Managing floods, managing people: A political ecology of watercourse regulation on the Kemijoki

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Abstract: The stark discharge variations on the Kemijoki, the longest river in Finnish Lapland, have long formed an integral part of the rhythmic dynamics of social and ecological life along its banks. With the spread of permanent infrastructure and activities, however, the annual spring-flood is increasingly conceived as a hazard. Fuelled, among others, by recent flooding events, climate-change scenarios, conflicts about hydropower developments and an EU directive, plans are being debated to dam the river in hitherto protected areas in order to decrease flood-risk downstream. This article outlines the divergent perceptions of floods, development and the nature of a river, on which the debate is based, and argues for a political ecology that understands non-human dynamics not as a backdrop, but as integral constituent of environmental politics.

Introduction: an old-fashioned river

In May 2005, the Kemijoki River in Finnish Lapland flooded like it had not done for a long time, triggering discussions along the river banks and beyond about ways of dealing with a watercourse that displayed such extreme variations (see Autti and Karjalainen, this volume, Figure 1 for a map of the river). Every year, river discharge decreases during the summer and increases with autumn rains and lower temperatures. In winter, discharge reaches a minimum when precipitation falls as snow and large stretches of the watercourse are covered in ice. With snowmelt in spring, this accumulated water boosts discharges to ten or twenty times their summertime level, causing annual flooding.

Floods and inundations have an extensive history on the river, and social life had long been similarly seasonal, with different livelihood activities during different times of the year, resonating with the state of the river and other fluctuating dynamics (Krause in press). Recently, however, more homes had been built closer to the floodplains, more permanent roads asphalted near the course of the river, and more people came to depend on occupations requiring the same activities year-round, independent of river discharge. Life on the river banks had modernised; but the river stubbornly continued to be old-fashioned. The Regional Council of Lapland, a development and planning authority run by the province's municipal administrations, soon offered a solution to this discrepancy. If life on the river was becoming more permanent, the river had to be made more permanent, too. Therefore, a number of flood control reservoirs were to be constructed on the headwaters of

the river and its largest tributary. Spring runoff peaks were to be retained there, decreasing maximum discharge along critical stretches downstream. Thereby, not only were economically valuable assets to be protected, but the construction projects were to also stimulate growth in the somewhat underdeveloped upper catchment.

This article outlines on-going conflicts over flood protection on the Kemijoki through a political ecology lens, that is, through an approach that analyses the conflicts and power relations inherent in environmental issues as an integral aspect of these issues. This approach is premised on the double realisation that ecological problems are not only replete with human agendas and influences, but they are also political struggles couched in material realities, and non-human participants may form part of the struggles. The political and the ecological, thus, need to be considered together.

Riverine political ecology

The understanding of political ecology that informs this article goes beyond analysing the discursive construction of environmental knowledge, power and distribution (e.g. Stott & Sullivan 2000) to include the active role of the non-human environment in shaping political struggles. Neumann (2005) suggests achieving this inclusion through a 'critical realist' stance that recognises the efficacy of a 'real' world that is only incompletely grasped by human concepts. In a slightly different way, in this article I follow Latour's (2004) argument for a political ecology without reference to an external 'nature' at all. As Ingold (2005) puts it, the political in 'political ecology' often lies in the conflicts over the right to define what this 'nature' is. He also points out that approaching 'nature' as a contested concept rather than a set of 'real', non-human entities, enables the recognition that power – through the support or subversion of the conditions of life for others – is not limited to humans but inherent in all relations, also with the non-human world. Extending the realm of the political to the entire field of relations liberates political ecology from a narrow focus on 'social' conflicts over 'natural' objects. Instead, it opens analysis to non-human participants in environmental struggles.

Here, this means framing the conflict in terms of not only the manifold relations that differently situated people have with the flooding Kemijoki River, but also the freezing, thawing and flooding of river and wetlands, for instance. Previous political-ecological studies of water and floods have often restricted their analysis to the human aspects of the political, using the material as a mere backdrop. Pelling's "political ecology of flood hazard in urban Guyana" (1999), for instance, provides an excellent account of the political, social and economic drivers of vulnerability to floods, but fails to include the particular material dynamics of the floods in the analysis. In this article, I attempt to avoid this limitation by following the developments pioneered, among others, by Swyngedouw (1999, 2009) and Kaika (2003) in the political ecology of water, which introduce, for instance, "the notion of socionatural production [that] transcends the binary distinctions between

society/nature, material/ideological, and real/discursive" (Swyngedouw 1999: 449).

In a similar vein, Walker and colleagues (2011: 2316) have argued for approaching floods as 'assemblages' of various elements, including "the interacting agencies of water, of material infrastructures and technologies (drains, air bricks, damp meters), and of social actors and institutions of various forms (residents, neighbours, landlords, water and insurance companies)". This enables them to investigate the range of spatial and temporal scales at which flooding occurs and what cultural, socio-economic and material aspects play a role in the making of specific flood events. Ekers and Loftus (2008) have attempted to improve the analysis of power in the political ecology of water, but while they eloquently integrate power theories of Foucault and Gramsci, the powers of water itself are being sidelined. Treating water mostly as the passive contents of urban utilities infrastructure, Ekers and Loftus relegate it to a means by which social power is exercised and contested. Jones and Macdonald (2007), in contrast, emphasise that water can be "unruly" just like people, arguing that similar approaches to disciplining and resistance can be applied. Developing Foucault's concepts, they portray flood management in Glasgow as "an ongoing performance of a tension between water itself, the urban infrastructure with which it interacts and those who would tell it what to do" (2007: 542), enacted through various disciplinary practices. In what follows, a political ecology approach thus delineated will be applied to the discussion of flood risk management on the Kemijoki. The account begins at a meeting in Rovaniemi, the provincial capital of Lapland, located at the confluence of the Kemijoki with its largest tributary.

Straight lines and stray lives on the river

In early May 2008, just when river dwellers were anticipating the spring flood, the Council of Lapland presented its flood defence project to the public. A speaker cited the EU directives on water and on flood management to bolster their plan. The directives, in his reading, suggested that EU member states were encouraged by the Commission to construct reservoirs, raise levees, and dredge river channels. Furthermore, the speaker invoked predictions of increased rainfall with climate change, a most powerful discourse in the global North. In short, the old-fashioned Kemijoki was dangerous, and the EU was interested in modernising it. To illustrate their plan, the Council presented a schematic map of the Kemijoki River (Figure 1), depicting it as a set of discharge streams, coupled with a number of population centres and existing or envisioned mechanisms to manipulate discharges.

Newson (1992) has reproduced a series of schematic river catchment images, illustrating the multiple ways in which rivers can be approached. The geomorphologist's image differs strikingly from that of the water manager or the one used for environmental assessments. The Council's image of the Kemijoki, however, resembles most closely the plans used in hydroelectricity generation, not included in Newson's list, according to which the Kemijoki has been

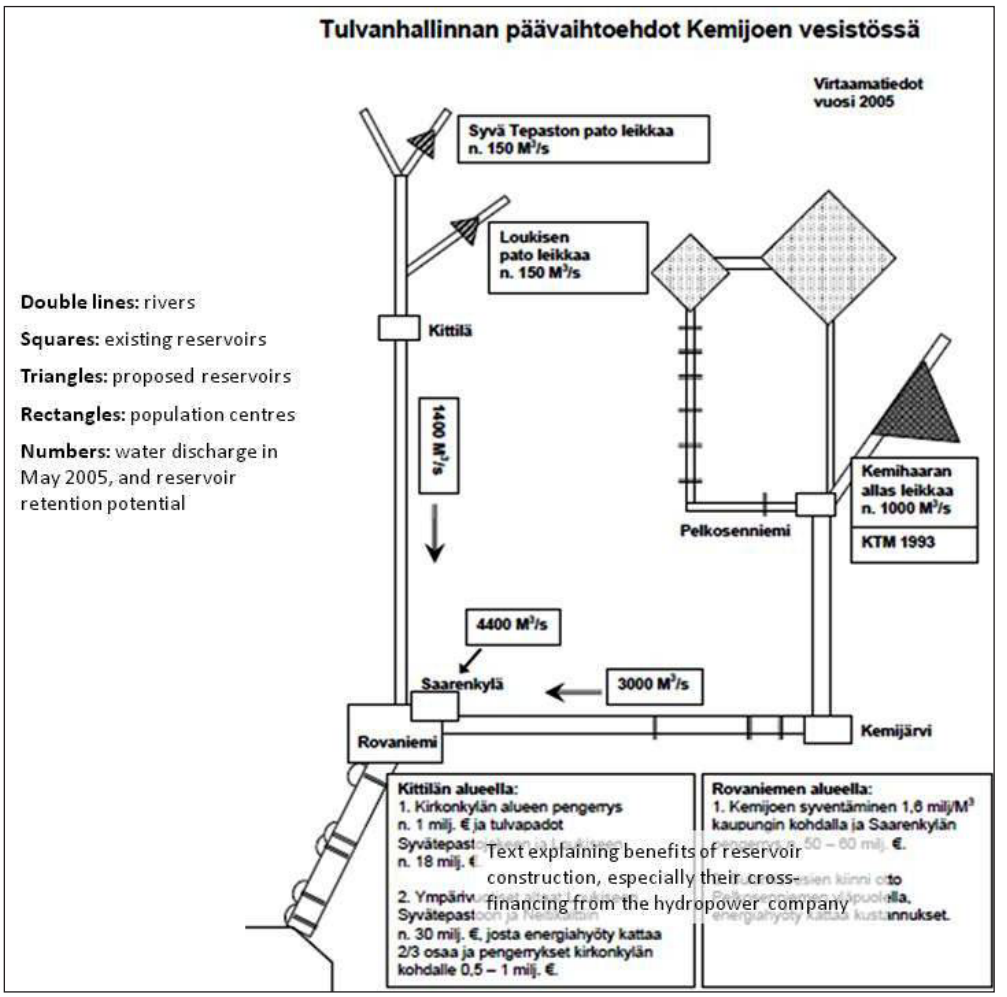

Figure 1. "Main alternatives of flood management on the Kemijoki River" from the Council of Lapland's plan. Note that the purpose of this depiction is to level the fluctuations of river discharge (adapted from Lapin Liitto 2008: 148).

transformed throughout the second half of the twentieth century (Krause 2011b). The straight lines representing the rivers, and the detailed inclusion of hydropower dams and discharge numbers – rather than, say, bridges and swimming places – attest to this kinship.

As Scott (1998) has shown, such maps facilitating the view of a specialist, external manager or ruler not only represent a particular reality, but also *transform* it in accordance with its representation. The Council thus treated the river as a raw resource that needed to be shaped to flow according to a development plan to benefit the people properly, for instance through flood defences, hydroelectricity generation or tourism income. Implicitly, this view

regarded river *dwellers* as economically disadvantaged individuals in need for large-scale, centrally-planned development initiatives.

Indeed, the population of the Kemijoki River region had recently transformed fundamentally from being largely self-sufficient smallholders with a combination of seasonally specific livelihoods including dairy farming, forestry, fishing, and reindeer herding (Ingold 1988). Developments in market prices, mechanisation, and communications infrastructure, among other things, had led to widespread migration from villages and hamlets into the province's towns, the country's southern cities, or abroad. Whereas Finnish post-war resettlement and reclamation programmes had promoted small-scale agriculture in Lapland, these projects were reversed from the 1960s onwards. The children and grandchildren of former frontier farmers today work in offices. Some of them explain that the earlier resettlement optimism emerged during the 1930s, a much warmer period than the following decades that – together with the social, technical and material transformations listed above – crushed this optimism. While this entails a number of economic problems for the remaining population, it does not mean Kemijoki River dwellers are poor and despondent victims of history; instead, many of them excel in improvising a livelihood out of many small and often temporary sources.

Back at the flood control meeting, a number of river dwellers voiced their concerns with the Council's plan. Most critical was Helena Tiihonen, a lady from the vicinity of one of the planned dams. She saw the flood-protection project as a blatant continuation of the damming enthusiasm of the second half of the twentieth century that had led to the construction of sixteen major hydropower stations and three large reservoirs on the river. Helena had been the key figure in a social movement that had prevented the building of a forth large reservoir (Liljegren 1999, Suopajärvi 2001) in exactly the same location as the flood-retention reservoir proposed by the Council.

For Helena and her compatriots, the river was home, fishing ground, and bearer of named places imbued with memories and stories, some of them concerning its magnificent floods (Figure 2). The adjacent mires and forests offered hunting and berry-picking grounds, and habitat for birds and birdwatchers. Experiences of other large reservoirs on the river had taught them that damming produces capricious water bodies with ugly and difficult-to-access shorelines, unable to sustain fish in winter and devoid of spawning grounds in spring. Helena knew that the economic situation in the area of the planned reservoir was far below the national average. She did not, however, understand this as the consequence of a lack of large-scale developments, but rather as *caused* by them: The decades-long insecurity of whether or not homes, roads, forests and fields along the upper river would soon be located on the bottom of a reservoir had deterred many river dwellers from investing in their estates, and had encouraged them to seek homes and livelihoods elsewhere. The unproductive and depopulated wastelands that the Council said would comprise most

of the area of the reservoir had in fact been *created* by the very treatment of the area as unproductive and depopulated.

In Helena's view, river dwellers were not individuals who happened to live in an area that had somehow lost all its economic opportunities and thus needed centrally-planned interventions. Conversely, she knew them as inventive and resilient people, who had been deprived of most

Figure 2. A pole on a river island in Rovaniemi marking the flood levels of 1859 and 1993. Evidently, the marker boards have moved, but their exact heights are probably less significant than their reminding passers-by of the potential immensity of floods and the rhythmicity of the river. Note that the purpose of this depiction of river discharge is not about levelling its fluctuations, but visualising, and perhaps appreciating, them.

of their livelihoods by centrally-planned interventions. If the government and the hydropower company only stopped to treat the upper river as a de-facto reservoir, and its inhabitants as soon-to-be-displaced people, these people would be very well able to make ends meet. Reviving the discussions about a reservoir at this point would only cause more insecurity and resignation in the region.

Moreover, it was only five years since the Supreme Court had ruled against the construction of a reservoir in this location, part of which had subsequently been protected under national and EU environmental legislation. Pointing this out, Helena also questioned the Council's authority in applying the EU Flood Directive – and *their* particular interpretation of it – in Lapland. She then noted that the Directive suggested to first conduct flood risk assessments, then to draft flood risk maps, and only by the end of 2015 to establish flood risk management plans. Discussing the construction of reservoirs in 2008 was taking the last step first, she said, and revealed the Council's narrow interest in damming the Kemijoki. She even quoted from the directive's preamble, which said "Floods are natural phenomena which cannot be prevented," turning one of the main pieces of evidence that the Council had presented as favouring their project into an argument against the reservoir. Helena was of the opinion that river dwellers had to cope with floods, but should not attempt to control them.

Some of the employees of the Finnish Environmental Administration at the meeting raised further objections. Flooding, they explained, is not a simple function of river discharge, but often caused by floes of river ice getting stuck and obstructing the flow. Building reservoirs would do little to change this. It was also mentioned that a less intrusive method of dealing with floods was perhaps building dykes along the river banks of flood-prone stretches, and to heighten them temporarily if necessary. To this, Helena added that while reservoirs might indeed curtail spring flood discharges, they simultaneously raise the risk of flooding later in the year. Filled with spring flood water during the summer, reservoirs are incapable of retaining any additional discharge peaks, such as potential autumn floods. The more bogs and forests are converted into reservoirs, the more pronounced these additional floods will be, as the discharge buffering capacity of these areas is lost. Strikingly, the same climate change scenarios that the Council had cited as proving the need for enhanced flood management also indicated that summer- and autumn-floods may soon increase.

The politics of flood management

Contestations of visions, knowledge, technology and power have characterised the history of the Kemijoki and its people for a long time, even before the advent of hydropower developments in the mid twentieth century (Krause 2011b). Generally, where ever water flows, people struggle about how it is supposed to flow, for whose benefits, and manipulated by what means. And arguably *because* water flows – along rivers, past turbines, in irrigation channels and throughout the hydrological cycle – it

not only constitutes a most attractive symbol to conceptualise social and ecological relations, but is also a phenomenon whose management necessarily impinges on other places and other people.

Because there are always various places and different people involved in water issues, the distributional aspects involved in decision-making clearly come to the fore. If the flow is manipulated in one place to benefit a particular group of people, the costs often occur somewhere else, for instance in river management (Mehta 2005), groundwater extraction (Aguilera-Klink *et al.* 2000) and irrigation (Lansing 1991). In the Kemijoki River flood management discussions, the interests of upstream river dwellers are pitted against those of downstream inhabitants. More than that, the project even *makes* them into opposing groups. If the latter want to feel safe in their riverbank homes and streets, the former need to give up their homes for a reservoir.

Developing analyses of the political dimensions of water management (e.g. Wittfogel 1957; Worster 1985), Strang (2004: 21) asserts that "to control the most vital resource is a powerful political position, and likely to be contentious. Water is always a metaphor for social, economic and political relationships – a barometer of the extent to which identity, power and resources are shared". The Kemijoki is not a source of drinking water or irrigation, but river dweller identities are entangled with its flow as much as the forests and wetlands along its banks. Deciding about the management of discharge patterns therefore implies much more than finding a technical solution to a technical problem. Rather, it is an exercise in political negotiation.

As research on contested river management in various places has amply demonstrated (e.g. Adams *et al.* 2004; Waley & Åberg 2011), such conflicts frequently see the clashing of deeply held convictions about human-environment relations, competing public and policy discourses, personal esteem (for instance as an engineer or ecologist), and knowledges and experiences of rivers. Whereas river restoration is in vogue in many countries, and some dams have even been decommissioned, the dam-building lobby in northern Finland has recently regained vigour. In part, this is because it couches its arguments in terms of the high energy demand of a country with dark and cold winters, and the widespread anxiety to depend on electricity imports particularly from the powerful neighbour Russia (see Strauss, this volume). In the Kemijoki River case, moreover, the Council eloquently presented the damming and discharge regulation project as part of a "multipurpose plan" of river development, which included tourism and the re-introduction of migratory fish (see Autti & Karjalainen, this volume), an extremely popular issue in the region (Lapin Liitto 2008).

Critically, however, the flood management conflict was not created by disagreeing human factions alone. Rather, the river's unruly, or old-fashioned, demeanour played a central part. The 2005 floods had upset many people; stark discharge fluctuations continued to rub against permanent infrastructure and predictable lifestyles; and the river's ice crust was – at the time of

the Council's presentation – about to break open and threaten further inundations. Far from a passive backdrop to, or object of, the conflict, the river participated in its emergence and development.

Presently, negotiations of the river's flows with particular human interests are most tangible in the context of hydroelectricity generation. For many river dwellers, the daily, weekly and yearly fluctuations in discharge and water table induced by the existing hydropower scheme bear witness to the "robbery" of the river by rich industrialists from the far south of the country with whom they feel little in common. They are uncomfortable with the fact that today, a single and centrally-managed company should control the technology to manipulate how much water flows when along which stretches of the river. The management of river rhythms belongs to life on its banks; but many river dwellers hold the present scale, degree of centralisation and the managing company to be too large, too effective and too alienated.

It is particularly through such rhythms – in discharge, fish movements, freezing and thawing – that the lives of many river dwellers are integrated with the river (Krause in press). The rhythms of fish resonate with fishing techniques and the frequenting of particular catching places; freezing and thawing enable skiing and snowmobile rides in winter, or boating in summer; and discharge dynamics indicate seasons and transformation, enable or disable certain boating routes, and continuously shift the river. If the final remainder of the famous Kemijoki River spring floods is to be channelled into reservoirs, introducing radically new rhythms in the dammed area and managing other rhythmical dynamics downstream as well, some river dwellers feel that the river's rhythms would be altered so radically as to simultaneously alter their own lives, tastes and activities in uncomfortable ways.

Furthermore, opponents of the flood control reservoirs consider the problem a clearly manufactured one, triggered by foolish land-use planning. Most river dwellers concur that the buildings flooded in 2005 and threatened by high water each spring were simply built in the wrong place. Older riverside dwellings are usually located on high banks, hardly reachable by floods. Only the more recent housing developments are situated in former meadows, of which everybody knows that they are flooded occasionally.

In many ways, the discussions concerning flood management are about different visions regarding the articulation of various rhythms of river and inhabitants. Shall there be floods, maybe temporary dykes, and potential evacuations? Shall the discharge on the lower river be made as stable as the prevailing constructions and occupations? This latter option would of course mean introducing entirely new rhythms on the upper river, where discharge peaks would be trapped in a reservoir and gradually released during periods when hitherto there was rather little water in the river. And these, in turn, would transform the rhythms of ice reliability, fish behaviour, and watercourse accessibility, among others. Furthermore, a series of contested parameters have to be agreed upon, many of which are contested mainly *because* of their rhythmical variability, like the shoreline of a watercourse. Is it at

its rather low summertime level, or at its springtime level, i.e. considerably higher and often dozens of metres wider? And *which* spring flood level shall be taken as baseline? As Lefebvre (2004) has made clear, rhythmic dynamics imply recurrences *with difference*, which means that even though floods may occur annually, their extent is highly variable – a point to which everybody on the Kemijoki River can attest.

Flood management as political ecology

Flood management discussions along the Kemijoki River bestow momentum on a discourse of damming and control that had previously lost its appeal. They reveal uncertainties about current and future hydrological dynamics. They illustrate how a riverine conflict can create allies and adversaries. And, most of all, they show how dealing with environmental phenomena necessarily implies dealing with social issues as well, as human and non-human rhythms everywhere interweave. These dealings are inherently political since, expanding from Ingold (2005), ecological relations are fundamentally about providing or inhibiting the conditions for the lives of others. The river jeopardises and enables different forms of human life as much as those kinds of social power that are conventionally considered 'political'. Analysing the struggles over flood management on the Kemijoki, riverine dynamics must be considered alongside human ones.

If flood management on the Kemijoki is the attempt to discipline the rhythms of discharge and river dwellers' lives according to a particular vision of progress, predictability and permanency, it constitutes a struggle both between differently situated people, and between certain people and the river (Krause 2011a). Flood management is as much about water as it is about those whose lives relate to this water. A truly political *ecology* therefore must be more than a political economy applied to environmental issues. Rather, the approach must reckon with the ecology, i.e. the interplay of human and non-human dynamics, of the power relations and subject positions in question.

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