ranking bureaucrats engage actively with local communities and networks such as the Friends of the Lågen Delta. Especially in the regional media, but also at a national scale, the voices of dissent are heard at full volume.

On the other hand, Hessen’s thoughtful and eloquent essay may be read by a couple of thousand intellectuals and activists, and although the Friends have 1,700 followers on Facebook, that will not in itself change anything, nor will meetings with sympathetic and supportive politicians. The response from politicians does not suggest that ecological anxieties (or *solastalgia*, to use Glenn Albrecht’s (2005) evocative term for the feeling of loss experienced by people whose immediate environment is altered beyond recognition) and concerns with the local quality of life will make them change their minds. Their reaction, similar to politicians’ response to environmental activism encountered in the industrial city where I did fieldwork in Australia (Eriksen 2018a), seems to be of the generic ‘thank you very much for your input, we will take it with us as we proceed’ kind, which is a form of repressive tolerance.

The scalar conflict is visible at several levels. The locals opposing the Friends for not paying sufficient attention to the northern part of the delta represent one extreme, while the state, taking a map depicting the transport arteries of Southern Norway as its preferred scalar reference, seems to inhabit the other extreme. However, scientists and activists concerned with the future of the planet position themselves at a higher scalar level. Rather than being accused of NIMBYism, they may be criticised for placing the well-being of the entire planet before that of actual people living in communities and struggling to make ends meet. Intermediate scales are represented in the Friends of Lågen Valley, and their allies fighting similar battles in other localities, the commercial sector of Lillehammer, and local politicians.

There is no simple narrative about David and Goliath to be extracted from this controversy. As elsewhere, there is no single ‘local view’ opposing the highway expansion nor, for that matter, a view from afar seeing the large-scale economic benefits from infrastructural development while ignoring the effects on the community. The Friends of the Lågen Valley are a relatively small online community, loosely tied together and de facto run by a few dozen committed activists, most but not all based in the Lillehammer region. At the latest local elections in 2019, the Green Party<sup>2</sup> and the Socialist Left, which oppose the highway expansion, got 9 and 7 percent of the vote, respec-

tively – far less than the parties that advocate infrastructural developments that might encourage economic growth in the region. It seems, in other words, that the majority of the people living in the Lillehammer area are favourable to the bridge.

In December 2021, Nye Veier decided not to build the controversial bridge, but to improve the highway without interfering with the fragile delta wetlands.

In another current controversy, the scalar conflict is reversed in that national authorities favour conservation for reasons of biodiversity and natural beauty, while local politicians encourage, and enable, irreversible infrastructural expansion. In the mountainous and scenic rural municipality of Vinje, the local council recently (2021) decided to allow the construction of several hundred new cabins in the area, having successfully overruled national conservation law, a practice among local councils that is legal, controversial and widespread in Norway (Reinertsen 2021). In other words, the national politicians favoured ecological responsibility, while local politicians decided to inflict ecological damage in their area in order to boost the economy.

### ***Speed and Efficiency as Addictive Substances***

The possibility that the E6 bridge was favoured by most residents of the region does not detract from the inherent contradictions of the project, which would, had it been built, have led to long-term effects that were ecologically harmful and would also add, however modestly, to the global threat against wetlands.

There are three analytical implications of this case that may be particularly relevant in the present context, and which also form a bridge to my second case.

First, the *speed and efficiency* critiqued by Hessen, central features of modernity associated with the value of economic growth, result in unknown but possibly comprehensive unintended side-effects. There is no reason to doubt the benevolent intentions of the politicians, engineering companies and bureaucrats that devise transport plans whereby roads are expanded with taxpayers' money while railways are left to their own devices, or rather left to deteriorate, as is the case in Norway. However, the flawed epistemology (cf. Bateson 1972) on which decisions are being made has severe destructive effects, not necessarily immediately visible, but as long-term cumulative outcomes. A culture addicted to speed cannot get enough of it (Farman 2018), and the failure to attend to side-effects and long-term consequences is directly connected to the contrast between volatility and stability. The contemporary building of infrastructure, typically involving large amounts of concrete, replaces that which is fluid and flexible with fixed and stable structures. Although, as shown by Penny Harvey (2019), concrete does have a local element in that the sand and gravel that makes up the bulk is extracted locally, a concrete dam or road cannot easily be tweaked or removed once the concrete has set. The loss of systemic options is evident, in this particular case, in biodiversity loss, and moreover, the changes imposed on the landscape through highway construction are irreversible (Harvey and Knox 2015).

Second, the highway project illustrates another fundamental aspect of contemporary modernity, namely the *scalar gaps* between life-worlds and the system world of planning, to use Habermas's concepts. What is good for Norwegian GDP in the short term is not necessarily good for the environment in the short or long term, but the

case also shows how the apparent benefits at the national scale may be immediately detrimental to a thriving and harmonious relationship between local people and their *Umwelt* (environment, surroundings). In a society committed to speed and efficiency at the level of the state, which is in turn integrated into global systems of exchange and, in the era of neoliberalism, increasingly intertwined with business interests, the scalar gaps tend to grow. Economies of scale increase profitability and reduce local autonomy.

Third, the almost *impenetrable meshwork* of agencies, companies and consultants involved in a decision-making process of this kind makes it difficult to engage with it politically. The planning and building of large-scale infrastructures comes across as an anti-politics machine (Ferguson 1990) whereby a political decision is translated into a mere administrative, normatively neutral exercise.

My second case, a deadly disaster rather than a slow-burning, long-standing conflict between economic and environmental concerns, may help to develop these analytical leads further.

### The Social Life of Quick Clay

The 1755 Lisbon earthquake shook not only Portugal's greatest city, but also sent ripples through the incipient secularist and Enlightenment beliefs across the European continent. Its immediate effects on intellectual life included a poem and a philosophical novel by Voltaire, a long letter by Rousseau (1756) objecting to Voltaire's analysis, and several essays by the young Immanuel Kant. It was to eighteenth-century Enlightenment thought what the sinking of the *Titanic* was to early twentieth-century optimism, carving a deep dent into a belief in progress that was still struggling to leave religious belief and commitment to tradition behind. It was a cold shower for the intelligentsia of the time.

Voltaire's view, as famously developed in *Candide*, is that there is no benevolent deity looking after his flock, and that Leibniz (aka Dr Pangloss) was misguided in his suggestion that we live in the best of possible worlds. The earthquake showed, in other words, that catastrophe may occur at any time. The powerful Jesuit cleric Gabriel Malagrida took the predictable view that the earthquake was a divine intervention punishing the sinful people of Lisbon for their transgressions, while the de facto ruler of Portugal, the Marquis de Pombal, adopted the pragmatic, modernist position that the dead should be buried, and – disposing of Malagrida – proclaimed a new, efficient and rational society built on the ruins of the old (Dynes 2005; Shradly 2008). Rousseau, in his *Lettre à Monsieur de Voltaire* (Letter to Mr Voltaire), argued that Providence was a reality after all, but with the interesting caveat that humans were themselves responsible for much of the destruction wrought by the earthquake. Their houses were standing too close together, they were often built shoddily, and city planning had taken place without the foresight that might have enabled the citizens of Lisbon to survive:

*Sans quitter votre sujet de Lisbonne, convenez, par exemple, que la nature n'avait point rassemblé là vingt mille maisons de six à sept étages, et que si les habitants de cette grande*



*ville eussent été dispersés plus également et plus légèrement logés, le dégât eût été beaucoup moindre, et peut-être nul.* (Rousseau 1782 [1756]: 95)

(Remaining with your topic of Lisbon, you must agree, for example, that nature has not gathered twenty thousand houses of six or seven stories there, and if the inhabitants of that great city had been spread more equally and with more modest housing, the destruction would have been much less, and perhaps nought.)

There were at least four distinct interpretations of the meaning of the Lisbon earthquake in its aftermath. (i) Voltaire held that it was a meaningless catastrophe that cast serious doubt on the belief in an omnipotent and benevolent God. (ii) Malagrida's view was that God punished the sinful residents of Lisbon with an earthquake. (iii) Rousseau argued that the most severe consequences could have been avoided with foresight, seeing them as caused by a lack of intelligent urban planning. (iv) Finally, the Marquis de Pombal saw the destructive effects of the earthquake as an indication of the passing of an old order and a pretext for creating a modern Portuguese state. Only Rousseau saw the lack of flexibility as a main cause of the unnecessarily destructive effects of the event. To these accounts of disasters I shall return.

It had been raining almost continuously for six weeks when, in the early morning of the penultimate day of 2020, news about a major landslide near the city where I live appeared on my smartphone. Buildings were smashed to pieces, gardens turned into rubble, people went missing, and as it was the darkest time of the year and no snow on the ground, the day never lit up. Slowly waking up to a live nightmare, and realising that more than a dozen houses containing over twenty homes had been swallowed up by the slippery clay, a comparison with the aforementioned attempts to breathe meaning into the 1755 Lisbon earthquake seemed inevitable. A random act of a godless nature? A punishing act of God? A critical moment enabling us to go bigger and better subsequently? Or a result of poor foresight and a lack of planning? Or, in this case, unlike in 1755, a result of anthropogenic climate change? Mild spells in December are not unknown in South-Eastern Norway, but until now they had never lasted for weeks.

The residential area Nystulia at Ask in Gjerdrum municipality, consisting of single-family houses and multi-family dwellings, was built in 2006–07. Located between Oslo and its airport, it is one of many new outlying suburbs, or urban satellites, built in great haste in response to the increased demographic pressure on the city. The flatlands north of Oslo are comparatively affordable owing to their distance from the city and from the sea, located in an undramatic (in middle-class Norwegian lingo *lite spektakulær*, 'unspectacular') landscape, in the case of Nystulia nonetheless on a low hill overlooking a stream and agricultural lands, framed by forest.

The ground of this area consists of quick clay formed during land elevation after the last Ice Age. Originally seafloor, the stabilising salt has left the clay after millennia of regular precipitation, increasing the clay's likelihood of liquefying when additional weight is added, as with a housing development. Although usually stable, quick clay may slip and slide when saturated with moisture for an extended period. Such landslides have been known to occur, and the Nystulia estate was built, the Norwegian Geotechnical Institute (NGI) was approached for advice. In a 2003 report, the Institute concluded that 'major landslides above ten acres may imply that between ten and 50

persons lose their lives. Material damage may amount to 20 to 100 million kroner [€2 to 10 million]' (quoted from *Dagsavisen*, 5 January 2021).

### ***Conflicting Knowledges***

The NGI made several recommendations before construction began in order to reduce the risk of landslides. Asked whether the appropriate measures were implemented, the managing director of NGI, Lars Andresen, said shortly after the disaster, somewhat equivocally: 'Provided that the security measures were implemented, the stability in the area was improved. The danger zone maps that have been made after the development show that the risk of landslides in this area was identified as being low' (NGI 2021: np).

There are indications that the recommendations from NGI had not been followed in detail. This question is of great importance to the legitimacy of the Institute, since a considerable number of houses were destroyed in the landslide. On 5 January 2021, NGI announced that their geotechnical reports from the area had now been made publicly available and downloadable for the sake of transparency.

More than two months later, a pair of investigative journalists with the NRK (National Broadcasting Corporation) discovered an email exchange from 2018, where the NGI expresses dismay and outrage over geotechnical reports commissioned by municipalities concerned about quick clay, concluding that 'we are frightened by the quality of these reports and the potential consequences, were these projects eventually to be executed' (NRK 2021b: np). A detailed expert report published in September 2021 confirms that not all recommendations had been followed up, although there had been extensive correspondence between the municipality and the construction firm about possible risks of erosion and landslides (Government of Norway 2021). It has later been documented that the same geotechnicians, employed by private engineering companies, may be involved at all stages in such processes: they contribute to formulating legal regulations; they work as consultants ahead of a development; and take part in evaluations following an accident or disaster. The geologist Halfdan Carstens (2022) spoke of them as 'Tordenskiold's soldiers', a Norwegian expression referring to the Dano-Norwegian navy captain Tordenskiold, who had a tendency to place the same people in several capacities provided they were loyal to him. Another expression used to designate the lack of openness and transparency was *bukken og havresekken* ('the goat and the sack of oats'), which is the equivalent of letting the fox look after the henhouse.

The area directly affected by the landslide covered 300 × 700 metres (21 hectares or 59 acres). A thousand people were evacuated from the area, and several weeks after the landslide the ground remained unstable, making salvage work difficult. At the outset, 26 persons were reported missing; this was reduced to ten in a couple of days, all subsequently confirmed dead, the last body having been discovered on 20 March. It may seem, in an ironic twist of fate, that the restrictions imposed on mobility and socialising over Christmas and the New Year owing to the Coronavirus pandemic could have saved a number of lives, since many opted to spend the New Year in their mountain cabin since large family gatherings and parties were out of the question. This

may have been the case for the majority of those who were initially reported missing, leaving empty houses to tumble down the hill. The number of casualties is nevertheless significant, disregarding the material losses involved for the absentees.

It was not just the NGI that had called for caution ahead of the building of the suburb. The hydrologist Steinar Myrabø, who lives in the region, was quick to point out that he had issued a warning as early as 2008 (NRK 2021a: np). In particular, he was concerned that erosion along the river in the valley immediately below the housing estate could destabilise the slope on top of which the houses were perched. He was proved right twelve years later. The aforementioned expert report also cites letters of concern from local residents to the municipality from the same period.

Moreover, the risks were far from unknown. Quick clay landslides have taken place in several parts of the country before, and one of them – in 1924 – took place in Gjerdrum municipality, not far from the current site. The chemistry of quick clay has also been known for decades. As early as 1953, the geologist Ivan Rosenquist recommended resalination of a hilly area near the Oslo city centre in a bid to stabilise the volatile quick clay.

Shortly after the Nystulia landslide, the geology professor Knut Bjørlykke (2021) explained, in a newspaper op-ed, the way in which quick clay is destabilised when the salt is washed out, but he then moves on to ask how decisions are taken which allow the construction of residential housing in areas which are demonstrably unsafe. He explains that quick clay, with its past as marine deposits, does not occur above 200 metres in southern Norway, suggesting that the estate could have been built on higher ground not far from its actual location, thereby preventing this kind of event. Since rural municipalities like Gjerdrum are unlikely to possess the necessary scientific and engineering knowledge, he adds, they rely on external experts, such as the NGI, but as indicated above, other consultancy firms whose competence is now being questioned have been involved. The question Bjørlykke raises is to what extent their recommendations were presented as imperative and how they were interpreted by the municipal decision-makers. He does not delve into questions about the economics of the project, and seems to ignore the fact that private consultancies have been involved in preparing the reports. The construction enterprise had obvious economic interests in seeing it brought to fruition, as did the municipality since it would increase their tax income and the overall size of the local economy. It may thus have been tempting to cut some corners. Neither the real estate agent nor the house buyers had been made aware of the quick clay (NRK 2021c: np).

## **Scale and Accelerated Change**

However different these two cases are, they share some common features, which may shed light on speed, scale and the tension between volatile nature and societal attempts to produce stability. Although truth claims, moral responsibilities and possible human errors in the case of the mudslide will likely be discussed for years, a few analytical insights can be foregrounded already now, and they can be related directly to the points made with respect to the Lågen Delta.

*Speed.* The suburb was built quickly, against the advice of at least some experts, in a situation where there was a great demand for affordable housing in the Oslo area and free capacity in the construction sector. Moreover, although caution and reticence would have been reasonable responses to the geotechnical and hydrological reports produced in the early 2000s, the municipality was determined to go ahead, supported by consultants whose competence was openly questioned by the NGI.

*Scalar gaps.* The contrast between the everyday world of Nystulia and the desktop model of the suburb and its surroundings, including its geology and hydrology, becomes visible only when the relationship between map and territory is brought out of kilter, as with this disaster. The residents moved into Nystulia estate because housing there was comfortable, affordable and within easy reach of Oslo's labour market. The municipality saw opportunities for increased income, and at a higher scale still, the probabilistic models produced on the computer screens of the consultancies indicated low risk, although others (notably NGI) warned of potential catastrophe. However, the abstract character of these calculations did not come across as important to the municipal planners compared to the potential profitability of the project and the house buyers did not even learn of these considerations. The gap between the temporal scales is also significant. House buyers think about their down-payment and perhaps the proximity of schools and services; entrepreneurs and local government think about profitability in the next decade; and the causes of the disaster must be traced back to the end of the last Ice Age.

*Impenetrability.* To those affected and therefore representing a legitimate vested interest in the case, it will be difficult to identify who or what to make accountable. In the first phase after the disaster, the general answer given by politicians, builders and engineers is that this was nobody's fault, a form of collateral damage resulting as a side-effect of a more important project, namely to promote growth and development. They sided with Voltaire against Rousseau, while simultaneously expressing doubtless heartfelt sympathy with the victims and the bereaved.

### ***Clashing Scales***

Upscaling and speeding are Siamese twins in a neoliberal, globalised world. The faster, the better; the bigger, the better. The sole reason for disturbing the nature reserve in the Lågen Delta was for traffic on the E6 to accelerate, and Nystulia housing estate was planned and built at great speed to satisfy the current market demand. Decisions to implement both projects were taken at a scalar remove from the people directly affected by them. A paradox is that in attempts to reduce volatility by building stable, robust infrastructure, the long-term volatility increases since flexibility is reduced (Krause and Harris 2021a; see also Strang, 2023). Allow me now, having presented the two empirical cases, to pursue the notion of clashing scales further, to see if it can provide some general insights into the issue of volatility.

As anyone conversant with maps knows, small-scale maps are outstanding tools for providing overviews, but they lack detail. Differently put, large scale is best depicted on a small-scale map and vice versa. When operations expand – companies merge, planning becomes standardised and centralised, markets converge – the distance

between people and the decisions shaping their lives grows, an argument developed in a different, but not incommensurable, kind of setting in James Scott's (1998) influential analysis of the failures of large-scale, abstract, top-down development projects, be they in the Soviet Union or in Tanzania. The moral accountability of people who are removed from those affected by their decisions is progressively diluted as the distance and scalar abstraction increase. As the saying goes (attributed to Stalin), one death is a tragedy, whereas a million is statistics.

The articles in this special issue concern the floating and negotiable barrier between human lives and the forces of nature; the amphibious membrane separating the floating waterworlds from the terra firma of civilisation, bringing to mind Bateson's (1972) rendering of the Iatmul myth of origin, where a huge crocodile flapping its tail at the boundary created an unsavoury and useless mixture of the wet, the firm and the gaseous until the great culture hero came along, slaughtering the beast and creating crisp boundaries, in a manner reminiscent of the Hebrew God, who began his work by separating light from darkness and subsequently land from water. Recall Mukherjee and co-authors' observation about the difficulties, for state authorities, to recognise the floating, shifting environment of the Bangladeshi chars. As in the example of the Brisbane River (see Strang, this issue), government authorities try to fix the boundary between the liquid and the solid by means of concrete walls (for more Bangladeshi cases, see Dewan 2021).

A theme that is more mundane, but no less salient than that of the wet, the dry and the indeterminate, is that of David and Goliath, the tangible versus the abstraction, the near and the far, the small scale and the large scale. As the popular adage of economic development has it, sacrifices must be made, and you cannot make an omelette without breaking eggs. What, after all, are the livelihoods of a few hundred tribal people living off fish and crustaceans at a river mouth, compared to the thousands who might make a living on a plantation, or a seafood company farming white fish, in the same place? Through accumulation by dispossession (Harvey 2003), wealth is created on a large scale while lives are being destroyed on a small scale.

This kind of story, familiar to every anthropologist, has the advantage of a clear moral message, almost like a myth told, refined and retold in an oral civilisation. However, many of the situations where the small scale is de facto overrun, exploited or just neglected and ignored as collateral damage by the large scale – negligible to GDP, too small to make a ripple in national politics, too poorly connected to canvas for media coverage or political support – are of a different kind. There is no malevolent intent in logging in the Himalaya foothills (which disrupts the flow of the great rivers of India), or in producing snacks for Chinese citizens (the wrappings of which clog the great rivers of China), or accelerating the traffic between Oslo and Trondheim, or in building affordable housing for commuters in the vicinity of Oslo. The problem can be phrased as one of the capitalist growth logic (which is relevant), of unintentional side-effects leading to a tragedy of the ecological commons, or as one of overheated change beyond control (also relevant), but perhaps the most illuminating lens is that of clashing scales.

When something is scaled up, it doesn't just get bigger. It changes qualitatively. Giving a seminar to a dozen students is in almost every way different from lecturing to

two hundred. As the saying goes, when a mouse falls down a mineshaft, it shakes off the dust and runs off. A rat dies, a man is broken, a horse splashes.

In biology, J. B. S. Haldane's (1926) essay 'On being the right size' was an early explanation of the relationship between size and complexity. A later, splendid illustration of the qualitative change resulting from scaling up is Bateson's story about the polyploid horse (Bateson 1978). His allegory describes a fantastic horse developed by the sharpest minds in genetics, the polyploid horse. This horse was twice as long, twice as wide and twice as tall as a normal horse. Of course, its weight was eight times that of an ordinary horse. It was unable to support its own weight in an upright position, for its skeleton was only four times as thick as that of an ordinary horse. The inner organs were continuously on the verge of being cooked, since its skin was twice as thick, while the surface area was only four times that of an ordinary horse. It was also chronically hungry and had difficulty breathing, since the oesophagus and windpipe were only four times the size of those of an ordinary horse, while the body was eight times as heavy.

Growing scale, thus, increases complexity in a nonlinear way (for a wealth of examples, see West 2017). Bateson alludes to what is today known as the square-cube law, which entails that the proportion of surface to volume decreases with increasing size. A marble has more surface relative to its volume than a hot-air balloon, a mouse more than an elephant. Put the elephant and the mouse into a freezing cold room, and the mouse dies almost instantly, while the elephant stays alive until someone opens the door, since the surface, which is directly exposed to the cold air, is a big part of the mouse and a much smaller part of the elephant.

If you think about national transport networks, your gaze is qualitatively different from a perspective anchored in the *genius loci* of localities, for example among the concerned citizens who lived near the Lågen Delta and who were disappointed that the delta's 'new friends' (spoken in a condescending tone of voice) were only worried about the upper part of the delta and not its lower part. There are good reasons to suspect that the minister of transport and his close associates did not have this distinction primarily in mind when devising a transport plan enabling more efficient mobility along fast roads in Southern Norway. Similarly, the gaze from the architect's office, and even from the offices of the mayor, differs qualitatively from that informed by experience, and it is precisely this kind of scalar gap that needs to be unpacked, explored and critiqued.

## Conclusion

In this article, I have sought to make a number of points with a bearing on volatility (as a concept and as a physical reality), notably its relationship to scale, flexibility and crisis in a neoliberal, globalised economy.

First, the modern addiction to speed (which often translates into efficiency) explains both crises, both the slow and the fast one. Whereas the ecological and evolutionary rhythms of wetlands are very slow, while the rhythm of recreational

engagement with the same wetlands is much faster, the traffic on the proposed highway is not only much faster than both; it also contributes to economic growth, that is, speed in economic efficiency. There are at least three conflicting temporalities involved here.

This argument is difficult to counter within the dominant politico-economic paradigm, as the second case also indicates. It has been demonstrated beyond reasonable doubt that the housing estate was built in great haste to maximise profits for the entrepreneurs and the municipality, and that the precautionary measures that – with the benefit of hindsight – seem necessary, and that were known at the time, were ignored.

Second, the clashing scales of modernity, where an ever more distant system-world meets a constant, localised life-world, are made starkly visible at a time of crises such as these. Decisions that are rational and sensible on the Excel sheet and the CAD (Computer Assisted Design) screen come across as debilitating, demeaning and potentially catastrophic when translated into the physical world of local experience. Moreover, through accusations of NIMBYism, locals are given to understand that their concerns are merely local and fail to grasp the broader value of infrastructural development. When a fox eats a rabbit, it may be good for the overall equilibrium of the ecosystem, but not for the rabbit. The act of translation between the abstract plan and the physical life-world is never innocent, since it implies a reduction in the same sense as the map is simpler than the territory.

Third, decision-making processes in bureaucratic societies may be deliberately impenetrable as a means to prevent scapegoating and the attribution of responsibility when disaster strikes. In both the Lågen Delta controversy and the Gjerdrum disaster, responsibility and accountability vanishes in a bureaucratic labyrinth of stakeholders, alliances, consultancies, private and public actors.

The conclusion is, inevitably, that attempts to fix that which is fluid in a bid to reduce volatility may have the opposite effect. Flexibility, defined as uncommitted potential for change, refers to leeway, elbowroom and options, and is a close relative of volatility in this respect. As several of the contributors to this special issue demonstrate, volatility tends to lead to crisis only from the point of view of actors who seek to make a predictable, streamlined, fixed world. From the local point of view, the volatile system may in itself be flexible, in turn encouraging flexibility among the humans who decide to engage with it. This was a lesson from the Lisbon earthquake, and the same insight may shed light on the contrast between the projected highway bridge and the shifting sands beneath it, and that between solid, comfortable residences and the slippery precipice on which they were built.

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## Notes

1. See Lågendeltaets venner, 2020. <https://www.facebook.com/groups/Lagendeltaet/> (Accessed January 2023).
2. Miljøpartiet de Grønne. <https://innlandet.mdg.no/nyhet/lagendeltaets-venner/> (Accessed January 2023).

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## Échelles conflictuelles et changement accéléré : deux cas norvégiens

**Résumé :** Parfois, les tentatives de réduction de la volatilité ont l'effet inverse. Un système naturellement flexible qui est enrégimenté et discipliné à une forme fixe perd sa capacité à s'adapter aux circonstances changeantes. Il s'agit d'un thème récurrent dans l'anthropologie de la mondialisation, où la dynamique entre le fixe et le fluide n'est pas moins importante que le contraste local-global, plus commun: la modernité produit des infrastructures, des institutions et des pratiques qui sont incapables de s'adapter en douceur aux conditions écologiques changeantes. , privilégiant des modèles standardisés plutôt que des solutions adaptées à des assemblages aux caractéristiques uniques. Cet article traite de deux cas en Norvège – une controverse sur un pont dans une zone écologiquement vulnérable et une coulée de boue entraînant des dégâts matériels considérables et la perte de dix vies – afin d'examiner les écarts scalaires et la relation entre stabilité et volatilité dans une société engagée dans la maîtrise technologique.

**Mots clés :** Volatilité, Norvège, échelle, catastrophe naturelle, crise, zones humides, argile glaciomarine