VOICES from around the world

03/2017

Social Water

Water connects. It brings people together, in collaboration as much as in conflict. Oceans have facilitated colonial expansion, slave trade and globalisation. Rivers have been arteries for the spread of people and ideas, and have fuelled upstream-downstream struggles. Water supply and sewage systems reflect the political differentials of (dis)connected households. And wells and springs draw thirsty travellers, animals and pilgrims together.

Some observers have claimed that the wars of the future will no longer be about oil, but about water. With the availability of clean water declining, both relatively and absolutely, violent conflicts about this ever-scarcer but relentlessly vital substance are likely to increase. Others, conversely, have shown how water issues may just as well foster unforeseen solidarities and new alliances, forging cross-border dialogue on the use and protection of common aquifers, rivers or seas. Water-related protests and social movements have garnered tremendous global resonance, of which the multi-ethnic 'Water Protectors' camp opposing the US American Dakota Access Pipeline is only one recent example.

Water has also been used to illustrate that distant processes are often intimately connected, for instance through the accounting technique of 'virtual water' that traces how much water has been used in the production of a commodity. Here, water is used as a global 'currency', a substance equivalent across the planet. Other water uses, however, defy this image of generalised water, and imply that we should speak of waters in the plural, rather than assuming water to be a singular element across contexts.

The privatisation and commercialisation of water continues to make headlines, and has led to massive – and sometimes successful – opposition around the globe. Many commentators regard the privatization of formally municipal drinking water provision as the epitome of neoliberal reform, with devastating consequences for those who rely on its provision, especially the less-well-off consumers. These discussions often invoke the tension between treating water as an economic good, or as a human right. Furthermore, buying drinking water in bottles is an established practice in Germany and many other places, which has come under severe criticism both for divesting money away from public water infrastructure and, where plastic bottles are used, for contributing to the gigantic amount of plastic waste polluting our oceans.

Such powerful connections about, with and through water must not be taken as fixed structures, however. Just as water keeps on moving, evaporating, seeping, freezing and thawing, these connections are constantly

being renegotiated. In the booming cities of the Global South, access to drinking water is subject to rapid changes in contexts of new legal and illegal connections, political favours and lobbies, and an uncontrollable infrastructure. In river deltas around the world, water regimes transform radically with upstream damming, large-scale flood control and irrigation infrastructures, unpredictable storm surges and the effects of local hydrological adaptations. And the melting ice and permafrost in glaciers and Arctic regions jeopardise water availability, travel routes and many other aspects of people's lives.

As a vital substance, water is an integral part of people's everyday lives and livelihoods. How it is involved in connecting and disconnecting people, and what meanings it acquires in those relations, is embedded in the wider social, economic and ecological context, which is simultaneously remade through water discourses and practices. Water is everywhere. It has social consequences, as much as society has hydrological consequences. Water is social, and sociality is watery.

Under the heading of 'Social Water', this issue explores the sociality of water and the wateriness of society. Contributions probe into the various connections and disconnections that water enables and inspires; the social relations through, about and with water; and the hydrological resonances of politics, religion, ethnicity, kinship, and knowledge, and other realms of social life.

Multiple Social Waters

Numerous contributions illustrate that once we realise that water is social, we also find out that water is not merely the single, universal substance, H_2O, that scientific abstractions and economic models might lead us to believe. Rather, water is always multiple, and we are often best advised to think of waters in the plural, rather than of water as a singular essence.

Francine van den Brandeler, for instance, describes how a problematic confluence of different kinds of water in Amalacachico, an informal settlement in Mexico City, makes life difficult for its human and non-human inhabitants. This place has a long and exciting history, for it is comprised of a network of canals originally built by the Aztecs prior to the arrival of the Spanish colonisers. Although recognized as a UNESCO heritage site, local residents continue to struggle for their basic rights including a legal clean water supply and a sewage system. Conservationists are also campaigning for cleaner waters, but for different reasons: the site is home to an endangered species, the axolotl. As van den Brandeler shows, polluted water, drinking water, wastewater, floodwater and the water in which the endangered axolotl lives are all connected in Amalacachico, but they are not the same waters. Referring to all of them by the same term, H_2O, might suggest the wrong problem formulations and therefore inspire unsuitable attempt to solve them.

Flore Lafaye de Micheaux makes a similar point in reference to the River Ganges. She illustrates how this river is more than a single flow of water, which has been recognized even by the explicitly secularist first prime minister of India, Jawaharlal Nehru. The author contrasts two imaginaries of a river: one as 'house', emphasising its physical and measurable dimensions, as economic and scientific approaches would; the other as 'home', emphasising its experiential, spiritual and emotional qualities, as the inhabitants of its banks, and sometimes even people living further afield, would. Lafaye de Micheaux suggests using the concept of the 'milieu' to understand how people can simultaneously inhabit both a 'house' and a 'home', and to trace how the perspectives on the river as either one or the other are the product of different relations between river and people, rather than an intrinsic attribute of either the water or the individual.

Ines Stolpe's contribution provides insights into the multipliplicity of waters in Mongolia, where traditionally, nomadic groups using the same water body would be united as the 'people of one water'. This social principle, however, does not apply to urbanised Mongolians, who feel no bonds with the other rural-to-urban migrants who share a 'water kiosk' with them. Furthermore, Stolpe sketches some of the different and changing meanings of water in Mongolia, a substance which has been considered 'black' and 'impure' until recently,

and is not to be mixed with milk, the white epitome of purity. With the introduction of modern hygienic perceptions of water, many of these meanings have begun to shift, and people have been adapting the related water practices. These creative reworkings, however, do not obliterate the multiplicity of different waters, but rather illustrate how Mongolians navigate in a world where water is not one, universal substance.

While these contributions, and others in this collection, show how water is multiple, Jamie Linton argues that even the idea of 'social water' has two rather different connotations, which may be difficult to reduce to a common denominator. Reflecting on his earlier work and recent readings and experiences, he illustrates how water is social in two senses. In the constructivist and political ecological sense that he elaborated in his book What is Water?, 'water is what we make of it', where the 'we' is a heterogeneous assembly of often conflicting interests and perspectives. Here he argues, however, that there is a second way in which water is social, namely in the way that it literally forms part of humans, so that there is no clear distinction between the inside and the outside, the constructers and the constructed, or the political actors and the political substance. This 'essential' form of social water must not be taken as an apolitical notion, however. According to Linton, it suggests that access to a healthy environment – including water – must be understood as a human right rather than the privilege of a few.

Connectivity and Infrastructures

A number of contributions illustrate how water flows are shaped by various infrastructures, past and present, state-planned, development-aid-funded, locally built, or private-enterprise-financed. These infrastructures don't always work as intended. They may be leaky, or exceed their purpose, or cause a plethora of unintentional effects. Therefore, when water connects people and places, this connectivity is usually a historically grown and politically contested relation.

The contribution by Jeanne Féaux de la Croix, Adhamjon Ashirov, Gulzat Baialieva, Aibek Samakov and Mokhira Suyarkulova, for example, demonstrates that the connections and disconnections afforded by the Central Asian Syr Darya River have been shifting in recent history. Some of these shifts have come about through large infrastructural projects like hydropower dams and irrigation schemes, but in spite of all their grandeur and catastrophic consequences (including the disappearance of the Aral Sea), these spectacular infrastructures leak and are fragile. They have been tied to particular political and economic contexts (such as the Soviet Union) and they easily disintegrate once these contexts vanish, affording yet new connections and disconnections in the ruins of the old. The authors conclude that a river basin must not be taken for granted as a spatial entity, but rather seen as something that emerges with particular political and infrastructural arrangements.

Sandro Simon delves into the various infrastructures that influence water flows in the Kenyan Tana Delta. He illustrates how the 100,000 delta inhabitants make a living by using creative strategies in an environment that is marginalized as 'wasteland' by the centre of Kenyan political and economic power. Understanding 'infrastructure' in its broader sense, as also referring to social, economic, and political relations between people, practices and things, the contribution discusses the complexities of space in an environment strongly shaped by water and its absence. Simon juxtaposes different (centrally organised and locally improvised) infrastructures, including the remnants of a large-scale irrigation project, community-built and -maintained tidal irrigation canals, and saltwater blockages. Thereby, he shows how water flows are channelled through a wide array of past and present social relations and imaginaries.

Franz Krause describes the complex system of historic timber-floating on the Kemi River in Finnish Lapland. He shows that while the river flows all by itself, it required a lot of human labour and technology to make it into a timber transport artery. Krause inserts these observations into the discussions about water and infrastructure, reflecting upon whether the labour and technology turned the river into infrastructure, or whether it had always constituted infrastructure, just not the kind that large-scale industrial forestry required. This contribution concludes with a cautionary remark about the burgeoning use of infrastructure, asking what

analytical and political effects it might have to call a river 'infrastructure' rather than another term, and suggesting that a river may be (called) many other things, too.

Large Dams and their Discontents

The following two contributions focus on one particularly prominent form of water infrastructure – the large dam – and its social consequences. Infamous for their displacement of tens of millions of people around the world, large-scale dams have been severely criticised for their social, economic and ecological unsustainability. Nevertheless, they continue to be built in many places, often for their purported cost efficiency or for their alleged climate benignity (in the case of hydroelectricity generation) or food security (in the case of irrigation).

Juan Pablo Hidalgo-Bastidas, Sytske Susie Jellema, Leontien Cremers and Félix Narváez introduce a documentary project in the making. Their film Above Water is set in Ecuador and shows the consequences of a governmental development project for the local population by focusing on the life and struggles of an Ecuadorian woman, Bella. She and her family were displaced and strongly affected by the building of a hydropower dam, and now live in between the dam and a banana plantation that exposes them to a contaminated and unsafe environment. While the documentary is still in the making, readers can learn more about the story behind the film and watch the teaser, which gives some visceral impressions of the everyday life of the victims of 'progress' and the dirty effects of 'clean energy'.

Lucigleide Nery Nascimento's contribution takes us to the Northeast of Brazil. It introduces us to the São Francisco River, the basin of which is home to nearly eight per cent of the Brazilian population. The river is threatened by a combination of large-scale governmental hydropower developments and the vagaries of an unstable climate, which endangers the entire ecosystem and the people who depend on it. Exacerbated by the withdrawal and withholding of river water at the dams, droughts along the river affect large parts of the local human and animal population, leading to hunger and starvation. Overall, Nascimento paints a rather bleak picture of the São Francisco River, exploited for national development goals and international export markets, a former "ocean river" progressively drying up as minimal flow regimes are not met.

In their collaborative contribution, Simon Borja, Joel Cabalion, Vinod Chahande, Julien Jugand, Philippe Pereira and Dhammasangini Ramgorakh use multiple registers – text, images and a song – to illustrate how a current water struggle has deep historical roots. Around the Gosikhurd dam and irrigation project in Maharashtra, India, they trace on the one hand how the distribution of winners and losers in modernist water project mirrors and reinforces older inequalities of water access between high-caste Hindus, and Dalit (low-caste) and Adivasi (tribal) people. On the other hand, the authors show the unequal distribution of water is a strong mobiliser for opposition, which builds equally on a long history of social movements fighting against injustices in the region. With increasing droughts, pollution and a lack of fair distribution of water, 'Fighting for water rights is akin to struggling generally to get one's position in society recognized'.

Water Perspectives and Approaches

While water infrastructures like large dams thus produce winners and losers, water and water bodies may also give rise to particular ways of seeing and imagining. Perceiving a place from the water, rather than from the land, might provide a rather different understanding of that place. Conversely, looking out on an expanse of water can have different social and imaginary effects that contemplating a view of the land.

Gerda Kuiper takes us on a boat trip to Lake Naivasha in Kenya. Her descriptions along with her photographs allow us to witness scenes that are invisible from the roadside. The lakeside view is particularly interesting, she explains, because it allows us to discover the very different economic activities and lifestyles pursued around the lake, ranging from migrant worker settlements to abandoned flower-farm owners' houses. Kuiper contrasts her view from the water (here the undifferentiated lake) to the view from the road on the land,

explaining that the two suggest rather different kinds of life: where the road view signals separation and invisibility of the various activities and groups through fences and vegetation, the lake view suggests interaction, mixing and visibility. Such differences in 'approach', Kuiper proposes, warrant reflection in ethnographic research.

Tijo Salverda, in his contribution, discusses how in exclusive seaside resorts the vast emptiness of large water masses may also facilitate exclusivity instead of just being appreciated for their aesthetic nature. With only a horizon in the distance, views of uninhabitable oceans allow affluent elites residing in the resorts to (temporarily) escape from the everyday realities of a world they share with the less affluent. Where the ocean is imagined as a socially and politically empty space, and where it acts as a pragmatic barrier to people's movements, it can afford exclusivity to the elites in their seaside resorts.

Potentialities of Water-Land Mixtures

Very often, water is entangled in social lives not as a pure substance, but as a mixture with other substances, as in marshes, mud, swamps, beaches and coastal areas. Some contributions explicitly explore social and cultural dynamics in and through such mixed matter and suggest that it is particularly in such muddy mixtures that water's life-sustaining potentialities are realised.

Caterina Scaramelli's evocative vignettes and images from her ethnographic fieldwork in the Turkish Kızılırmak Delta pay close attention to different mixes of water and land in everyday practices of work and householding. The delta is saturated with and produces all kinds of water in the context of people's gardening, animal husbandry, dairy processing, rice agriculture and fishing. The life she describes is one of always attempting to coordinate different spatiotemporal dynamics – including those of the weather, plant growth, religious duties and kinship relations – in order to keep up with the delta's rhythms of wetting and drying.

Matian van Soest, subsequently, investigates the growing pressure on wetlands around Kampala, Uganda. Because the city is expanding, and an emerging middle class is striving for affordable and pleasant housing on the urban fringes, the wetlands are shrinking. This jeopardises the regional water resources, as the wetlands used to filter and clean the water. Soest demonstrates how this process is not random encroachment, but the product of a highly problematic land-tenure system with roots in the colonial conquest of Uganda. Wetlands, in this account, figure as places of last resort for people who have been effectively disowned, places that are unsuitable for predatory real estate developments, and places that now offer opportunities because they had been neglected as marginal lands in former property claims.

Kaleo Sansaa presents a poem that is filled with emotion and melancholy and evokes feelings of childhood, roots and diaspora. Spoiled Children opens up spaces for childhood memories and experiences of transformation by using various metaphors. Water provides striking images in this poem, for example in the form of rain and raindrops, which connect the lyrical persona and the addressee to past and future, to childhood and ancestors, to memory and healing. Water also prominently figures as 'mud' and as part of the soil, to which people belong. Sansaa evokes the rainy season that produces this mud as a powerful, creative event of 'ancestral whispers', which may facilitate a postcolonial, diasporic re-awakening (and re-wetting), a transformative but equally painful process, marked by with tears, yet another form of water.

The Sociality of Flooding

Whereas watery mixtures may enable agriculture, provide ecosystem services and signify belonging and rebirth, the absence or overabundance of water tends to cause crises and catastrophes. Two contributions deal explicitly with flooding, and demonstrate that such events are as social as the floodwater itself. Rather than 'natural disasters' with causes and effects, as described by hydrology, meteorology, economics, and demography, floods are also shaped by historically grown social and infrastructural elements – they are experienced, remembered and combatted by socially and culturally situated people.

Lukas Ley has contributed a teaser – both in text and video form – about a phenomenon called 'rob' in the Indonesian city of Semarang. Rob is caused by tidal flooding of a river that is actually a sewage canal, haunting one district of the city while draining wastewater out from the urban centre. In writing and in video, Ley illustrates that rob is not just a matter of rising waters. Rather, this irritating and dangerous flood it is about tidal rhythms as well as about the residents' sense of cleanliness and resilience; about land subsidence and colonial legacies of canal digging; about the political ecology of drainage and the sense of time and purpose; about environmental degradation, climate change and urban planning. In short, rob is a cultural, political and social phenomenon as much as it is the rising of Semarang sewage into people's homes.

Following on from this, Patricia J. Rettig explicitly argues against the tendency to reduce floods to physical events expressed in numerical accounts (amount of water, intensity of rainfall, cost of damage, etc.). Instead, with her story of the 1976 flash flood in the Big Thompson Canyon, Colorado, US, she suggests that human memories and narratives can provide an account that 'inspires true understanding and empathy' of such an event. Rettig's story is based on a wealth of archival material, including recorded accounts/interviews, available online at 'The Big Thompson Flood Collection' in Colorado State University's digital archives, and proves the value of such collections. In this case, part of this value lies in the material's ability to evoke and reconstruct the multiple dimensions of a flood, including the emotions, stories, hopes, fears, and explanations that people had during and after the catastrophe. Rettig emphasises that the account also 'shows us the impact of unpreparedness', suggesting that people might learn from such accounts. Indeed, the Big Thompson Flood led to an improvement of disaster warnings and communications, recovery procedures, and local floodplain regulations across the US.

Negotiating Fishing and Water Rhythms

If water comes and goes, sometimes more regularly and at other times less so, the same is true for fish and other aquatic life. These rhythms have implications for the fishing practices of the people who depend on the waters and fish, which often involves not unproblematic matters of adaptation and resonance, and comes with various hardships and tensions.

Mouazamou Ahmadou and Sarah Laborde's short film about canal fishermen in the Logone Floodplain in Cameroon illustrates both the ingenuity of this particular fishing technique and the social tensions that can develop around it. During the dry season, people work strenuously to dig canals through the riverbank, connecting the river to the floodplain beyond. Towards the end of the wet season, these channel the floodwater, along with the fish that have hatched and grown in the floods, back into the river. Through a carefully constructed and timely inserted trap, the fishermen catch large numbers of fish with this technique. Some years bring abundant floods and fish, others bring no floods, and therefore no fish either. But this very successful fishing model has spread so much that the increasing number of canals has fuelled competition and tensions among established canal owners and newcomers. While these are mostly non-violent, rival canal owners frequently accuse one another of using magic and poison to guide fish into one canal rather than another.

Michael Vina explores the multispecies relations that make up coastal communities in Ecuador. His contribution shows how the interactions between El Niño, precipitation, fish populations, mosquitoes, pathogens, and traditional and state-induced infrastructures form a rhythmic and unstable whole that includes humans and their preferences, experiences and practices, but is not limited to them. A regionally particular form of drizzle, in this view, is not only a meteorological phenomenon, but a part of local subjectivities and histories, which are not easily replaced by (repeatedly empty) state promises of modern piped water – a situation that has proven beneficial for the coastal communities, as Vina elaborates.

Communicating Social Water

As a number of contributions in this issue suggest, how we approach water often depends on the cultural

context in which we have grown up. From a young age we may have learned about the needs and/or dangers of water, or how to navigate an abundance or shortage of water in our lives. Yet with large-scale technical projects that harness the might of water, such as dams, and also because of global climate change, many people will probably have to relearn about the place of water in their lives. In urbanised and complex societies where relations with water are increasingly obscured, this may mean they virtually have to start from scratch again. Access to tap water is after all often taken for granted, with little knowledge about the infrastructure behind it. In the case of sewage systems, many equally refrain from wondering where their waste ends up – though for better or for worse, the growing attention to the 'plastic soup' dumped in our oceans may raise awareness that the waste doesn't just disappear.

We are witnessing an increasing number of initiatives aimed at educating local populations about water in all its variety, addressing the shortcomings of existing knowledge and meetidng the challenges that may lie ahead. This might take the form of a university course with a view to prepare social anthropologists for work in the water sector; an art and design exhibition aiming to raise awareness of a city's 'hidden hydrology', or an out-of-school centre teaching schoolchildren about the urban water cycle. In Cologne, for example, where the editors of this collection are based, the Cologne Wasserschule (Water School), established in 2011, offers children from a young age the opportunity to learn about drinking water, wastewater treatment, the ecology of streams in and around the city, the quality of water, and flood protection. In collaboration with the relevant institutions, the school hopes that about 7,000 local children per year can obtain a better understanding of the role and circulation of water in their lives. Assuming that many children lack an experience and understanding of water flows beyond the tap and drain, the idea of the Wasserschule is to create opportunities for schoolchildren to reconnect with the otherwise hidden and unknown aspects of water infrastructure, water cycles and water ecology in and around Cologne.

The two final contributions in this collection provide excellent examples of other initiatives that share experiences of communicating the insights of the sociality of water and the wateriness of society to different publics, and of applying some of those insights in non-academic settings. Douglas McRae documents an intervention in an increasingly urbanised world where people's direct dependence on water is often obscured. He notices that city inhabitants only realise their relation with water in moments of scarcity (periods of drought) or overabundance (flooding). In São Paulo, Brazil, as his contribution nicely demonstrates, a collaborative effort by researchers and designers is intended to counter this lack of knowledge. Through an exhibition combining history, geography, ecology, and visual art, they aim to communicate a vision of the city's hydrological realities. The exhibition reawakens, as McRae calls it, the 'aquatic memory of the city'. This is to recreate an awareness of watersheds and water flows in the city, and enable people to reconnect with hidden and built-over rivers in order to reverse their pollution and mistreatment.

Finally, resonating with the professional background of many of this issue's contributors, Karlheinz Cless shows that at the university level too, social water is an increasingly prominent subject. He reports about the research and teaching around water at the Department of Social and Cultural Anthropology of the University of Frankfurt, Germany. He details some of the contributions and findings from the international workshop that the department held to inaugurate this field, and he describes a course on water commercialisation that he has been teaching. In his teaching and research, he places particular emphasis on the ubiquity of society and culture in what might otherwise pass as 'technical' water relations, such as infrastructure and privatised water provision. Cless's work also foregrounds that a 'social water' perspective is valuable not only in academia, but also in applied fields like development cooperation and water utilities, among others.

We can only applaud initiatives like these. In a world where concerns about water become ever more prominent, such educational initiatives may help us grasp that water is part and parcel of our social and political relationships, of economic distributions and dependencies, and of cultural meanings and imaginaries. Learning about this exciting substance that we cannot live without must not stop at its physical characteristics; we must also become aware of how this fluid and ephemeral material is implicated in the very constitution of our social and cultural worlds.

Going thirsty with your feet in the water in Mexico City

by Francine van den Brandeler

In 2016, while conducting my PhD fieldwork in Mexico City on urban water challenges, I visited an informal settlement in the south of the city. Amalacachico was built on top of the Chinampas areas, a network of canals originally developed by the Aztecs before the Spaniards arrived. Much of the Valley of Mexico, where one of the world's largest metropolises is now located, used to be covered by a large lake, and this region now holds its last remains. The Chinampas are a system of small plots, or gardens, that seem to float on the shallow lake although they are connected to the lake bed by their roots. The Aztecs depended on the Chinampas to produce food that sustained what was then already one of the largest human settlements in the world. Managing water was essential to ensure good harvests and avoid floods during the rainy season.

As the city grew and affordable housing became scarcer, people moved into the Chinampas and built informal settlements. Self-built houses line the edge of the now severely polluted canals, as houses are not connected to the sewage network and waste is only collected on the edge of the neighborhood. In the rainy season the canals swell and cause flooding. Today, the Chinampas are recognized as a UNESCO heritage site, and as Amalacachico is a slum its residents could be evicted at any moment.

I meet Daniela (not her real name) at the entrance of the neighborhood, where large concrete buildings on one side of the road dwarf the self-built houses lining the canals. Daniela is a single mother and has lived in the neighborhood for several years with her parents, who have lived there much longer. She is an activist fighting for the regularization of the neighborhood and access to drinking water. She considers the lack of access to water the main struggle that Amalacachico faces, and the water utility company will not bring in pipes as long as it remains an informal settlement. Local politicians have made many promises to bring in water but their zeal has usually subsided soon after they were elected. While we walk through the maze of narrow streets and over countless small bridges, she explains that houses are also often under water in the rainy season as the water from the canals progressively rises. Wastewater from each house mixes with garbage washed in by the rains, leading to a toxic stew of rising waters.

Daniela claims that they can live with the floods if at least they have drinking water. Currently flimsy rubber pipes crisscross the neighborhood, including the filthy canals, bringing water to houses from other areas by connecting these pipes to the public water supply system. She admits this is illegal, but defends the practice as people can't live without water. Clean water, that is. This is why she has been on a mission to bring an alternative practice to the neighborhood – a practice that would be compatible with the informal status of the area and the practical challenge of bringing in water infrastructure in the maze of narrow streets and canals. "Rainwater harvesting would be perfect for this community. At home, we already collect water with some buckets and use it to wash clothes. But that's it, there is no project". Daniela has heard of organizations that install such systems, including filters, on rooftops and enable houses to have a reasonable source of water for at least part of the year.

Some argue that the area has been occupied for so long now that regularization is the most humane and pragmatic approach. However, others insist that the cultural significance of the Chinampas area as well as its ecological importance should also be taken into consideration. A biologist from the National Autonomous University of Mexico (UNAM) who has spent years studying a rare salamander that only lives in the remaining lake waters of Mexico City argued that relocating the residents to a new neighborhood is preferable to the loss of an entire species – the Axolotl. What makes the Axolotl particularly unique is its ability to regenerate limbs and body parts, including spines and brains, without any scarring and as many times as needed. As the original lake has shrunk to a fraction of its original size and is heavily polluted, Axolotls have become critically endangered.

Amalacachico remains in limbo as these multiple interests clash with each other, causing a gridlock for which there is no end in sight. Daniela explains that there are initiatives to involve locals in cleaning the canals, especially the algae that covers them, which is then recycled for other uses. Although there is little evidence that this is making a difference, partly due to their limited resources, it is a step in the right direction. Finding a way for people to co-exist harmoniously with the remnants of the lake and its inhabitants will require creative, decentralized solutions and the active involvement of local residents. In the meantime, time is running out for the axolotls, and Daniela and her family continue to struggle to meet their daily water needs.

Bridge connecting a house to the street

Pipes bringing in water to local residents

River-House, River-Home

by Flore Lafaye de Micheaux

Introduction: Rivers, Feelings and Emotions

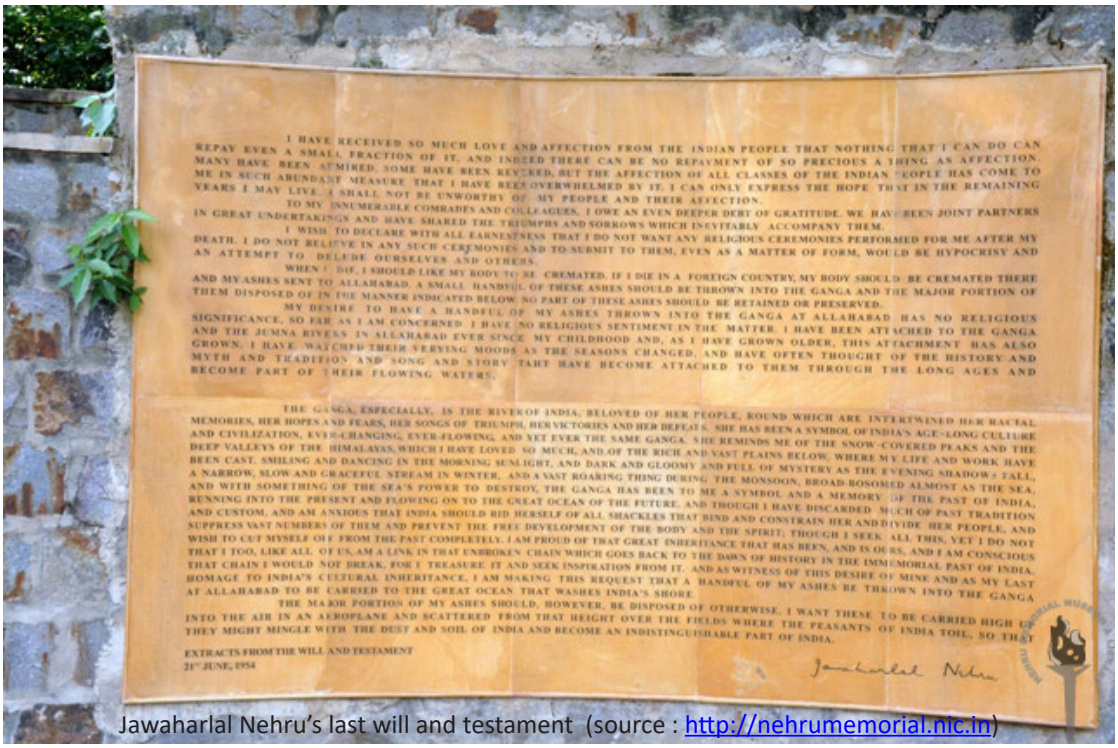
"The Ganga, especially, is the river of India, beloved of her people, round which are intertwined her racial memories, her hopes and fears, her songs of triumph, her victories and her defeats. She has been a symbol of India's age long culture and civilization, ever changing, ever-flowing, and yet ever the same Ganga."

Jawaharlal Nehru, Will and Testament, 1956

The Ganges is more than a river for Hindu believers; it's a deity. Indian myths and traditions abundantly refer to the Ganga divinity, named Ma Ganga, or Mother Ganges, by its devotees. Other rivers are also revered in India. Key rituals are thus performed next to rivers, particularly cremations and offerings.

Photo: Uttarkashi, Uttarakhand, India (photo by the author)

Jawaharlal Nehru was the first Prime Minister of independent India. He was not a Hindu-religious person, as he himself put it. Secularism was an important concept for him, and he steadily worked at incorporating it into laws and institutions throughout his tenure. However, he requested that his body's ashes, or a small handful of them, be thrown into the Ganges at Allahabad, as written in his published will at Jawaharlal Nehru Memorial Museum.



I HAVE RECEIVED SO MUCH LOVE AND AFFECTION FROM THE INDIAN PEOPLE THAT NOTHING THAT I CAN DO CAN REPAY EVEN A SMALL FRACTION OF IT. AND INDEED THERE CAN BE NO REPAYMENT OF SO PRECIOUS A THING AS AFFECTION. MANY HAVE BEEN ADMIRED, SOME HAVE BEEN REVERED, BUT THE AFFECTION OF ALL CLASSES OF THE INDIAN PEOPLE HAS COME TO ME IN SUCH ABUNDANT MEASURE THAT I HAVE BEEN OVERWHELMED BY IT. I CAN ONLY EXPRESS THE HOPE THAT IN THE REMAINING YEARS I MAY LIVE, I SHALL NOT BE UNWORTHY OF MY PEOPLE AND THEIR AFFECTION.

TO MY INNUMERABLE COMRADES AND COLLEAGUES, I OWE AN EVEN DEEPER DEBT OF GRATITUDE. WE HAVE BEEN JOINT PARTNERS IN GREAT UNDERTAKINGS AND HAVE SHARED THE TRIUMPHS AND SORROWS WHICH INEVITABLY ACCOMPANY THEM.

I WISH TO DECLARE WITH ALL EARNESTNESS THAT I DO NOT WANT ANY RELIGIOUS CEREMONIES PERFORMED FOR ME AFTER MY DEATH. I DO NOT BELIEVE IN ANY SUCH CEREMONIES AND TO SUBMIT TO THEM, EVEN AS A MATTER OF FORM, WOULD BE HYPOCRISY AND AN ATTEMPT TO DELUDE OURSELVES AND OTHERS.

WHEN I DIE, I SHOULD LIKE MY BODY TO BE CREMATED. IF I DIE IN A FOREIGN COUNTRY, MY BODY SHOULD BE CREMATED THERE AND MY ASHES SENT TO ALLAHABAD. A SMALL HANDFUL OF THESE ASHES SHOULD BE THROWN INTO THE GANGA AND THE MAJOR PORTION OF THEM DISPOSED OF IN THE MANNER INDICATED BELOW. NO PART OF THESE ASHES SHOULD BE RETAINED OR PRESERVED.

MY DESIRE TO HAVE A HANDFUL OF MY ASHES THROWN INTO THE GANGA AT ALLAHABAD HAS NO RELIGIOUS SIGNIFICANCE, SO FAR AS I AM CONCERNED. I HAVE NO RELIGIOUS SENTIMENT IN THE MATTER. I HAVE BEEN ATTACHED TO THE GANGA AND THE JUMNA RIVERS IN ALLAHABAD EVER SINCE MY CHILDHOOD AND, AS I HAVE GROWN OLDER, THIS ATTACHMENT HAS ALSO GROWN. I HAVE WATCHED THEIR VERYING MOODS AS THE SEASONS CHANGED, AND HAVE OFTEN THOUGHT OF THE HISTORY AND MYTH AND TRADITION AND SONG AND STORY THAT HAVE BECOME ATTACHED TO THEM THROUGH THE LONG AGES AND BECOME PART OF THEIR FLOWING WATERS.

THE GANGA, ESPECIALLY, IS THE RIVER OF INDIA, BELOVED OF HER PEOPLE, ROUND WHICH ARE INTERTWINED HER RACIAL MEMORIES, HER HOPES AND FEARS, HER SONGS OF TRIUMPH, HER VICTORIES AND HER DEFEATS. SHE HAS BEEN A SYMBOL OF INDIA'S AGE-LONG CULTURE AND CIVILIZATION, EVER-CHANGING, EVER-FLOWING, AND YET EVER THE SAME GANGA. SHE REMINDS ME OF THE SNOW-COVERED PEAKS AND THE DEEP VALLEYS OF THE HIMALAYAS, WHICH I HAVE LOVED SO MUCH, AND OF THE RICH AND VAST PLAINS BELOW, WHERE MY LIFE AND WORK HAVE BEEN CAST, SMILING AND DANCING IN THE MORNING SUNLIGHT, AND DARK AND GLOOMY AND FULL OF MYSTERY AS THE EVENING SHADOWS FALL, A NARROW, SLOW AND GRACEFUL STREAM IN WINTER, AND A VAST ROARING THING DURING THE MONSOON, BROAD-BOSOMED ALMOST AS THE SEA, AND WITH SOMETHING OF THE SEA'S POWER TO DESTROY. THE GANGA HAS BEEN TO ME A SYMBOL AND A MEMORY OF THE PAST OF INDIA, RUNNING INTO THE PRESENT AND FLOWING ON TO THE GREAT OCEAN OF THE FUTURE. AND THOUGH I HAVE DISCARDED MUCH OF PAST TRADITION AND CUSTOM, AND AM ANXIOUS THAT INDIA SHOULD RID HERSELF OF ALL SHACKLES THAT BIND AND CONSTRAIN HER AND DIVIDE HER PEOPLE, AND SUPPRESS VAST NUMBERS OF THEM AND PREVENT THE FREE DEVELOPMENT OF THE BODY AND THE SPIRIT, THOUGH I SEEK ALL THIS, YET I DO NOT WISH TO CUT MYSELF OFF FROM THE PAST COMPLETELY. I AM PROUD OF THAT GREAT INHERITANCE THAT HAS BEEN, AND IS OURS, AND I AM CONSCIOUS THAT I TOO, LIKE ALL OF US, AM A LINK IN THAT UNBROKEN CHAIN WHICH GOES BACK TO THE DAWN OF HISTORY IN THE IMMEMORIAL PAST OF INDIA. THAT CHAIN I WOULD NOT BREAK, FOR I TREASURE IT AND SEEK INSPIRATION FROM IT. AND AS WITNESS OF THIS DESIRE OF MINE AND AS MY LAST HOMAGE TO INDIA'S CULTURAL INHERITANCE, I AM MAKING THIS REQUEST THAT A HANDFUL OF MY ASHES BE THROWN INTO THE GANGA AT ALLAHABAD TO BE CARRIED TO THE GREAT OCEAN THAT WASHES INDIA'S SHORE.

THE MAJOR PORTION OF MY ASHES SHOULD, HOWEVER, BE DISPOSED OF OTHERWISE. I WANT THESE TO BE CARRIED HIGH UP INTO THE AIR IN AN AEROPLANE AND SCATTERED FROM THAT HEIGHT OVER THE FIELDS WHERE THE PEASANTS OF INDIA TOIL, SO THAT THEY MIGHT MINGLE WITH THE DUST AND SOIL OF INDIA AND BECOME AN INDISTINGUISHABLE PART OF INDIA.

EXTRACTS FROM THE WILL AND TESTAMENT
21ST JUNE, 1954

Jawaharlal Nehru

Jawaharlal Nehru's last will and testament (source : http://nehrumemorial.nic.in)

Strong emotional attachments to the Ganges are still very much alive. I understood this in Benares, next to a woman from Mumbai, suddenly sobbing during an evening Aarti ceremony performed on the riverbank. She explained to me her deep attachment to the river and the extraordinary feeling that came to her during the ceremony. At a distance from the river, young Indian fellows repeatedly mentioned to me the warmth in their hearts when they heard the name Ganga. In those discussions, I was looking for the image that would arise in their minds when they heard the name of the river. However, it was not so much an image in the mind as a feeling within the body that they expressed.

Jawaharlal Nehru himself referred to his attachment to the river Ganges to justify his request. Interestingly, he expressly rooted this attachment in his childhood and in the Ganges-related "history and myth and tradition and song and story" (1956). In a similar way, a friend reported to me that her feelings towards Ganga could be phrased as a "feeling of connection", a connection with her childhood as well as with the strong and long-lasting traditional reverence to the river, which gave her a sense of an immutable strength.

All this has elicited in me two ideas that I will develop in this theoretical essay. First, the reality of a river encompasses much more than flowing water – in particular emotions, attachment and symbols. In this regard, I will elaborate on a perspective that considers the meanings of "river-house" and "river-home". Second, human–river relations should be considered through the concept of the milieu, as described by the French geo-philosopher Augustin Berque (2014). This approach emphasizes the deep entanglements of human beings and rivers. Some photos taken at various points during my field visits in India will alternate with these thoughts in order to illustrate them.

Nirmal char, Murshidabad district, West Bengal, India
(photo by the author)

River-House and River-Home

In American culture, as Daniel Ingersoll (1998) writes, the house/home distinction is important. “Americans learn the difference between house and home at an early age. House: a cold space enclosed by walls. Home: a warm place animated by family and friends” (Ingersoll, 1998 cited by Moberg, 2013, 277). Ingersoll further develops the notions in relating houses to the “profane realm of law and market economics, natural right, and profit” while relating homes to “intangible wealth which can not be bought or sold”, as they “belong to the sacred world of fellowship, love and nurture” (1998, 6). He also opposes material (house) and social (home) artifacts, and finally observes that Americans “dwell simultaneously in physical houses and symbolic homes” (1998, 6).

This distinction is of great help to better explain diverging understandings of a given reality, like that of a river. The perspective on a river may be restricted to the water that flows, the sediments it carries or the aquatic species it shelters. Those components and their dynamics are what sciences (hydrology, hydro-geomorphology, ecology, etc.) study. They are also the resources economics deal with. Activities such as hydroelectricity production, irrigation, navigation, sand mining or fishing are the prism that economists use to look at rivers. Here, we could say that the word river only carries the meaning of “river-house”, referring to the “cold” realm of economics and materiality.

Maneri Bhali dam, Uttarkashi district, Uttarakhand, India (photo by the author)

However, rivers encompass symbols and human attachments too. The previous quotes about the Ganges illustrate this, but examples are not restricted to such a sacred river. In many instances, the literature reports human feelings towards rivers. A French author, Michel-André Tracol, expresses for example his bitterness at the "dead" Rhône river, now tamed by embankments and dams, in contrast to the fascinating, fiery river that he and other "Rhodaniens" used to love (Tracol, 1980, 5-7). In social sciences, notably in Political Ecology, some authors have shown how much rivers are lived realities with emotions and interpretations attached to them that either reinforce or oppose dominant perspectives (Baviskar, 2005; Alley, 2002; Drew, 2017). In these texts, the word river obviously carries the meaning of "river-home", or the "warm" realm of feelings and attachments.

In a conflict about hydropower in the upper Ganges, around the Eco-Sensitive Zone of Gaumukh-Uttarkashi, opponents and proponents of hydroelectricity express contradictory interpretations of what a river is. In the first group, the sacredness of the river is invoked and some people even consider the river to be "who we are" (field interview, 2016); for the latter, the river is a resource to be tapped for the sake of local and national economic development. The opposition between considerations of "river-house" and "river-home" here appears to be the origin of an intractable conflict.

Near the source of the Ganges (Bhagirathi stretch), Gaumukh, Uttarakhand, India
(photo by the author)

The Milieu, or the Emphasis on Human–River Relations

As noted above, Ingersoll (1998) observes that the distinction between house and home does not prevent people from “dwell[ing] simultaneously” in houses and homes. People seem to “naturally” overcome the contradiction between the two perspectives. What about the distinction between “river-house” and ”river-home”? One answer could be to move beyond the question of what a river is (a “river-house” or a “river-home”). We may instead consider the human–river relationship that is present in both perspectives.

Science and economics are human interpretations of reality. Traditionally considered as purely rational, “cold”, or devoid of any emotions, science and knowledge production may sometimes be loaded with interests or even passion, as science studies has illustrated (notably the works of Callon & Latour). In addition, the frontier between object and subject has been blurred with the emergence of the Actor-Network theory. Hence, we argue that a distinction between “river-house” and “river-home” as an opposition between the “material” and the “social”, the “physical” and the “symbolic”, is not relevant. Both perspectives encounter physical, emotional and ideal human–river interactions; they both belong to the realm of a full human–river relationship.

Dehradun, Uttarakhand, India (photo by the author)

Geo-philosopher Berque provides interesting insights about such a human-environment relationship, or what he names the milieu. In his "mésologie", he explains that the given environment, once interpreted (through senses, thoughts and actions) by a human society, is no longer an external thing. It becomes a trajective reality (an historicized construction, in a back-and-forth move), neither entirely objective, nor entirely subjective, i.e. the milieu, which incorporates the human dimension (Berque, 2014, 2016). The milieu is thus simultaneously the given environment and the human interpretation of it. Material and social realms are here reconciled, as in the hydrosocial cycle framework developed within the political ecology of water (Linton & Budds, 2014).

Conversely, Berque argues that a human being is constituted by an "animal body" and a "medial body". The latter incorporates the "social body", which includes language for example, but also the milieu (with its historicity) itself (Berque, 2014). Thus, if one brings transformation to the milieu through any "eco-techno-symbolic processes" (Berque, 2016), such as physical interventions, this necessarily has consequences for human beings too.

In this perspective, the human–river relationship is a two-way, reciprocal one. This understanding of human–river relations goes beyond the incorporation of symbols, interpretations and attachments to rivers. It encompasses the agency of rivers, and the historicity of the relationship, and gives space for more human–river interactions than traditionally considered. In our view, this vision significantly renews the way one could assess the impacts of any river-related infrastructure or river valley transformation. For example, what and who change, if a river fish population decreases due to pollution or lack of fresh water?

Hamidpur char, Malda district, West Bengal, India (photo by the author)

Conclusion

In this essay, we have shown how the distinction between “river-house” and “river-home” helps to distinguish between two conceptions of a river: 1) a “cold” reality assessed by science or “market economics”; and 2) the recognition of the “sacred realm” of attachments and symbols related to it (Ingersoll, 1998). We have also demonstrated how Berque’s concept of the milieu advances this understanding in bringing the reciprocal human–river relationship to the core of the analysis. Further empirical research could explore how the materiality of the river, in all its dimensions (water, sediments, biota, floodplains, etc.) precisely plays its role within the human–river relationship.

Nirmal char, Murshidabad district, West Bengal, India (photo by the author)

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Social and Cultural Significances of Waters in Mongolia

by Ines Stolpe

Water scarcity has always contributed to shaping the socio-cultural sphere of Mongolia, a landlocked country in the vast Eurasian steppe eco-region, bordering semi-arid and arid areas of the Gobi desert. Mongolia is the least densely populated state in the world with the largest contiguous common grasslands. Until not so long ago, the majority of the Mongolian population were leading a nomadic way of life. While surface water is mostly available in the northern parts of the country, people and livestock in the southern parts depend on groundwater resources. The ways in which water has always had a connecting quality are recognisable in the common notion of "people of one water" (neg usnykhan), which refers to groups of mobile pastoralists who share a body of water.

Well shared by nomadic pastoralists in a semi-arid area

Watering herds in a lake shared by people in a large steppe area

Over the last decades, the availability of clean water has become a matter of concern. Climate change, overgrazing caused by profit-seeking priorities, and most of all mining (industrial as well as artisanal mining) cause rivers and lakes to dry up and contribute to the contamination and an increasing desertification of arid land. Competing interests in water use have led to the mobilisation of grassroots activists, which have become internationally known as Mongolia's River Movements.[1] These groups of translocal civil society actors, advocating the rights of "people of one water" (neg usnykhan), have made the conflicts between the logic of exterritorial business interests and community-based ethics regarding water visible. They have also built up connections with transnational solidarity networks such as Rivers without Boundaries.[2] Their collective struggle, using diverse forms of protest to protect the waters and to ensure the livelihoods of nomadic

1 Dalaibuyan Byambajav (2015): The River Movements' Struggle in Mongolia. In: Social Movement Studies, 14:1, DOI: 10.1080/14742837.2013.877387, S. 92-97.

2 http://www.transrivers.org.

pastoralists, has finally led to the approval of the law “To prohibit mineral exploration and mining operations at headwaters of rivers, protected zones of water reservoirs” (colloquially known as “the law with the long name”), which was passed by the Mongolian parliament in 2009. Notwithstanding that protecting the “motherland” (ekh oron) is a proclaimed aim of leading politicians as a part of popular notions of Mongolness, law enforcement has always been an issue since market liberalisation took over.

Mongolia’s pastoralists have undergone drastic changes since the former socialist country was downgraded from “Second World” to “Third World” in the 1990s, thus being discursively moved from what used to be the “East” into the “Global South”. Only since the so-called transition to democracy have nomadic herders faced structural discrimination, which has contributed to increasing rural-to-urban migration. Due to a rapid urbanisation since the end of socialism, half of Mongolia’s population of a little over three million people are now living in the capital, Ulaanbaatar. The majority of the city’s inhabitants, especially rural-to-urban migrants, live in the outskirts in ger-districts, large settlements featuring the traditional mobile Mongolian dwelling ger, and lacking central water supply or sewage systems. Households have to fetch their water in jerrycans from water kiosks, a task that is mostly performed by children, who bear the brunt even in the freezing cold of the long winters. Households who share water kiosks, wells or water-tank lorries as connecting points, however, do not consider themselves to be “people of one water” in the urban sphere.

Children with jerrycans in a ger-district in Ulaanbaatar

Water kiosk in a ger-district in Ulaanbaatar

Water lorries filling up a water kiosk in a ger-district in Ulaanbaatar

Especially in the context of sustainability discourses, the state of Mongolia uses her nomadic traditions to display an image of outstanding environmental awareness. Nevertheless, the cultural significance of water has been quite ambiguous throughout history. At the time of the Mongol Empire, the largest contiguous imperium in history, routes of conquest had to be aligned with water sources for the nomadic conquerors and their accompanying livestock. This further extends to matters of customs and traditions. The still popular Mongolian proverb “Once I drink their waters, I follow their customs” (Usy ni uuval yosy ni dagana) refers to an interesting peculiarity: In contrast to other conquerors, the Mongols did not try to impose either their way of life or their beliefs on the population in the conquered territories. Other allegorical frameworks in connection to water refer to the sea or the ocean (tengis/dalai), which are associated with endlessness and depth: Chinggis Khaan was seen as a ruler whose power and wisdom were tantamount to the endlessness and depth of the sea, and the title Dalai Lama was created by the Mongolian prince Altan Khan and first bestowed on the Tibetan monk and teacher Sonam Gyatso in 1578, associating his wisdom with the endlessness of the ocean. A more unique and perhaps surprising cultural significance is the traditional association of water not being a purifying but actually a polluting element. Until this day, it is taboo to pour water into milk for water is assigned the colour black, representing evil, while milk is considered the epitome of purity and should therefore triumph symbolically over the water. But if somebody feels hurt due to being treated with mistrustfulness for no reason, the person can disembarrass herself by pouring water into milk and then sprinkling this mixture towards the offender, emblematising that (s)he spoiled the relationship by behaving as if pouring water onto good intentions as pure as milk. When modern concepts of hygiene were introduced from the 1920s, using water for washing caused scepticism, for it was feared that felicity, grace and good fortune would be washed away (buyan khishgee ugaakh). In the modern era, as hygiene is no longer a dubious matter, Mongolians in the countryside have developed creative ways to comply with hygienic needs in the face of water scarcity in the steppelands.

Bathroom with mobile water taps for a teachers’ seminar held at a rural school

The symbolic link between water and the colour black has another interesting connotation in connection to Mongolian toponyms: Many bodies of water carry the name 'Black Lake' (Khar Nuur) or 'Black Water Lake' (Khar Us Nuur), which refers to clarity and the absence of salt, i.e. all lakes with those names are freshwater lakes. Finally, even though in the pre-socialist past water was neither seen in connection with purity nor used as a means for cleaning, the healing potential of medicinal springs (arshaan) has always been highly appreciated. Drinking from and/or diving into their waters (biye arshaalakh) was and is still done to cure illnesses or to attain good health, but is not associated with profane washing. Most bodies of water are worshipped and considered by believers to be inhabited by the lus, the masters of water. These aquatic beings are worshipped and seen as environmental protectors with the power to punish any pollution of waters by provoking disasters.

Well in a forest steppeland area with light blue khadags to worship the masters of the place

In conclusion, while Mongolia's governments (as well as the tourist industry) take pleasure in promoting the image of the country as "truly nomadic" and eco-friendly vis-á-vis foreigners, actual support for nomadic pastoralists and protection of their livelihoods, including bodies of water, frequently fall victim to greed for profit and/or the carelessness of city dwellers.

Social Water

by Jamie Linton

"He longed for the river. Because water always helps." (Roy 1997, 113)

I began a book, published in 2010, by writing: "Water is what we make of it" (Linton 2010). Since then, while not quite regretting this statement, I have been thinking it over. Because in a strict sense, we have to admit that the opposite is equally true: Indeed, we are what water makes of us. This essay represents an attempt to reconcile this apparent contradiction while keeping in mind that it is the political dimension of these matters that counts.

Water is Social (1)

The statement that water is what we make of it represents a constructivist argument: We can never quite get at the actual reality of water, or anything else in what, by this way of thinking, becomes "nature". Instead, we apprehend the world via the cultured perceptual apparatus that mediates our every engagement with it (Castree 2005). In every instance therefore – including the modern, scientific reduction of all the world's waters to a chemical compound of hydrogen and oxygen – water must be a co-construction/production that occurs when people and water meet. The actual reality of water – like people – I argued, is a process rather than a thing. It is when this process engages with the processes of human perception and intellection that specific ideas, representations and notions of water are formed. That these human processes occur in a cultural medium means that a wide variety of ideas, representations and notions of water have occurred in different times and places throughout human history. My book was an effort to define the particular idea of water that has predominated in what can be described as modern Western culture, to describe the consequences of this idea, and to consider possibilities for alternative meanings and worlds of water.

When referring to the cultural medium in which water becomes what it is, I mean the knowledge, representational practices, technologies, legal frameworks, types of expertise and structures of social power that are dominant in any given time and place. Altogether, these produce a kind of relational coherence/matrix, associated with a particular way of knowing, representing, controlling, and allocating water. And by the same (relational) token, the cultural medium is reinforced by means of the "water" that it helps construct conceptually, and produce materially (Linton 2014; Linton 2017).

This approach is useful for analysing and critiquing water politics. It begs the unavoidability of certain questions: Who gets to define the use and value of water in any given set of circumstances? How are particular knowledges conducive to particular ways of using and distributing water? And more generally, how and in what ways is social power exercised to know, define, represent and control water? Likewise, by this approach, doing (progressive) water politics is a matter of deconstructing, and then reconstructing and reproducing wa-

ter in ways that are conducive to socially progressive outcomes (Linton 2010, chapter 10; Linton and Budds 2014). Because every instance of water occurs at the nexus of the water process and the various social processes comprising the cultural medium, water and water politics can be transformed through a wide variety of different means. As David Harvey (who inspires much of this work) claims, "there is no moment within the social process devoid of the capacity for transformative activity" (Harvey 1996, 105). In brief, this approach defines water as a resolutely social matter, and one that is therefore open to transformation from any number of purchase-points in the social process.

Water is social (2)

But there's another – perhaps more basic – way in which water is social. I stated above that water must be a co-construction/production that occurs when people and water meet. But this notion of water and people meeting is problematic when we consider the well known but perhaps less well reflected upon fact that we are ourselves made up largely of water. Water is the most abundant molecule in the human body, making up between 55 and 65 precent of adult body by weight, depending on body type. We feel thirsty as soon as we have lost two or three percent of our body-water. Thirst therefore might help us keep in mind something Jane Benett wants to remember:

> "It is very hard to keep focused on the oxymoronic truism that the human is not exclusively human, that we are made up of its. But I think this truism, and the cultivated talent for remembering it, forms a key part of the newish self that needs to emerge, the self of a new self-interest. For what counts as self-interest shifts in a world of vital materialities." (Bennett 2010, p. 110)

The vital materialities Bennett refers to are part of a growing awareness in (at least) the social sciences and humanities that the distinction between mind and matter – and more generally between culture and nature, which has been with us approximately since Aristotle, and receiving a huge boost from Descartes – is full of holes, and that our work to elaborate the social construction of nature, while not wrong, doesn't give us the whole picture. The whole picture is becoming more obvious on the outside with things like climate change and the anthropocene, and on the inside with things like thirst. Moreover, with such things, it is becoming more and more obvious that the very distinction between inside and outside is problematic.

These questions were immediate to me this summer as I found myself returning time and time again to sit and read by one of the fountains in the Jardin de l'Évêché of Limoges. As fountains go, this one isn't particularly beautiful. But, like almost every fountain I've known, it does the trick. After a few visits, I realised that from my apartment, this was the nearest place where I could go and sit in proximity to a lively body of water. (It's funny that we call it a body of water in English. The French, perhaps more hobbled by their Cartesian heritage, allow themselves only "une masse d'eau".)

Author's photograph

Being near a body, or current, or stream of water has always made me feel alive, and barring the odd flood and occasional bouts of seasickness, it has made me feel better. And I'm not alone. My brother, who is a real estate agent in Canada, tells me that merely being able to see a body of water from a property increases its value in proportion to the proximity of the property to the water. Undoubtedly there is some cultural content in this. Canadians, for example, have a thing about water. Despite having very large quantities of the stuff, they steadfastly and somewhat unreasonably refuse to export a drop of it to the United States (Julien 2015). But there's something more-than-cultural in it too. The first example given by Rachel and Stephen Kaplan in their important study, *The Experience of Nature: A Psychological Perspective,* is the common preference for being near water:

> "The presence of water is highly likely in a made-to-order preferred landscape. It can be an ocean, a big lake, a small lake, river, stream, or pond; it might be placid or fast-moving, tranquil or falling, with trees reflected or with rapids. Water is a highly prized element in the landscape… The fondness for the water seems to hold whether it is a place for active water sports or not, whether one plans to be "using" the water or is unlikely to ever directly interact with it … Water provides an excellent example of an aspect of the natural environment that is highly preferred." (Kaplan and Kaplan 1989, p. 9)

Why this preference? In what sense, and why, do we feel better when we are near water? A clue – a poster near the Vienne River placed by the City of Limoges as part of a project to develop an urban park along the riverfront – suggests it might be linked to our health. Although focused on "natural spaces" rather than water per se, the poster, (placed on the right bank of the river) affirms that, among other benefits, "people who reside within 1 kilometer of a natural space feel better and suffer from lower rates of depression."

Author's photograph.

Epidemiological studies have indicated an association between green spaces and various health outcomes or health-promoting behaviours such as physical activity. And a recent, well-reported study has shown a relation between increased urban greenness and decreased cause-specific mortality among urban Canadians (van den Bosch 2017). The epidemiologist Dan Crouse, who led the study, is now investigating findings that merely having a view of open water can have positive health effects, including reduced stress levels (Canadian Broadcasting Corporation 2017).

Several years ago, Veronica Strang, in her wonderfully titled article "Common Senses: Water, Sensory Experience and the Generation of Meaning" argued that water has certain characteristics that determine the generation of some common, cross-cultural meanings. "These commonalities" she argued, "appear to arise directly from two major factors. One is the observable and experiential characteristics of water: its essentiality; its fluidity and transmutability; and its aesthetic qualities… Equally important are human sensory and perceptual experiences of the qualities of water.

Though – like its qualities – these are shaped and influenced by particular cultural landscapes and engagements with water, it appears that common human physiological and cognitive processes provide sufficient experiential continuity to generate common undercurrents of meaning" (Strang 2005, p. 115).

We thus find that researchers in fields ranging from environmental psychology to epidemiology to cultural anthropology are exploring how the conjunction of the material qualities of water and the physical particularities of the human organism give rise to epiphenomena such as the production of meaning and the expression of preference that appear to be common to people of all cultures. Returning to the fountain at the Jardin de l'Évêché, there is no doubt that I feel this conjunction within myself and in the attraction I have to this place.

As it happens, I spent a good many hours by the fountain this summer reading Tim Ingold's *The Perception of the Environment* (Ingold 2000).
Among other things, Ingold explores the sense in which the world does not signify but *is*, and how it may be apprehended in a phenomenological sense through the process of engagement, i.e. through physical relatedness. Ingold's "ontology of dwelling" rests on the contention that "apprehending the world is not a matter of construction but of engagement."

> "This ontology of dwelling, I contend, provides us with a better way of coming to grips with the nature of human existence than does the alternative, Western ontology whose point of departure is that of a mind detached from the world, and that has literally to formulate it – to build an intentional world in consciousness – prior to any attempt at engagement. The contrast…is not between alternative views of the world; it is rather between two ways of apprehending it, only one of which (the Western) may be characterised as the construction of a view, that is, as a process of mental representation. As for the other, apprehending the world is not a matter of construction but of engagement, not of building but of dwelling, not of making a view *of* the world but of taking up a view *in* it." (Ingold 2000, 42)

Ingold doesn't get into the political implications of his notion of dwelling as opposed to building. But the dwelling perspective might suggest that access to and engagement with the elements that constitute our-environment-and-ourselves should be considered a right rather than a privilege. If it is indeed "the nature of human existence" to dwell in this fashion, then this type of access should be considered an existential right. This accords with another, more popular work that draws from the same phenomenological sources as Ingold, and which also served as fountain fodder this summer. "The simple premise" of David Abram's *The Spell of the Sensuous* "is that we are human only in contact, and conviviality, with what is not human" (Abram 1996, ix). There is the criticism that in leaving other humans out of this this picture, Abram supports what he purports to dissolve – nature–society dualism. Nevertheless the political implications, which Abram also declines to go into, are the same: If being fully human is a matter of this contact, might it not be considered a human right to have access to such conviviality?

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The Social Life of the Syr Darya: Connecting and Disconnecting Enviro-Technical Systems on a Central Asian River.

by Jeanne Féaux de la Croix

Often described as essential arteries in bodies of land, rivers that 'flow all by themselves' seem to suggest a self-evident mode of natural connectivity, a narrative thread as compelling as gravity itself. Yet the 20th-century history of the Syr Darya and its upper-course, the Naryn, do not tell the story of an effortless quasi-road. Known as the Oxus to Alexander the Great's scribes, the 'secretive' river (as its name is sometimes interpreted) carries snowmelt west from the heights of the Tian Shan range on the Chinese border. Descending from Kyrgyzstan through densely populated agricultural oases in Uzbekistan and Tajikistan, after 3,000 kilometres it reaches the shored-up vestiges of a once vast Aral Sea in western Kazakhstan.

City of Khojand (Tajikistan), founded by Alexander the Great on the Syr Darya. © Mokhira Suyarkulova

Map with case-study sites of the Volkswagen Project 'The Social Life of a River: Environmental Histories, Social Worlds and Conflict Resolution along the Naryn-Syr Darya'. © University of Tübingen

Silk Road cities and irrigation networks have long moved with the fickle shifts of the river bed. Until the 20th-century onslaught of canalization, swathes of riparian tugai forests harboured a rich ecosystem stalked by tigers.

Local water manager carrying out repair work on major canal, Ferghana valley, ca. 1939.
© Max Penson, courtesy of maxpenson.com.

Since the early Soviet period, great effort has been spent in creating greater river connectivity. In the post-war period, the region's population and economy became increasingly connected through the building of large hydropower stations and irrigation canals in the Soviet republics of Central Asia. Two interdependent, river-dependent systems were controlled from offices in Tashkent: first, the massively expanded system of irrigated cereal, tobacco, vegetables and – king of the crops – cotton. Second, the highland dams securing water for irrigation in the lowlands were also designed to feed the region's electricity grid.

Dam worker on Uch Kurgan Hydropower Station, now militarized as part of the Kyrgyz-Uzbek border.
©Gulzat Baialieva

These key aspects of the Syr Darya can be readily grasped as an enviro-technical system, one which does not just encompass watery ecotopes and immediate users. As developed by Sara Pritchard, an enviro-technical system allows the river to be understood as both a natural and a technical construct, while keeping in mind that the river is not only a construct, but exists as a material force in its own right (Pritchard 2011: 15-16). The Syr Darya's evolving characteristics and life can be understood as the effect of particular infrastructures linked to it, including the artefacts, people and skills that go with them.

These heightened connections of the Syr Darya had radical effects: at least some Soviet scientists knew and accepted that sapping the Aral Sea's feeder rivers to expand agriculture would cause a radical shrinking of its surface area. The ecological, economic and human health impacts of 90% of the sea evaporating, along with its fishing industry, are well documented.

Abandoned fishing vessel on former sea bed. © William Wheeler.

In the glasnost era, the fate of the Aral Sea and other environmental catastrophes were at the forefront of public discussion; few imagined the Soviet system would not survive this critique. However, for the river and river-dwellers, disintegrating this system has not resulted in more equitable water distribution, or lower pressure on the river's resources. The post-Soviet era initiated active and conflictual disconnections along the Syr Darya, as the centralized planned economy collapsed, and as the basic regional exchange of sending water downstream, and other forms of energy such as gas and oil upstream, disintegrated. Borders were militarized and bridges destroyed, cutting multilingual Tajik-Uzbek-Kyrgyz kinship networks off from one another and creating new lines of tension between neighbouring farmers in need of water, and consumers in need of electricity in the harsh winters.

Bridge blown up between Kyrgyzstan and Uzbekistan. © Gulzat Baialieva

Regional disputes over rights to the Syr Darya's water volume, and the timing of water releases from dam reservoirs, became an intransigible knot of upriver and downriver interests. Though the demise of heavy industries along the river improved water quality in some respects, pesticides and urban pollution still continue to collect in the river, while open uranium tailings in the headwaters threaten catastrophe in this earthquake zone.

The reduced figure of the Syr Darya simply as a contested volume of water, as a potential resource for generating electricity or crops here or there, dominates policy- and news reports, with direct consequences. One consequence of this long-hegemonic narrative is that citizens in the Tian Shan highlands think of their river mainly as being wasted – until the long-promised dams are finally built.

Tourism and mobile livestock herding on the Kichi Naryn, a feeder river of the Syr Darya, Kyrgyzstan. © Jeanne Féaux de la Croix

The dominance of these twin resource narratives also means that entire sub-economies, such as reed harvesting in the Syr Darya delta, where reeds feed cattle, insulate houses and create income, remain unrecognized as significant aspects of river life.

Winter reed harvesting in western Kazakhstan. © Aibek Samakov.

As the leaky infrastructure grown from the dream of total river exploitation limps along, human and non-human river-dwellers are however making use of it in unexpected ways. As described by Anna Tsing, the potential liveliness of these post-capitalist – and also post-socialist – spaces often fails to reach our attention, as they fit neither the model of 'pristine nature' nor of total modernist control (Tsing 2015:18).

Along the Syr Darya, we find dam reservoirs silting up and offering new, shallow water and reed systems – in Tajikistan even serving as new nature reserves. If manipulating the flow of rivers has deprived the Aral Sea of much of its volume, some of these flows have rerouted themselves to fill the Arnasai depression west of Tashkent instead, providing a new stop for migrating birds as well as an attractive site for the weekend villas of well-to-do urbanites.

Over the last century, it has clearly been hard work controlling how and when the Syr Darya connects different kinds of people, forces and environments to each other.

Tasattyq ritual in western Kazakhstan: slaughtering a bull and mingling its blood with the river water to ensure timely rains. © Aibek Samakov

With hundreds of glaciers in the Tian Shan now clearly ebbing, the question of whether and how the Syr Darya reaches human and non-human habitats now connects to a climatic world well beyond Central Asia. And this then is a world where the 'environmental' elements of the Syr Darya start to put into question the dominant, highly reductionist engineering visions of river life.

Riparian forests on the upper Naryn, Kyrgyzstan. © Jeanne Féaux de la Croix.

Constructing the Tana Delta: Imaginaries, Scales and Placeness of Watery Infrastructure

by Sandro Simon

Masinga Dam is one of five dams along the Tana river. Located hundreds of kilometers upstream from the delta, they together generate 70 percent of the country's hydropower. Their construction decreased peak flows, run-off and meandering of the Tana and the related deposition of sediments, which resulted in a reduction of the floodplain fertility and of riverine forest. This again adversely affects deltaic flood recession agriculture, livestock keeping, and fish production.

The Malindi-Lamu road hurdles the Tana river bevor it ramifies into the delta and has recently moved up the national agenda as the places it connects gain economic importance for the country. Along its route, settlements sprawl, new economies develop and imaginaries of mobility and modernity evolve.

Pumps for irrigation are used increasingly by those who can afford them to compensate for the lack of rain and flooding or to increase commercial production. Compared to the water harvesting upstream, whether for large scale irrigation or Nairobi's freshwater, pumps in the delta appear to be a drop in the bucket.

Once the Oda channel (right) was the main branch of the Tana river. Along its way, farming communities were practicing flood recession agriculture, while pastoralists used to graze at the smaller Matomba channel. With the water's alteration of route over the past decade through environmental change and human influences such as upstream damming or local channelling and unsuccessfully tried to be held or redirected back by governmental and community interventions (e.g. sandbags), these practices as well as the management regimes and social relations around them, get challenged.

In the lower delta, irrigation channels are cut and dug from the river to direct water to rice-paddies. With the tide, the ocean pushes up the river, which then again flows into the channels. With tidal variation, decrease of river water and flow and the rise of the sea level, constant re-attunement of the channeling practices is indispensable to protect the fields from salinization.

The Tana Delta Irrigation Project (TDIP) was a large scale rice farming project financed by the Japanese Overseas Economic Cooperation Fund. Its history is characterized by mismanagement and underperformance in yields, conflicts between the local communities and the operator, the parastatal Tana and Athi River Development Authority and massive damage by El Niño floods in 1997. In its ruins, the surrounding communities still grow crops, but the remaining channels increasingly fall dry.

Inland flowing streams with brackish water threaten to contaminate the main river. In the absence of (governmental) spill-over blockages, sandbags and sticks are used to hold back the brackish water.

Spill-over blockages made out of cement allow the fresh water to flow during the rainy season, while blocking brackish water in the dry season. However, they are rare, might be 'left back' after the water found new ways and, in the absence of governmental maintenance, disintegrate. A bridge assembled out of sticks by the local communities allow for small transport and, with its localized malleability, contrasts the cement blockage.

“We are now leaving Kenya”, my companion said to me as Malindi, the last town before the Tana Delta, vanished behind us. This sarcastic account mirrors the longstanding perception of the delta as consisting of around 1,300km2 of underdeveloped and unused “wasteland” or “swampland”, which for decades fostered imaginations and attempts at political and material reconfigurations, as well as negligence and marginalization (cf. Duvail et al. 2012, Leauthaud et al. 2013, Sampson 1935). Its approximately 100,000 inhabitants, however, contest such narratives and projects as they creatively and productively engage with the perceived “wasteland” or “swampland” and its challenges, such as changing water patterns due to seasonality, damming, water harvesting, deforestation, decreasing rainfall and rising sea levels, population increase and migration, landgrabs and overgrazing (Kenya Census 2010).

Life in the delta is thus rich and multifaceted, while at the same time caught up in challenging multi-stranded social, ecological, political, technological and economic forces that reach across local, national and global scales. Because these forces manifest and become visible in infrastructure and in people‘s engagement with it, be it through creation, usage, contestation, manipulation or destruction, drawing our attention to infrastructure can help us to trace and assess those same forces.

Infrastructure is a concretization of aspirations, values and meanings, and simultaneously transports and evokes them (Fennel 2015). It materializes and reflects technopolitical projects that aim to bind together different agents in a particular way to allow for specific activities, but always exceeds its design as it is an emergent assemblage of social, material and semiotic forces caught up in time and space (cf. Anand 2015, Harvey et al. 2016, Latour 1996). Infrastructure is hence a thing for itself and also the relation between things, both human and non-human (Larkin 2013, Wilson 2009). Thereby, it points beyond itself – it is not a closed feedback loop but is involved in relating and redefining actors (Jensen & Morita 2015).

Infrastructure and its complexity across scales, as well as the difficulty involved in constructing and maintaining it in an environment that is both socially and ecologically volatile and that does not necessarily allow for common ways of governance and development, have played and continue to play a pivotal role in the perception of and the agenda regarding the Tana Delta and its inhabitants – whether in the form of failed large-scale irrigation schemes, upstream damming with beneficial effects for the country but detrimental effects for the people downstream, or spillover blockages that demand continuous maintenance. On the other hand, delta dwellers’ experiences with infrastructure affect their relationships with governmental authority as well as their creativity, work practices, imaginaries and (national) identity. This relational dimension of infrastructure thus introduces the question of political aesthetics, which arise more or less as a byproduct of an infrastructure’s technical functioning (Larkin 2013, 2015). As a manifestation of power, the construction of a large-scale irrigation scheme might produce canals, sluices and rice paddies, bring about work opportunities, management regimes or land allocation, and affect the corresponding sociality, just as it might introduce certain imaginaries of development and modernity. Such imaginaries are neither universal nor stable because people apprehend infrastructure in individual, situative and positional ways and because its internal and relational functionings are subject to continuous change. This change can again fall back onto those associated with the working of infrastructure – if the attempt to redirect a river fails, those responsible for the design, construction and/or maintenance of the redirection might be perceived as incapable and expendable.

Infrastructural roles are not always are so clearly differentiated. In the Tana Delta, the volatility of which is characterized by its shifts between wet and dry, and its dwellers’ diverse, partly competing livelihoods and work practices – namely farming, pastoralism and fishing –more flexible, fragile, emplaced and hybrid forms of infrastructure also evolve. For example, a system of water channels that diverts tidal waters into rice paddies, built and managed by those who farm the paddies, can get along without any top-down planning and implementation and might be changing continually and interdependently through both human and non-human influence. Researching infrastructure in volatile places like deltas thus encourages us to reconsider our common understanding of infrastructure as something designed, fixed and exclusively human, and question the epistemological and political commitments involved in its definition (cf. Larkin 2013).

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Map

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Is a River "Infrastructure"?
Thinking about Timber Transport on the Kemi River in Finnish Lapland

by Franz Krause

As the largest watercourse in the Finnish province of Lapland, the Kemi River has played a central role in the development of settlement, travel and transport, forestry and energy production in Northern Finland. In fact, the large-scale expansion of industrial forestry throughout the province during the 20th century was, to a large degree, facilitated by the run of the river and its many tributaries, because the river served as the principal means of timber transport. This correlation seems simple: logs felled in the upstream forests and pushed into the river anywhere will be taken along with the currents, and sooner or later arrive at the river mouth, where the wood-processing industries are located.

In reality, however, the link between moving waters and moving timber is not so simple at all; rather, alongside the currents of the Kemi River, it took a large effort of planning, a huge arsenal of tools and other materials, as well as the gigantic coordination of the skilled practices of hundreds of rafters from the river banks and beyond. Did timber-floating thus turn the river into infrastructure? Or had it been infrastructure all along?

Timber Floating on the Kemi River

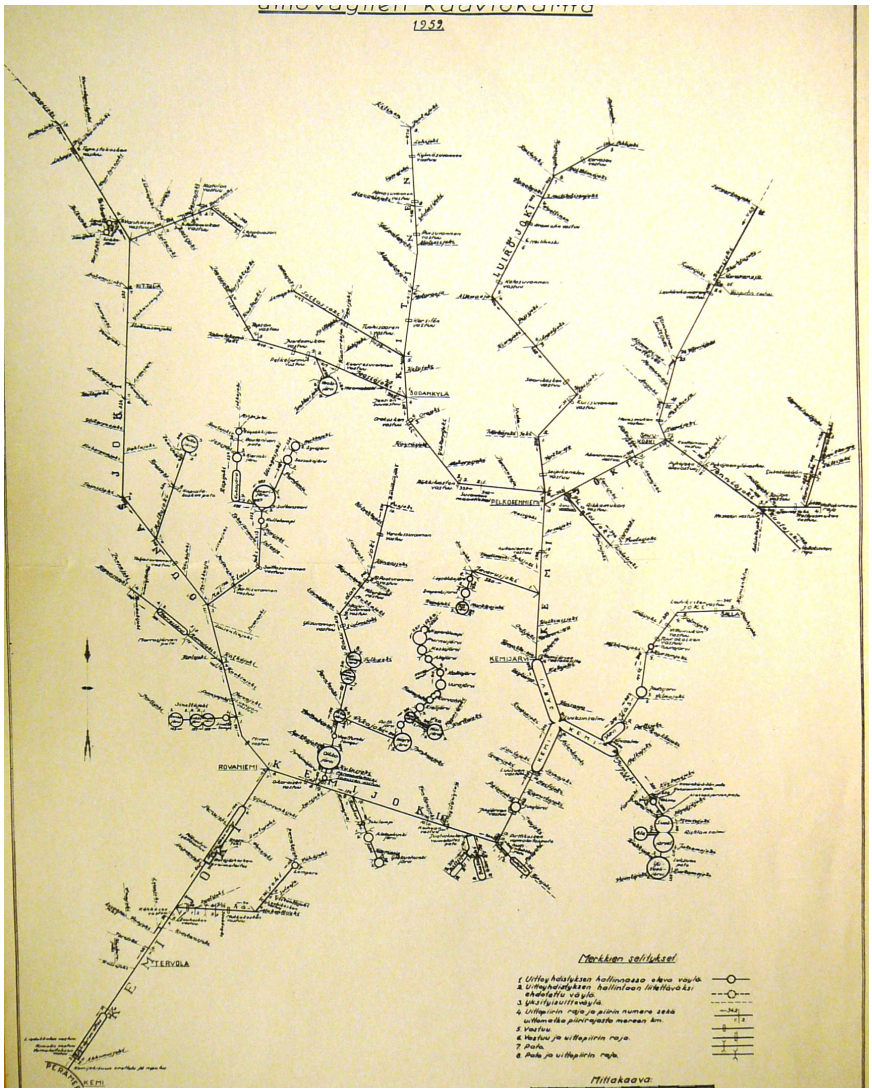
When large-scale lumbering campaigns expanded into Lapland around the turn of the 20th century, forestry employment brought to the banks of the Kemi River both the opportunity for monetary income and a large number of new people. For the area's inhabitants, logging and timber-floating provided seasonal wages and could be integrated well with other types of seasonal work, such as fishing and dairy farming, which had their labour peaks during different times of the year. One of these timber-floating veterans is Paavo, who was fourteen years old when he made his first money in timber-floating. It was the summer of 1948, when Paavo worked ten hours a day, distributing logs that had been floated down the river to their different owners. When Paavo later attended forestry school in Helsinki, he worked for the Kemi River Floating Association during the summers, and, once graduated, he got a job in floating management. First, he was sent to an upstream tributary of the Kemi, where he worked during the summer and followed the "tail", the final logs of the season, downstream along the tributary, into the Kemi River's main course, across Lake Kemi and all the way to the wood-processing plants at the estuary. Paavo says he learnt a lot during this summer, most of all about the challenges of coordinating an activity that depended both on the fluctuating dynamics of a large catchment and on the moods of a large number of human workers.

In autumn, Paavo was sent to another tributary, where he was to participate in the clearing of a floating channel through the stream. Larger rocks and sandbanks had to be removed to afford a smoother movement of logs the following season. All the subsequent summers he returned to timber floating. In 1963 he worked first on the headwaters of the Kemi River, then later in the summer he was sent to a timber barrier upstream

from Lake Kemi, where the logs were bundled to be tugged across the lake. During the following five years, he was in charge of the timber-sorting mechanism in the river's estuary, overseeing a large array of floating channels and workers, through which the mass of logs were distributed to their various owners. After 1968, Paavo continued to work for the Finnish Forest Authority, mostly in areas other than timber-floating, but still engaged indirectly with floating throughout his career, as this activity was tied up with many forestry issues until the early 1990s.

Paavo's account of his involvement in timber-floating makes clear that it was an extremely multifaceted set of activities, including the preparation of timber launches, the clearing of the riverbed, the annual setting-up and decommissioning of equipment, the timing of timber transport on different river sections, the deployment of rafting teams along the river, the tugging of logs across lakes and reservoirs, and the sorting of timber according to its various owners.

But why, one might ask, was all this effort necessary in the first place? Wouldn't the river's currents transport the logs to the estuary naturally, as it were? The answer to this question can be found in the many stories that former timber rafters on the Kemi can tell about logjams, drowned timber, and logs caught in eddies, stranded on banks or distributed across the floodplain after a sudden high-water spell. The river does move timber, but not necessarily in the way that forestry companies would have wanted. The Kemi River was made into a timber transport artery by conditioning its flow through an array of work practices and implements. This means that this timber-floating infrastructure, if this is what we should call it, was consciously constructed; it also means, however, that it was not made from scratch, but crafted from what was already there, including seasonal labour availability, local river skills, and, most of all, the waters of the Kemi.



Managing Heterogeneous Infrastructure

Since its establishment in 1901, one of the most complicated tasks of the Kemi River Floating Association was the coordination of the manifold tasks involved in timber transport. The Kemi River's main course measures about six hundred kilometres, but the total distance of floating channels during the 1950s and early 1960s was around three thousand kilometres annually, including over twenty tributaries, subdivided into 122 work-group sections manned by a total of 1,776 rafters (in 1957), and spread across an area of over 50,000 km^2 (Itkonen 2001:135–136, 147).

One of the most remarkable characteristics of the Association's infrastructuring work was its seasonality – all activities and equipment were in use only when the river had enough open and moving water. During winter, the summer- or springtime rafters would work in forestry camps, on their own smallholdings or with their reindeer herds. As soon as the snow began to melt, however, people were hired by the Floating Association or local rafting groups. One of the first tasks was always to prepare each stream and tributary for floating, before the flood began to decline and actual floating could commence. Towards the end of the season, rafters would move down the river following the final logs, clearing the last remaining wood from the shores and accumulating more and more local rafting groups on the way, often until reaching the mouth of the respective tributary. Each season, thus, not only did timber move downstream along the rivers of the catchment basin, but so did workers. Annual festival-like fairs, for instance in the village of Suvanto close to the mouth of the Kitinen River, are remembered by rafters and villagers alike (Pihlaka, Sippola, and Yli-Tepsa 1986:57). Finally, the rafters had to dismantle the floating constructions before the river began to form an ice cover. Should logs – once they were in the river – not reach the sorting mechanism before the winter, they would be lost to the next spring flood.

The Concept of Infrastructure

Although the metaphor of infrastructure is taken from the world of engineering and planning, anthropologists have used it not only to analyse the social effects of technology and hardware, but also to understand attempts at aligning wider social and ecological processes to produce particular outcomes. This aligning may take the form of land-use planning, regulations and environmental management, and thereby turn such processes into "environmental services" and "natural capital" (Carse 2012). Analysing the processes through which the areas around the Panama Canal were reconfigured as the water-provisioning part of the canal infrastructure, Carse concludes that "infrastructure is not a specific class of artefact, but a process of relationship-building. This is to say that dams, locks, and forests are connected and become water management infrastructure through the ongoing work – technical, governmental, and administrative – of building and maintaining the sprawling socio-technical system that moves ships across the isthmus" (Carse 2012:556).
This understanding of infrastructure is very useful in grasping how the social and material effects deriving from these arrangements are situated within wider fields of relations. However, weren't the watershed forests already part of the relations that facilitated ship transport across the isthmus, even before the managers focused on them? Isn't this a classic case of infrastructures as invisible facilitators that are noticed only when they break down (Star 1999)?

Infrastructure is therefore not something that is planned out in advance and subsequently realised in a passive environment, but an arranging of what is already there in the world, and responsive to the material and social processes with which it works (cf. Lippert, Krause, and Hartmann 2015). Timber-floating – as the conditioning of different flows – illustrates how infrastructures evolve in relation to the affordances and obstacles of the world they are designed to transform.

The layout and hydrology of the Kemi contributed directly to the infrastructural project of timber transport. For instance, because there was only one major lake on the river's main course, the Kemi River has been praised as a great watercourse for timber-floating. While a *river's currents* provide for the transport by itself, a *lake* merely holds the logs – locomotion has to be provided from elsewhere. Another key characteristic of

the river that afforded timber transport was its correspondence with the socioeconomic setup of the province (Krause 2017): while its headwaters were in the peripheries, its mouth had been developed into a centre of trading and industry. The river's main currents ran unidirectionally from resource periphery to industrial centre, a pattern that chimed perfectly with the contemporary logic guiding development for the province (Massa 1994).

Infrastructure as a Way of Seeing

If "infrastructures are extended material assemblages that generate effects and structure social relations" (Harvey, Jensen, and Morita 2017:5), then this must definitely include rivers. But wouldn't this imply that ANYTHING can be called infrastructure? If everything can be seen as infrastructural, what meaning can this term retain? Indeed, we should be wary, as Ivars (2016) reminds us, of using the term *infrastructure* indiscriminately. What reminds hidden when we call a river "infrastructure"? How does our analysis change if we instead call a river an "organic machine" (White 1996), or the principle for water flows the "hydrosocial cycle" (Linton and Budds 2014)?

Realising that the whole world may "generate effects and structure social relations", we need to be careful when, why and with what effects we call something infrastructure. The Kemi River has certainly fulfilled infrastructural functions, as I have illustrated for timber transport, not simply as a hydrological phenomenon, but through the successful conjunction of the river's flow with the coordinated skilled practices of hundreds of seasonal workers. Calling this assemblage "infrastructure" may help to highlight how its components became used and exploited in industrial capitalist fashion. It may also trace how it was intended to serve particular political interest at the expense of others (notably fishing, and later hydropower) (Krause 2011). Nevertheless, it may downplay many other important facets of river life in the 20th century. Sometimes, therefore, it may be best to simply call a river a river.

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Above Water – Documentary-in-the-making

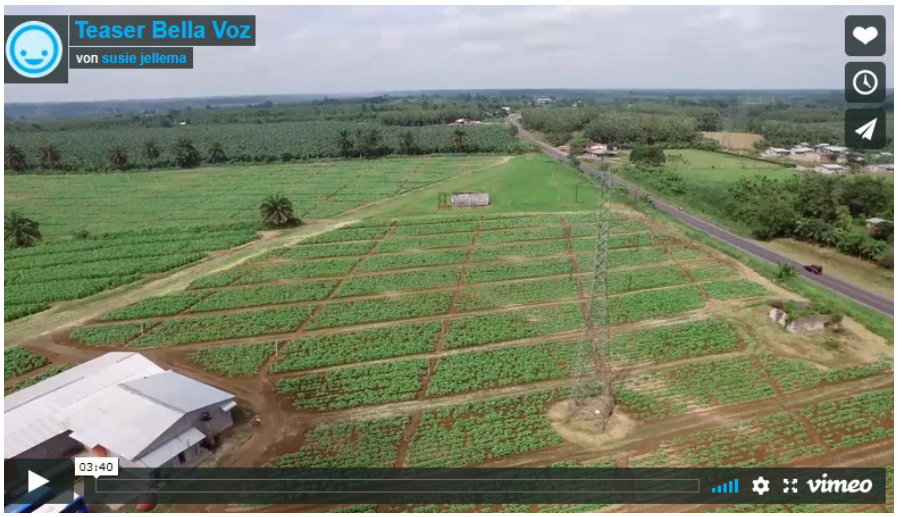
by Juan Pablo Hidalgo-Bastidas, Sytske Susie Jellema, Leontien Cremers and Félix Narváez

Displaced from her lands flooded by a hydropower dam, a courageous Afro-Ecuadorian woman struggles to keep her head above water.

Bella is trapped between the concrete walls of a hydropower dam and the chemically drenched fields of a large-scale banana plantation. Her life is a daily struggle to overcome the painful memories of the past and move towards a brighter future. Since 2005, Bella has endured the effects of the government-planned construction of a hydroelectric dam in the Peripa river. Her brother, who led fierce protests against the project on behalf of Bella's community, was murdered under unclear circumstances. The dam's construction and the conflict left Bella homeless and put an end to decades of community-based existence. She and her family were displaced to an unsafe and contaminated place where Bella can barely make ends meet. Despite all odds, she refuses to remain silent and embarks on a difficult journey to keep her head above water.

By featuring Bella's everyday actions, this documentary shows the strength and perseverance of a tireless woman seeking to challenge her unwanted fate. This is a story of human ingenuity, skill and courage arising from the most unexpected places: Bella's cocoa crops, her kitchen, her loving home and powerful imagination. Above Water is an intimate portrait showing the hidden stories of those neglected by large-scale projects built in the name of progress, urbanization and 'clean' energy.

Link to teaser: https://docubellavoz.wixsite.com/bellavoz/teaser



Website: https://docubellavoz.wixsite.com/bellavoz
Expected release of the full documentary: early 2018.

Once Upon a Time an Opará – an Ocean River

by Lucigleide Nery Nascimento[1]

On its nearly 2,700 kilometer-long northward and then eastward journey to the Atlantic Ocean, the *São Francisco River* drains eight percent of Brazil's territory (Figure 1), an area of the size of Spain, Portugal and Denmark combined, mostly consisting of *Savannah* and *Steppe* biomes. The basin is home to almost 8% of Brazil's population (CBHSF 2004), and two sentences define the river's importance and the locals' dependence on it: "if the *São Francisco* River dies, it will be the end of us all;" and "there is no life without the *São Francisco*" (Clothes washer #1, Personal Communication, 01 Aug 2006, *Juazeiro*-BA; Clothes washer #2, Personal Communication, 16 May 2007, *Pirapora*-MG). Indeed, according to a major Brazilian literary writer, Guimarães Rosa (1908-1967), in the backlands of the Northeast, the *Sertão*, the "*São Francisco* is the only river," the "capital river" (Rosa 1983, p. 55, p. 220). It is hydrologically and socially important. It is one of only a few permanent sources of water for many. Some fifty-seven percent of the basin is located in a drought-prone semi-arid climatic zone (CBHSF 2004).

Watershed vs. Country Area
Source: derived from georeferenced data available from http://siscom.ibama.gov.br/shapes visited on October 10, 2009 (IBAMA 2009).

1 Lucigleide Nery Nascimento holds a B.S in Economics, an M.S. in Natural Resources – Environmental Conservation, and a PhD. in Natural Resources and Environmental Studies. She is a Specialist in Production of Economic, Social and Geoenvironmental information at the Superintendence of Economic and Social Studies of Bahia (*Especialista em Produção de Informações Econômicas, Sociais e Geoambientais* at *Superintendência de Estudos Econômicos e Sociais da Bahia*) - SEI, Salvador, Bahia, Brazil. The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of any agency of the Bahian government.

Indigenous native people, white Europeans, and African slaves and escapees comprised the inhabitants of the basin during Brazilian colonial times (1500-1815) (CODEVASF 1978). The river served two major purposes for the nation: (1) its resources allowed population settlement in the basin, and (2) the main course and its tributaries linked inland regions, which could be accessed by boat (Rocha 1983) (Figure 2). The indigenous native people, the *Tupi*, named it the Ocean River (*Opará*), on account of its dimensions.

***Benjamim Guimarães* Steamship**
Source: Lucigleide Nascimento, 2007
Note: Transport by boat was crucial to the local economy. The different types of vessels carried everything, with cargos including salt, people, cattle, mail and money (Rego 1936, Gautherot and Frota 1995). Today, for tourism, the *Benjamim Guimarães* is the last steamship that still sails the Old Chico. Built in 1913, in the United States, it navigated the Mississippi and Amazon rivers before the *São Francisco* (Silva, *et. al*. 2000).

In Brazil, from the 1930s to early 1990s, the state invested in the provision of basic inputs and infrastructure in the nation. By the 1950s, electricity shortages and a growing demand for energy caused by urbanization-cum-industrialization challenged Brazilian development (Brewer for The New York Times 20 Nov 1954) and influenced the government-instigated changes. The first station producing electricity on a large scale, *Paulo Afonso I*, went online in 1954. Through power lines, electricity started to flow outward from the valley in the same year (CHESF 1998). Today (2017), nine dams govern the flow of the *Velho Chico* (Elderly Chico) (Figure 3).

Luiz Gonzaga Hydropower station, Source: Lucigleide Nascimento, 2004

Federal pro-energy policies favored large-scale irrigated agriculture in the valley, by providing a planned, steady water supply and the electricity to pump it. Furthermore, the federal government has directly implemented policies and actions for the agricultural sector, such as irrigation projects. The fruits of the basin now reach beneficiaries of the ecosystems services of the *Velho Chico* in places as far as the United States and some European nations.

A hydropower corporation maintains the average flow level of 1,815 m^3/s under normal circumstances. The ten-year management plan for the basin (2004–2013) established a minimal daily average discharge volume of 1,300 m^3/s, though at times flow rates above this must occur (CBHSF 2004; ANA Resolution # 412 of Sep 22, 2005). The National Water Agency – ANA (Agência Nacional *de* Águas) – and the National Electric System Operator – ONS (*Operador Nacional do Sistema Elétrico*) – are in charge of establishing criteria for the utilization of water resources and overseeing the use of water in reservoirs (Law n° 9.984 of July 17, 2000, Article 4). The discharge below its ecological level contributes to the river's ecosystems collapse: change in the water's characteristics, destruction of habitat and disturbance of species' reproductive cycles (Nascimento 2010).

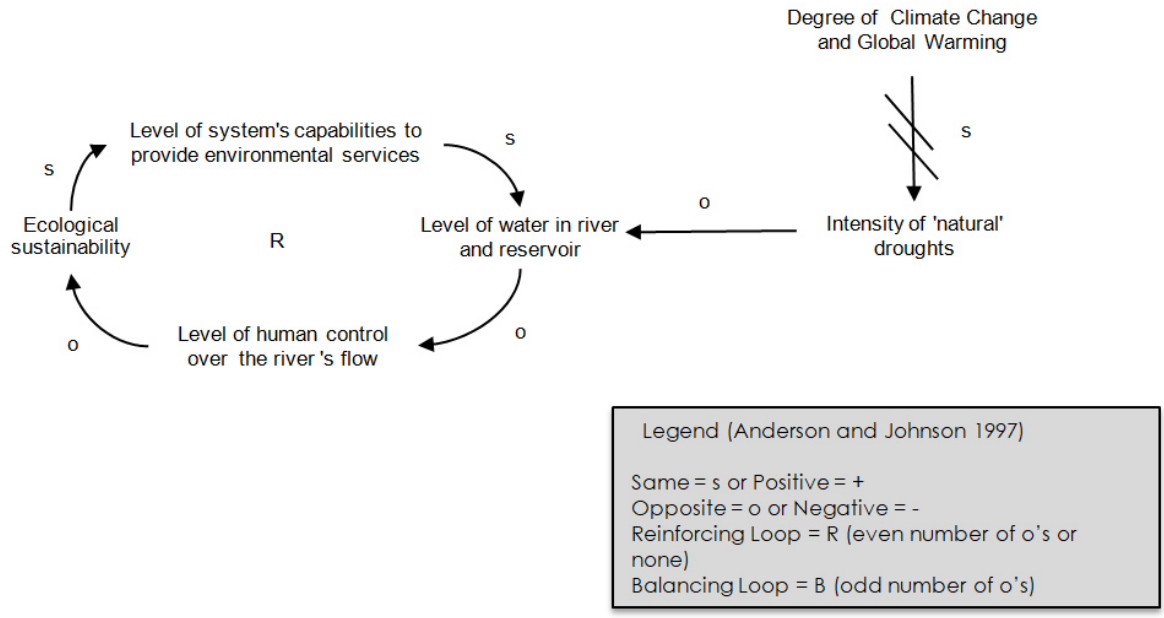
The years from 2012–2017 have been characterized by a period of extreme drought. According to the National Electric System Operator's demands, the National Water Agency reduced the discharge from *Sobradinho* and *Xingó* reservoirs to assure power generation and, in accordance with ANA, the multiple uses of the water resources of the basin. The temporary resolutions have allowed a discharge as low as 550 m^3/s, but the actual drought is so severe that restrictions were also imposed upon irrigators: water withdrawal on Wednesdays is forbidden until November 30, 2017 (ANA Resolution # 1.043 of June 19, 2017).

The two principal uses of this river of nationwide importance are as a power generator and as a source of irrigation. It has affected the provision of other ecosystem services too, disturbing fish, the fishery and fishermen, and traditional riparian agriculture. Nevertheless, the impacts of the droughts have negatively influenced even those uses.

Drought can be defined as a lack of water or a water volume below the average available under normal local conditions for humans and other species (Tallaksen and Lanen 2004). Studies have linked such events

in the Northeast Region of Brazil to temporal and spatial inter-annual variability of rainfall; the topography of the region; and high soil reflectivity (Nascimento 201?; SBPC 2005; Serebrenick 1953). Water scarcity also has been connected to climatic anomalies such as *El-Ninõ*; to alterations in the position of the Intertropical Convergence Zone (Nascimento 201?, Davis 2001); to the increase in the emission of greenhouse gases; and to the hole in the ozone layer.[2]

Climate change will reduce the water available in arid zones (IPCC 2014) (Figure 4). Marengo et al. (2007) asserted that climate projections confirm an increase in water deficit in the Northeast Region of Brazil. The National Water Agency's studies have showed an abnormal precipitation regime in the 2012-2014 period for that same area (ANA 2015; ANA 2013).



São Francisco River System - Source: Lucigleide Nascimento, 2017

Repeated longer-lasting droughts affect the semi-arid region of the basin. The valley has already been the context for water-use conflicts, which have even resulted in deaths and two much-publicized episodes of hunger-strike (2005 and 2007) by a Brazilian Catholic Bishop to protest the diversion of the *São Francisco River* (Silva 2013; Nascimento 2007). Extreme events in the Southeast and the Northeast Regions have resulted in higher energy bills for the larger society. Because of water scarcity, it became impossible to produce power, and subsequently Brazil replaced hydropower with thermal power, a more expensive form of electricity generation. Under unfavourable climatic conditions (droughts), the discharge has been kept below its ecological level and, at the river's mouth, among other consequences, the waters of the *Opará* now fight against invasion by the Atlantic Ocean. The conflict between non-consumptive (e.g. hydropower) and consumptive uses (e.g. irrigation, domestic water supply) will worsen in the future due to climate change and a growing demand for water, food and energy.

2 Despite the positive effects of the Montreal Protocol to regulate the use of and phase out substances that deplete the ozone layer, the hole still exists, mainly over Antarctica.

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'Where has my Water gone?' A Song from Mafua struggles and the Dalit Cultural Movement in Maharashtra, India

by Simon Borja, Joel Cabalion, Vinod Chahande, Julien Jugand, Philippe Pereira and Dhammasangini Ramgorakh[1]

'Water is life!' Or is it 10 rupees a bottle?

It is usual to hear, amongst other truisms, that water is indispensable to life, if not more solemnly that water *is* life. Water is one of the most universally necessary resources, and yet strongly resists sociological analysis. Indeed, what could we say that engineers, water experts or hydrologists have not already said? It has, however, not escaped the minds and bodies affected by its recurrent lack or sudden rise that water is also, if not first and foremost, a 'natural' resource whose ecological and economic values are constructed by very entrenched political processes (Baviskar 2007). In the western Indian state of Maharashtra, the agricultural sector is becoming increasingly fragile in the wake of climate change, with longer dry spells and more frequent drought cycles. While approximately 80% of agriculture is still rainfed, the last few years have witnessed some of the worst droughts in decades, affecting millions of farmers and bringing back haunting memories for the older generation who had experienced the historic water scarcity around the end of the 1960s and beginning of the 1970s[2].

Inasmuch as surface and ground water are considered, the scenario of management and allocation is supposed to be spiralling from bad to worse: 'All Indian water bodies within and near population centres are now grossly polluted with organic and hazardous pollutants. Interstate disputes over river water allocations are becoming increasingly intense and widespread. Not a single Indian city can provide clean water that can be drunk from the tap on a 24×7 basis' (Biswas, Tortajada, and Saklani 2017). Yet such a statement leaves open the question of the popular perception of water and its political dynamics, the ways in which its lack or abundance is pictured and portrayed, and the underlying reasons for these, amongst certain sections of Indian society. We will thus illustrate these social and political dynamics through the gaze of a critical and intellectual entente amongst scholars-activists-social workers gravitating around the region of Nagpur in Eastern Maharashtra and concerned by water issues.

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1 In alphabetical order: Doctorate student (Sciences-Po, Lille University), Associate Professor (Sociology and Anthropology, Tours University), Research Associate (Atal Bihari Vajpayee Institute of Good Governance and Policy Analysis, Bhopal), Anthropologist and music history teacher (CREM - Conservatoire de Dieppe), Freelance documentary maker and activist (Portugal), Sociologist (Women Studies Department, Nagpur).

2 For a historic appraisal of some of its socio-political consequences, see Joseph 2006; Patel 2006. For a contemporary view, see the following 13-part series on the Marathwada drought in 2016 by Tushar Dhara, journalist at First Post. URL: http://www.firstpost.com/india/marathwada-drought-the-region-is-parched-impoverished-and-desperate-the-exploiters-turned-into-the-exploited-2715116.html

Drawing of Parmeshwar and Veena ploughing the Field

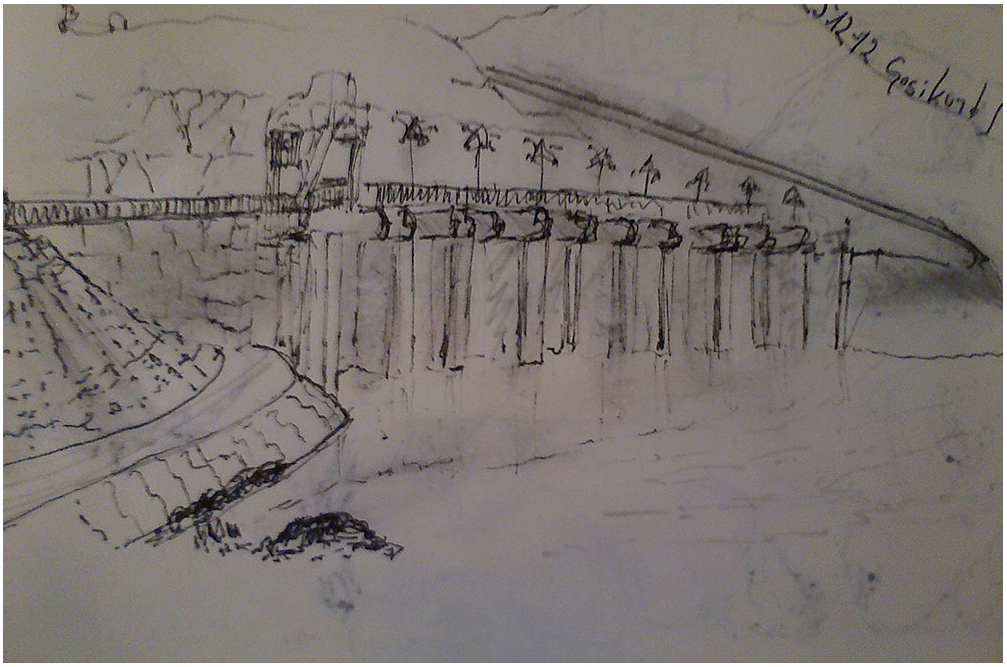
Development and Destruction, a timeworn Dialectic of Power

In the region of the Wainganga river in Eastern Maharashtra, the landscape offers an infinity of images emblematic of an early industrial onslaught in the shape of debris from crumbling houses in submerged villages, open mining sites encroaching upon forest land, sewage flowing from the swelling city of Nagpur or flying ash pollution coming from various thermal plants. This description may appear a bit too impressionistic to summarize the historic lifeline and major basin of Vidarbha, yet it actually comes short of listing the various 'dispossession and displacement projects'[3] either already existing or signalled as upcoming in these regions formerly known as the Central Provinces and Berar. Designated as a 'backward area' in the official jargon, the Maharashtra Tourism Development Corporation more graciously calls this forested terrain 'the land of oranges and [endangered] tigers'[4], preferably remembered for its yesteryear prestige in hosting the background of the mythical Jungle Book. It would however be unfounded to consider Vidarbha – like many other regions in the Indian subcontinent – not to also be seriously endangered by the 'iron cage' of capitalism and its multiple impacts on the environment and rural social groups. The Wainganga is already home to the Gosikhurd dam, a project whose promised bounty (250,000 ha of irrigation) has been expected for more than three decades but which has more tangibly become a reservoir of corruption and displaced up to 100,000 people, most of whom may find it difficult to recover from paying the cost of development (Cabalion 2018 and South

3 Felix Padel and Samanendra Das's substitute expression of 'displacement projects' deserves to be extended to the phenomenon of dispossession at large, the latter not being necessarily accompanied by the former in every case. See Padel and Das 2010.
4 It is sometimes even called the 'California of Maharashtra', though the person who coined that expression was surely being ironic.

Asia Network on Dams, Rivers and People 2017). The river basin at large has undergone and may experience further tremendous morphological transformations in years to come through the demiurgic projects of interlinking river segments (Bhagwat 2015, Ghoge 2017) symbolizing the nation's engineering ambition and its conquering *ethos* over nature. While college level B.Ed. engineering students in the region are made to write papers to justify their corporation's technological hubris, the official praise goes that they will solve the problems of cotton farmers whose suicide mortality rate is very high in western Vidarbha (Mishra and Reddy 2010), not to mention the case of malnutrition in Melghat, infamous for deaths due to starvation amongst its important *Adivasi* (tribal) population.

Against such a backdrop, this essay is a piecemeal attempt to present a sketch of the water scenario in that region of India alongside the perceptive lyrics of an activist song originating from a context of people's mobilization. Titled '*Maaii, paani kutha gela*' ('Mum, where has the water gone?'), it was written and sung by one of the authors of this article, Dhammasangini Ramgorakh, and enjoyed during fieldwork by the others, for it astutely articulates if not unites the issue of water and the reality and utopia of the *dalit* cultural movement,[5] and underlines the brunt of droughts versus the abundance of water parks; in brief, it convokes the issue of inequalities in contemporary India towards all kind of liquid forms.[6]



Drawing of the Gosikhurd Dam

Mafua: An Historic Articulation between Buddhism, Dalit struggles and the Water Movement

To enter the political arena of western India, we would like to introduce the unfamiliar reader of Indian politics to a very small word which yet retains immense force and meaning in the Indian space of social movements: *Mafua*. As the fused concatenation of Marx-Phule-Ambedkar, it encapsulates a decades-old infusion of painstaking (and incomplete) convergence between class and caste struggles. While Marx requires little introduction due to his legacy of social transformation, the other two characters continue to struggle for a well-deserved acknowledgement beyond social science academia or India's borders. To put it briefly, while Gandhi is known and revered almost everywhere and has a kind of following that many Christian mission-

5 The *dalit* cultural movement can be understood as the social space of artists-cum-activists and ex-untouchables from various castes, often ex-Mahars but not uniquely, entrepreneurs of causes and cultural forms of expression in the field of aesthetics (literature, music, theatre, etc.) and intellectual interventions at large indulging in a critical reading of the Indian social structure.
6 This should undeniably and inextricably link the issue of water to the issue of waste. See Singh, Goyal, and Jain 2017.

aries might envy, one cannot say the same of Ambedkar, whose law is the everyday rule for Indians – as the principal redactor of the Constitution – and yet who does not appear on the rupee note, as one common grievance puts it (a grievance which recently produced a major musical hit in Marathi amongst Ambedkar's followers – *kayda bhimacha, photo gandhicha*[7]). Our argument here is not to decry this fact but rather to engage with this historical bias and its meaning. Bhimrao Ramji Ambedkar (1891-1956) is probably one of the most important Indian politicians of the Independence era, and at the same time one of the least-known abroad. Less mentioned than Nehru or Gandhi, Babasaheb, as he was popularly known, nevertheless occupies a most prominent place in the Indian pantheon of national figures. While Nehruvian ideals have long been considered to be in decline and stand defeated by neoliberal policies, only Gandhian repertoires of contention and Gandhi's philosophy of non-violence can actually compare – partly due to their international fame and circulation – with the incredible postcolonial career of Ambedkarite politics and (counter-)narratives at home. Gandhi and Ambedkar embody two very entrenched type of worldviews within the Indian political and activist social space. In the former these two figures were notoriously opposed. In the activist sphere, Gandhian and Ambedkari repertoires of contention are in fact nowadays considered complimentary to many social movements around the country, members of which will quote Gandhi in environmental politics while advancing Ambedkar in demands for social justice and extended affirmative action. The base of their historical opposition revolves around their competition to represent the former Untouchables.

The case of Maharashtra has already long attracted academic discussion around social movement history, for it is well-known as one of the early states hosting major social struggles. Particularly renowned are those against castes (the Non-Brahmin movement in the 19th century as well as the *Dalit* movement in the 20th century), a position today quintessentially attached to the trajectory and legacy of Ambedkar, who converted to Buddhism in 1956 to escape from the Hindu fold. While this narrative of *dalit* struggles is well known (Omvedt 1994), Maharashtra harbours no less a myriad of left-wing workers' movements (and small parties) as well as agrarian struggles (Kude 1986) that have continually infused political practices and claimed descendance from Marxist ideology on the one hand, as well as lower-caste struggles and Ambedkar on the other. These are less famous despite having left traces all over the state in matters related to land and water policies (Chowdhury 2013; Joël Cabalion 2014, 2015).

Photo of Submergence in Ghaadegaat

7 Youtube url : https://www.youtube.com/watch?v=BReeoF-8QbY

Are Lower Castes and Dalits Water Heroes? Mythical Pasts and Modern Tensions

During ancient times, the Buddha acted as a mediator in the conflict over the use of the river Rohini, at the times of the Sakiya Republic and Koliya tribe. The culprit, as recalled, was already a dam. Water was insufficient, then war broke out. When the Buddha went to settle the conflict, the legend recalls that he used the argument that water was of less value than human lives (Schumann 2004). Before Independence during the colonial era, Savitribai, the wife of Jyotirao Phule, a lower-caste social reformer, opened her well to *atishudras* (an old term to designate former untouchables), one action amongst many others of the emerging Non-Brahmin movement (O'Hanlon 2002). In brief, 'water heroes', as they are sometimes re-discovered for the benefit of popular and activist representation (Vora 2009), quite often extract adherents from the lower rungs of Indian society or claim to work for them. Can such a view pretend to be accurate, considering most of them also supported dam construction in their time? Apart from being one of the most important figures of the low-caste protest in Western India, Jyotirao Phule was also a contractor from the gardener caste (Mali) who contributed to the construction of a dam on the Mula-Mutha river near Pune. We could also take the example of Rammanohar Lohia, a socialist who gave his name to the Lohia Sagar dam (lit. the dam of the ocean of Lohia) while Ambedkar supervised the advent of Damodar Valley Authority during his political career (a project inspired by the 'Tennessee Valley Authority model' in the US, just a few decades earlier), as well as promoted the necessity of a unified federal water policy. We can of course consider that the modern *épistémè* had not yet been much deconstructed, or was just about to be, technologically speaking at least and amongst these leaders. It is worth noting that most activists inheriting their ideological baggage today mostly oppose the planning of mega projects for these now seem to take a different economic road.

Photos of Protests Around the Dam Site (GPSS courtesy)

As a simple reminder, *Dalits* were notably banned from using water bodies used by upper-caste Hindus. Ambedkar's Mahad *satyagraha* in 1927 (a march to allow untouchables to use water in a public tank) was a fight against this particularly violent form of social separatism. Defending, claiming or simply recalling the struggles of former untouchables over water resources is thus neither a faint debate nor an anachronistic human rights discussion. It is in fact an important reminder of the spatial dimension of social inequalities, especially of the reality that Indian *dalits* and *adivasis* are still, all other things being equal, more often deprived of access to water resources than other social groups, and more often pay the cost of 'development' by granting 'the right of passage' for the edification of dams and thermal plants which affect their livelihoods.

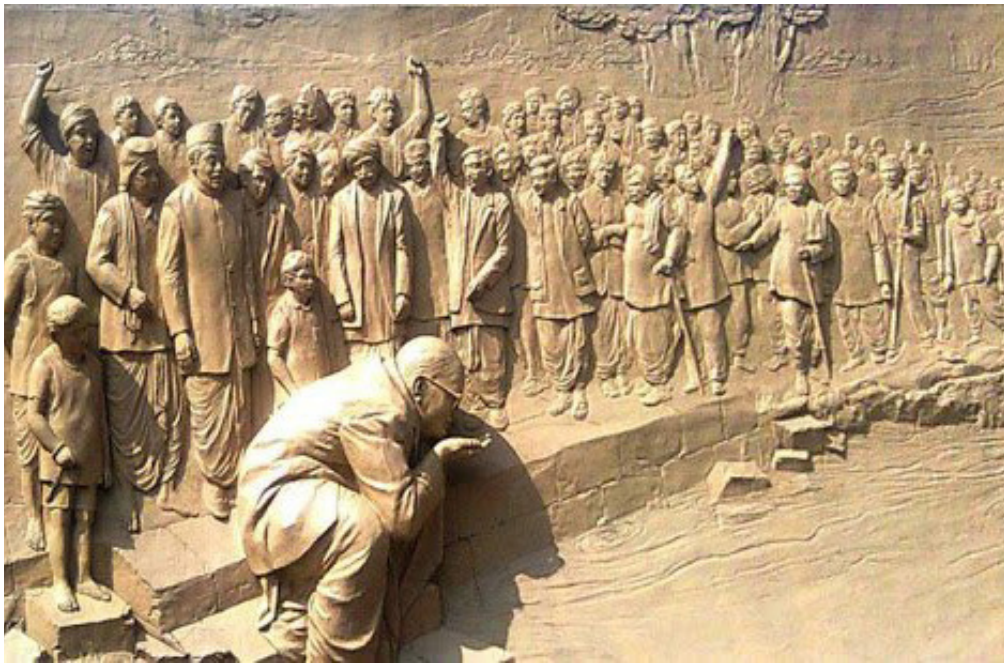


Photo of Mahad Satyagraha with Ambdekar

Mafua Songs and (neo) Bhimgit: an essential Mediation for Water struggles?

The ex-Mahar caste has been traditionally associated with singing. As reminded by Rege, 'in the Ambedkar era, old forms of publicity like the community *bhajan* [devotional singing] came to be thematically reformulated. The "private" forms of expression, like women's compositions of the "ovi" (songs of the grinding stone), "*palana*" (songs of the cradle), adopted overtly political themes of a caste society' (Rege 2008: 17). As a space of cultural production, songs to Bhimrao Ambedkar – *bhimgit* – already have a long history and large audience. Since at least the 1930s, they have accompanied the process of social and political emancipation of former untouchables. While *bhimgit* have undergone many evolutions, they have often played a crucial role in various resistance movements as a circulating cultural good of struggle. Dhammasangini's song aptly sends the message: today's stake for *neo-bhimgit* is to ask new ambedkari questions of those in power, and no longer to instigate statues of great leaders, gardens and *maidans* (public ground) in the name of Ambedkar – or even umbrellas for his statues so they do not get drenched by monsoon rains. The stake is to ask questions to disturb and disrupt projects relating to special economic zones, to cancel water parks or to state the impossibility of deviating water rights to entities of the private sector or even state corporations. New *bhimgit*, we may say, are one significant cultural future amongst others for the ambedkari movement, if they not only combine popular songs and idioms of rural areas, but also address new political issues beyond a mere politics of representation.

If the cultural base of the water movement in Maharashtra is diverse and notably draws from the integrative aspects of the famous hindu Warkari saint tradition, the actualization of water struggles indirectly results from their association with *dalit* struggles, spearheaded by most of the agents of the lower castes and the ambedkari cultural movement for many years in various literary and musical forms. Water can thus be a practical rejoinder for such a programme. Fighting for water rights is akin to struggling generally to get one's position in society recognized. At present the *dalits* in India experience an everyday fragile existence and struggle in order to keep their historical legacy and few legal victories alive against age-old practices of discrimination. Music is one important way for them to do so, reminding us how 'struggles over cultural meanings are inseparable from struggles of survival' (Rege 2002).

Picture of the Dikshabhumi and of a Bhimgit Troupe

Conclusion

Between dams, GMOs and nuclear plants (certainly not a very subtle triad), is there any room left for farmers who wish to engage in a symbolically non-aggressive form of agriculture? This question receives much argumentative currency from the organic movement wherein incentives for producing in a so-called sustainable fashion are still contradictory and do not necessarily imply the preservation of the environment. The impression that more dams are still being built, and that water still continues to be lacking or is distributed in a skewed way in the Indian context, may endure for some time. Displaced peasants and those whose lands have been submerged will continue demanding water shares while their lands are being drowned or acquired for the common good – or is it for the comfort of a few? While research continues to compile and explain so many facts on ruinous scenarios, should we join the chorus and ask: where has the water gone?

The Song

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Get on a Boat! A Photographic View from Lake Naivasha

by Gerda Kuiper

Over the course of the past century, Lake Naivasha in Kenya has attracted diverse groups of people. These groups include pastoralists with their herds, European settlers during colonial times; large-scale flower and vegetable farmers in more recent years, and thousands of jobseekers from other parts of Kenya who followed in the wake of these firms; domestic as well as foreign tourists, and researchers. Much could be said about water as a contested resource in this dense environment. However, here I would like to draw attention to a very pragmatic, methodological advantage of the presence of watery environments in a field site.

In February 2014, I arrived in Naivasha to conduct research within flower farms and in workers' settlements around the lake. After a few weeks, I got on a boat and took a ride on the lake – an activity which is also popular with tourists. This resulted not only in pretty pictures but also provided complimentary perspectives on what was going on around the shores of the lake: from the water, one has an unrestricted view of many of the premises. These are often fenced off from one another and are barely visible from the public road. A view from the road therefore gives the impression that there is little interaction between the different groups of residents of Naivasha. However, pictures that I took during this boat ride show the proximity and convergence of different economic activities and lifestyles around the lake. 'Sightseeing' from the water thus proved to be a fruitful method during the explorative phase of my fieldwork.

A tourist camp with boat operators.

On the hill in the background lies Kamere, one of the privately developed settlements where migrant workers of flower farms find rental houses.

A flower farm water pump.

The abandoned house of the former owner of a flower farm that got into financial trouble. The house was constructed at a time when lake levels were lower.

A group of hippos floating in front of greenhouses where flowers are grown.

Naivasha is a favourite destination of birdwatchers.

Mount Longonot is another major tourist attraction.
The lakeshores in front of it are dominated by greenhouses.

Beyond the Horizon – The Logics of Exclusive Seaside Resorts

by Tijo Salverda

Through images of boats at the mercy of huge waves, icebergs sinking massive ships like the Titanic, and storms battering coastal areas, most of us know about the destructive force of the oceans covering most of the earth's surface. At the same time, in hot summers people are drawn *en masse* to the seaside, tourists have found their ways to many of the world's tropical beaches, while beachfront properties are often among the most expensive.

Following the Paris elite, who from the second half of the nineteenth century onwards chose to holiday in Deauville, on the coast of Normandy, the affluent around the world have often been the first to develop seaside resorts for their pleasure – in line with Thorstein Veblen's (1994 [1899]) 'leisure class', they were initially the only ones in a position to enjoy leisure time at all. Luckily, many others are nowadays equally in a position to cherish the seaside. This notwithstanding, elites have still maintained control over plenty of exclusive seaside resorts by constantly searching for new destinations, buying whole islands, or simply residing in locations were the property and hotel prices are well above what any ordinary citizen could afford.

Every summer the rich and famous of New York migrate to the Hamptons, while the French elite (and international jet set) nowadays meet and greet at the Côte d'Azur rather than in Deaville. In the Caribbean, the billionaires dock their super yachts off the coasts of islands like St. Barth, while beach properties in Cape Town draw not only the South African rich to the city's ocean views, but also many wealthy international guests. Yet apart from the beauty of the locations and the wish to hang around with like-minded people, the elites' attraction to these locations appears to have an interesting underlying sociological component. With only a horizon in the distance, the emptiness of large water masses allows elites to (temporarily) exclude themselves from the everyday realities of the world we live in.

Based on my research on the Franco-Mauritians, the white elite of Mauritius, I argue that for elites oceans are not only about the joy of cooling off and the beauty of the sunsets, but also about evading other people. This feature, though, is not exclusive to oceans. As David Hughes has argued, whites in Zimbabwe were

drawn to the region's wilderness, for example, because it allowed them to escape the (in their eyes) chaotic life of African societies in which they only constituted a tiny (elite) minority. Yet as among others the case of Franco-Mauritian seaside properties nicely illustrates, water may even be a more powerful tool in shaping and maintaining exclusion.

Standing behind the Franco-Mauritians' seaside villas are big stone walls that make it impossible for most other Mauritians to peek into their private lives, while in front of them there is nothing but the island's renowned beaches and the Indian Ocean beyond. Many Franco-Mauritians, as a colleague and I have discussed in more detail here, consider these places to be one of their last exclusive resorts, where there is a relaxed atmosphere and they can retreat from hectic everyday life. Children can swim and enjoy other aquatic activities while adults spend time relaxing, fishing and sunbathing. Put briefly, life is rather carefree here because of the sea, the sun and the beaches and the pampering by nannies and servants who look after the children and take care of a number of daily chores. In other exclusive seaside resorts around the world, the situation is not much different. Properties are often hidden from view by large walls and hedges, and if possible, elites do their best to restrict others from accessing the beaches between their properties and the ocean beyond. The intimidating nature of the oceans' water also provides a relatively good guarantee that others will not inhabit their immediate space – in the direction of their views, at least. The vast empty expanse of water, as far as the eye can see, allows elites to (temporarily) forget that they actually share a social world with the majority of the less affluent.

The Wateriness of Everyday Life in a Turkish Delta

by Caterina Scaramelli

Introduction

Humans inhabit liquid worlds.
Anthropologists have long argued that water is fundamental to constituting social relations—in ways that are ritual, material, symbolic, and sensorial (for recent examples, see Strang 2004; Krause 2010; Orlove and Caton 2010; Limbert 2001; Anand 2011). In the last decades, water has become a metaphor for fluid identities and relations (Busby 2000; Nelson 1999; Moore 2012; Carsten 2011), and for global flows of capital, commodities, and culture (cf. Féaux de la Croix 2011; Krause 2014). Water, then, continues to provide metaphors for social theory (Helmreich 2011). And as anthropologists of science have questioned the putative material essence of water, scholars have analyzed the various logics, forms of expertise, and relations that constitute water's materiality, flow and quality (e.g. Barnes 2014; Carse 2014).

As "modern water" (Linton 2010) has come under anthropological and historical scrutiny, many have also underlined the ways in which power and inequalities are manifested through the control of water flows (Swyngedouw 2005). The old question, that of water and social power, has gained renewed salience in a contemporary moment of accelerated climate change and neoliberal regimes of water distribution.

An anthropology of water and beyond foregrounds liquid relationalities—and it engages with material movements of water, the infrastructures of flow, the entanglements of water and place-making, and the knowledge practices that ascribe value and political weight to water.

In this short piece, I draw, fluidly, from my ethnographic notes to reflect upon everyday social relations in, of, and around water in a Turkish rural delta. This produces, I argue, ethnography made richer by attention to sensuous details, multiple agencies, and an analytical attention to practices. I also emphasize the things that water carries—fish, fertilizers, boats, sediments, lactose, fat, anthropologists.

April 2015: water domains in the domus

I have been living in Avni Koparan's family farm—on and off—for the last year and a half. My comings and goings are tidal, synchronic with cycles of research funding and findings, and with research trips in other parts of Turkey. The summer is weeks away, but the mornings are already sweltering. Looking synoptically at Google Earth photography, we are only steps away from Cernek Lake, one of the largest wetland lakes on the delta (Fig 1). The maze of canals in the delta moves through a landscape of pastures, rice paddies, and farms, and some lead through reedbeds into the open waters of the lake.

Google Earth view of Cernek Lake and its surrounding farmhouses

Within the farm compound (Fig 2), it easy to forget the ubiquitous seeping presence of wetland waters, lakes, and canals—flows of water that are always produced and mediated by infrastructural interventions, political debates, and social relations. These are also watery settings for complex entanglements of human and non-human lives. And the controlled movements of water are fundamental to the very survival of the farm: for instance, the delicate balancing of irrigation, chemicals, seeds, rain, soil, and drainage, orchestrated by Avni, his sons and nephews, and the workers he hires seasonally, will determine the success of the rice season.


Home in Doğanca, hosted by the Koparan's family (C. Scaramelli. 2016)

And water, from the city supply, allows Avni's wife Hatice and their daughter-in-law, with their Georgian helper, to cook, clean, and sustain multiple social and kinship ties. Water is used to irrigate the vegetables in the family plot, which feed the family (Fig 3). I try to help with planting, weeding, and irrigating—"make a circle around the plant, don't wet the leaves, or else it will die in the sun," Hatice instructs me, as I clumsily maneuver a heavy hose, connected to stackable irrigation pipes and then to the water pump at the nearby well.

Thirsty tomato seedlings in the Koparan family garden
(C. Scaramelli, 2017)

Water is essential to the dairy economy of the family, too. In the mornings, Hatice, her youngest son, and a hired shepherd carefully feed, clean, tend to and milk the family's water buffaloes (Fig 4). Hatice then skillfully turns the bulk of the milk into yogurt, cheese, and cream—and bottles the rest in recycled Coca Cola bottles, to be sold to customers in Bafra. Washing the milking jugs and bottles with plenty of tap water and detergent is a task fit for the visiting anthropologist—I am scared of lifting the heavy cauldron of boiling milk from the stove.

Water buffaloe calf (C. Scaramelli 2016)

June 2017: Watery temporalities of rice

Planting season. The men are outside day and night, leveling the rice paddies. As tractors need maintenance, taxed by the heavy workload, trips to the mechanic shop in Bafra are frequent. Dikes and sets are repaired, built, and inspected, in anticipation of the flows of irrigation water. Avni and his workers oversee the order in which rice fields will be filled with water, and the changing water levels, in a delicate dance with the rice seeds: enough water for the seeds to sprout, and the seedling to take hold, without being washed away. Clouds, ripe with rainwater, add another level to the choreography of fields, seeds, and agrotechnology, for rain will influence when the fields will be irrigated and planted.

One evening Avni takes me on his tractor to bring a bag of groceries to the "water man," who is bunked in a trailer at the edge of the rice paddies, a twenty-minute drive from the farm. He navigates the maze of country roads and canal access tracks, and talks to me about the history of infrastructural development and shifting land property regimes that, in the last two decades, created this landscape (Fig 5). On the way back, Avni reflects upon the difficulty of coordinating decision-making with his relatives and workers dispersed in the rice paddy landscapes, and with the cloudy, rainy skies. Every day of delay with rice planting is a large economic burden for the farm. We are already running late this year, he nervously explains (Fig 6).

Rice fields, photographed from Avni's moving tractor (C. Scaramelli 2017)

Going with Avni on his tractor to examine the preparation work on the rice fields (C. Scaramelli, 2017)

We are late for dinner, too. We are approaching the time of *iftar*, breaking the day's fast. Avni's wife rushes us to get showered and changed and we run to the kitchen, where the other women and I ladle steaming bowls of soup at the call to prayer—streamed on the daughter-in-law's phone (she has a slick *Ramadan* app), slightly out of sync with the village mosque's *ezan*.

July 2014 Fishing Lives at the Water's Edge

I have been living near the edge of lake Cernek, only a five-minute drive away, but the lake is not as easy to get to and to navigate as I had initially thought. Not for a woman, at least. But my father's visit to Doğanca provides me with a perfect companion for a lake expedition. A few phone calls and texts with a fisherman, with whom my hosts here have connected me, and I convince him to take me on board for the day. I am waiting at the side of the road, with my father and two local environmental advocates—one of whom had been involved in declaring the delta a conservation area in the 1990s.

I see them on the boat, far away on the other side of the lake: two fishermen (Fig 7). I cannot help but wonder, am I being stood up on account of my company? Finally, the fishermen approach, cautiously. There has been a misunderstanding concerning the place where we were supposed to meet. My father and I take off our shoes, and wade through the soft mud to get to a small rowboat, equipped with a rusty engine. Soon, in the middle of the lake, we will run out of gas.

The two fishermen row to retrieve their fyke nets (*pinter*), marked with the empty water or milk jug they are attached to. To retrieve them, they pull them up by hand, a strenuous job I know from my fishing trips in the Izmir bay, where fishermen use the same nets to catch sepia (Fig 8). As they take up the net, they disentangle the freshwater crayfish (*kerevit*), and throw weeds, debris, and small fish back into the lake. Then, they throw the net back in the water again, making sure it is attached to its floating marker.

As we fill the boat with crates of crayfish, and the fisherman who is rowing seems to struggle controlling the boat, I wonder whether we will capsize into the lake (Fig 9). The lake surface today is calm and warm, and the lake is shallow enough to wade through, but in the winter, the freezing cold waters and the strong winds can be deadly.

Cernek lake (G. Demirer, 2015)

Throwing pinter nets (C. Scaramelli, 2014)

Fishing for Kerevit (c C. Scaramelli, 2014)

Conclusion: Multiple Waters

To live, work, and conduct research in the Kızılırmak delta, as in any other delta, is to know its waters (Fig 10). Consider the different waters one encounters: the mighty Black Sea, slowly eroding away the coast; the Kızılırmak river, now in large sections constrained in stone walls, flowing into the sea; networks of canals, of different sizes, carrying irrigation water from the dams upstream; flows of drainage water rife with pesticides and fertilizers pouring out from the fields; the delta's lakes, which only fishermen and reedcutters (and a few scientists) really know at all times of the day and through the seasons; groundwater, which seeps into the fields, and which feeds the house wells and also the wetland ecosystems; water in the mudlands and meadows, which the water buffaloes so love, and which provides the essential ingredient for healthy and biodiverse wetland ecologies; water in the air: rain, fog, snow, clouds, fundamental to the work rhythms of farmers, and to the feeling of being in the delta in all seasons; water pipes from Bafra flowing in the villagers' house taps (nobody buys bottled water here!).

Corn field in the Yılmaz household, Doğanca (C. Scaramelli, 2014)

Water is always both natural and cultural, and easily defies the already problematic boundaries of nature-culture (Fig 11). In a delta saturated with water of different kinds, knowing and working with these different kinds of water, for different purposes, and in different ways, is central to everyone's livelihood. This is why we pay attention to the everyday practices through which people perform their knowledge and valuation of water: not just the way they talk about water, or waters, plural, but what they actually do in practice. We can think about water, then, as one of the centers of practice, discourse, values, and aesthetics that connect all the people who live and work in the delta.

Wet meadows and koga (Juncus acutus) in the Kızılırmak delta (C. Scaramelli, 2016)

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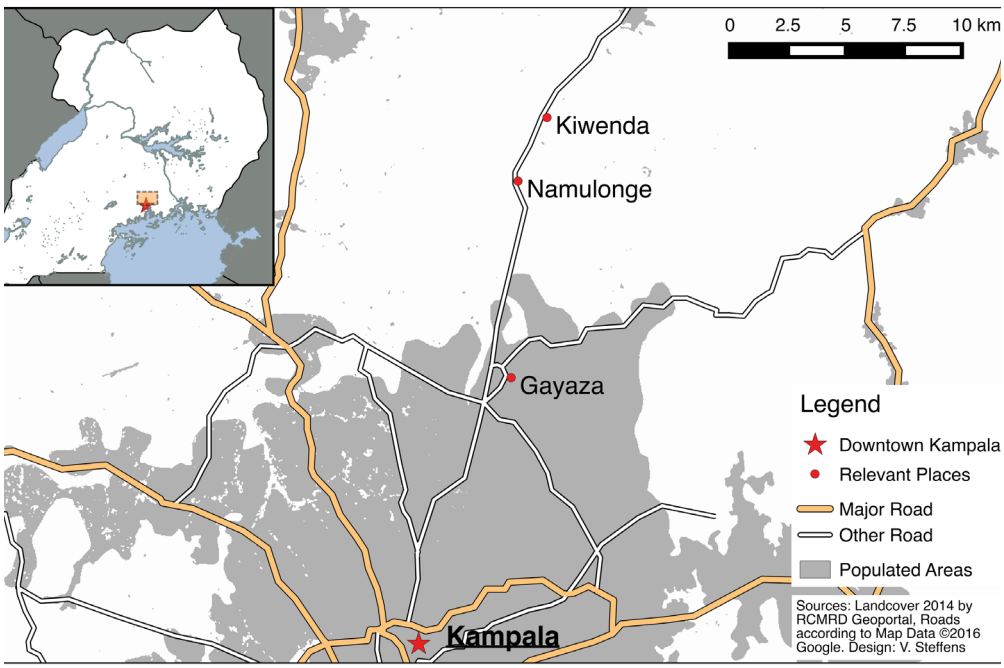
Wetland encroachment in the urban fringe: land dynamics in central Uganda

by Matian van Soest

Kampala, “the city of the seven hills”, is the buzzing capital of Uganda, located on the northern shores of Lake Victoria. The city, once founded around the royal hunting grounds of the Buganda Kingdom, has long outgrown its administrative boundaries, and is today home to more than 1.5 million people, with another 2 million living in the greater metropolitan area (UBOS 2014). It takes an hour’s drive along one of its northern exit routes before the urban scenery breaks up into villages. Here, around the trading centers of Namulonge and Kiwenda, the landscape is characterized by the lush, green color of cultivated wetlands, while the settlements are confined to the hilltops (see picture 1). At first glance, the area seems rural, mainly due to the agricultural land use in the watered valley bottoms in between the hills’ slopes. A closer look, however, reveals dynamics that must be understood in relation to the nearby city (Simon 2008). Especially with regard to land use and the land market, the capital’s influence can increasingly be felt. Land prices rise as the upcoming Kampala middle class is looking for affordable land close to the comforts of the city. This drives local smallholders, who typically own little or no land, into the swamps in between the hills in order to generate an income. Aside from their agricultural production potential, these wetlands are valued for their freshwater supply, be it for cooking, washing, bathing or even drinking. Characterized by a humid environment throughout the year, wetlands function, so to speak, as natural water-treatment plants that filter out pollutants. Encroachment into these swamps can seriously disturb their delicate ecological equilibrium, resulting in degradation of the entire ecosystem and the water quality in particular (Dixon and Wood 2003; Nakangu and Bagyenda 2013).



In order to understand the current land dynamics that put pressure on the wetlands in Kampala's urban fringe, one has to take central Uganda's unique tenure system, the *mailo* land, into consideration, a relic of the country's colonial past. Established by the British colonial forces in 1900 with the short-sighted *1900 Buganda Agreement*[1], the tenure system still exists today, and has far-reaching consequences for the landless poor in the Buganda area. Unlike in most other cases of British colonial conquest in Africa, land rights in Buganda were not divided between British private owners and collective local communities, but rather among a number of Baganda as well as British individuals. The British made use of the existing power structures of the Buganda Kingdom, and divided land ownership rights among selected notables and chiefs, as well as missionaries and, of course, the British crown (West 1972). Anthropologists soon pointed out that the Buganda treaty introduced an entirely new conceptualization of land tenure to the region, namely the idea of land as private property, and with it the notion of land as a source of profit, thereby transforming former chiefs into landlords, and consequently rendering the people who occupied a *kibanja* – a piece of land – their tenants (Mair 1933).

Up until today *mailo* remains the predominant form of land tenure in central Uganda. While the number of *mailo* land owners has multiplied since its establishment at the turn of the last century, the majority of the people in the Buganda area still don't possess ownership rights over the land they occupy. With the efforts to formalize land rights and promote a land market during the heydays of structural adjustment measures, the rights of occupants have been strengthened (Boone 2008; Coldham 2000; Hunt 2004). People cannot be evicted from their *kibanja* without proper reimbursement, and without being offered alternative land to relocate to. Often, however, the tenant and the owner come to an alternative arrangement, whereby the *kibanja* is decimated and the tenant is given full ownership rights over the remaining portions, while the owner regains control of the newly freed ground. Typically, the tenant remains with the land he (or, in rare cases, she) and his relatives stay on, including, if applicable, their burial grounds. In most cases it is the land used for cultivation or cattle-keeping that the tenant loses control over.

During my fieldwork I spoke to numerous people, who had recently, over the course of the last 5 years or so, been deprived of their *kibanja* as the owner had sold it off to an investor. Most of the new housing that is being built in the area is put on former *bibanja*[2], and the construction of relatively expensive houses and estates can be seen everywhere in Namulonge and the neighboring villages (see picture 02 for an example). In 2012 the former owner of the land in my research area passed away and bequeathed the land to his son, who in turn is now selling much of this property. The benefits are evident: because leasing a *kibanja* out to a tenant doesn't bring the owner much wealth, selling the land off to an investor is more lucrative, especially now since the demand for affordable land just on the city's doorstep grows. Moreover, the recently improved road infrastructure allows for a fast connection to the city, and makes the area attractive to the rising middle class in Kampala, who are willing to commute in order to afford a home.

1 It should go without saying that speaking of an "agreement" in the context of the colonial encounter bears a certain sarcasm.
2 The prefix *bi-* instead of *ki-* indicates the plural form.

The case of Mukassa, a farmer in Namulonge, serves as an illustrating example, as he lost much of his agricultural land in this way. His father was approached by the genuine owner of the *mailo* land that the family's *kibanja* was located on. The owner wanted to negotiate a deal with Mukassa's father, so that he could sell the land to a real estate firm. From the perspective of Mukassa's family, the father had no choice but to agree to the proposed deal, leaving him with little more than the housing for him and his four sons. Mukassa lamented that, while his father was now a titled land owner, he was basically unable to sustain an income to support his family, let alone make a profit out of the little agricultural land he was left with. Showing me the grounds of his former farm, where excavators had just finished levelling the terrain, he contemplated possible alternatives that could generate an income for him (see picture 03).

A likely option for him would be to search for cultivable land in a nearby wetland. Many of the people I interviewed during my research worked on fields in the wetlands that characterize the region's landscape. As I found out over the course of my stay in Uganda, most of them had faced a similar fate: they lost large parts of their land (or couldn't afford a sizeable *kibanja* in the first place), and were moving into the swamps to work. Wetlands are unattractive sites for real estate firms: the ground is moist; constructing a building requires a lot of labor and expensive materials. What's more, they are, at least in theory, protected by the government against exploitation and usually excluded from *mailo* tenure (Kalanzi 2015). This keeps them safe from investors, and renders them one of the few remaining land resources in the region.

From an ecological perspective, the land dynamics in the region then have implications that go beyond the social and socio-economic effects on the local population. The redistribution of land and the rising demand among the solvent middle class in Kampala drive the landless into wetlands, where they try to eke out an income. These income-generating activities, be they in the form of agricultural production or the mining of building materials, are a major encroachment into, and transformation of, these ecosystems. In order to understand these ecological changes, therefore, we have to consider processes such as the distribution of land. The colonial legacy with regard to land in central Uganda has had harsh effects on the local population, who are increasingly deprived of their access to land. In Lund & Boone's (2013:7) terminology, the *mailo* system could be best grasped as a user-rights tenure principle based on labor investment, considering the majority of the population don't own the land they occupy, but claim their rights based on its use. However, we now witness a shift to a market-based tenure principle, in which formers tenants become property holders –leaving them, however, with significantly fewer land resources.

The resulting agricultural uses of wetlands are probably only the beginning of further, more problematic social as well as ecological changes that are yet to come in the context of Kampala's growth. In between the city's hills, thousands of people are living in slums that developed in former wetland areas. During the heavy

November rains the local newspapers are often filled with reports about flooding of these neighborhoods, which can turn into serious health threats due to the poor hygiene and sanitation (see for example Mubangizi 2015; Mukisa and Butagira 2015). The informal settlements in the urban swamps are, however, the only place left for the city's landless poor (Vermeiren et al. 2012). With the ongoing, rapid urbanization of the area, the same will probably soon hold true for the farmers at Kampala's fringe.

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Spoiled Children

by Kaleo Sansaa

I have no intend in letting you go
I have your spirit, I love your spirit
Time has come and gone
Your essence has come to dawn upon me
And I love the conspiracy
When we rejoice together
Because we have gained some strength
Because we have rejuvenated our spirits
Because we have calmed down our ancestors
Because we have memories of our first rainy seasons
Memories of when we had all the reasons to be joyous
When we lived just across the graveyard
Not because we were cynical
But because we were brave enough to challenge the silence of the bushes
Behind which each ancestor hid from us
Because we were brave enough to keep our composure
When love abundantly spread in secret forests of trust
Because we were brave enough to be children

We traded our white Barbie dolls
For handmade babies
Made of precious soil, mud
Precious earth helped us mould abstract versions of our past bodies
Our imagined bodies
Our imagined boundaries
It's the rain that softened our material – brown soil
It's the rain that showed us how to perfectly mimic our skins, our textures,
Our madness and our love for each other

Today in this 21st-century drought
You do not respond anymore when I ask you
To make me a baby made
Out of mud
I can't resist asking:

"Is it because your body is abstract again –
And you no longer need moulded sculptures to remind you of your past?
Is it because just like abandoned ancestor hiding behind the bush
You too feel like an outcast?
Like a contrast to the living world?
Is it because when I look at you-
You are steady and no longer flexible,
No longer enchanted are your eyes
No longer in expectation of our season-
The rainy season?"

What if I told you that yes we have transformed
Yes it has been a century
And yes it took a drought to refresh our memories
And it's no surprise we can't handle the melancholy
In our hearts

In this diasporic dystopia
Who is to say? Who is to blame?
Who is to mould even one single body –
Abstract or factual?

Divinity has left us
Even though water is abundant now in every season
Why is that we lecture and never leave our houses blind?

Where's the future hidden if not in the raindrops?
Tell me honestly
When was the last time you witnessed rain
Not as a weather, not as a mood of the sky
But as a season?
As a statement of the gods
As long period of ancestral whispers
As a congregation, a gathering of the elders
Spreading and speaking their knowledge all at the same time
Just like the raindrops – making sounds like a symphony

Chaotic and full of wisdom and yet cold and silent in their being

When was the last time you lived across the graveyard
Because you were brave enough to contrast death
Brave enough to be a child
Brave enough to be an artist
Brave enough to be an ancient whisper
Brave enough to be a raindrop
Brave enough to compete with the rainbow
Brave enough to borrow more time
Time needed for the games you missed out on while you were moulding yourself
Using tender soil, violent creativity, unforgettable toys
Inexplicable void, holy noise

When did you expect to meet your maker
When you are the same one creator that moulded herself –
Abstract and factual

What to make if not love?
What to trust if not sound?
Who to blame if not mother?
What to eat if not soil?
What to know if not spoil from mother?

Spoiled by the gods with a never-ending story
They call it a 'childhood in the rainy season'
I call it the playground of married seasons
The Playground on which galaxies propose to each other and love each other
Where foreign galaxies trade eternity for a short season on earth
To live as sculptures made of mud, soil, softened earth

My past? – It was once ground
My past? – I was once ground
The ground you stepped on to elevate yourself from your past
Because you and your past? – You were once ground
We were once ground-ed
Until we were softened
Softened by patient drops of rain, drops of pain
Softened until soft enough to be moulded into babies – mud babies

Have you ever forgiven yourself for living – diasporic dystopia?
For leaving – diasporic dystopia ?
Have you ever let me live?
Freely, free of your guilt – diasporic me?
Have you ever trusted the German weather – diasporic mimicry?
Have you ever worn your Sunday school dress again – diasporic dysmorphia?
Have you ever trusted me again?
Has it ever since stopped raining from your eyes?
Such heavy rains, such tender flows as though to make up for your lost season

I'm here to tell you – diasporic future:

There's hope – even for your soul – lost and found in these words
In these words you can be saved, you can be redeemed:
Just put on your Sunday school dress and dance while you
Make it rain from your eyes
Don't call it crying though
It's the whispers of the ancestors, remember them?
The congregation and gathering of your elders?
Transform your face into a village
Your reflection in the mirror into the graveyard
And be brave enough to live across your graveyard
Be brave enough to contrast the death in your reflection

If your Sunday school dress doesn't fit any more
Be bold enough to remould your body,
Your imagined boundaries

The Years of Living Precariously – the "Rob" Phenomenon in Semarang

by Lukas Ley

Here, you have to reckon with water. You have to plan with it, think with it. Otherwise it can become your worst enemy, your nightmare, your nightly disaster. So you reckon with water, you observe the tide, how the river swells, you try to understand the water's behavior in the canal and the gutter. If it rises you try to take timely measures. You pump it out, you move family members' belongings out of harm's way. Water's altered consistence has consequences for your body. You can't drink the water. You prefer not to touch it. It stinks. In your city, the way you intimately know water has to do with the location of your neighbourhood. Your neighbourhood is at the receiving end of the city's drainage system. But you receive little help. The government's inaction, fragmentary interventions at best, leave you with no choice but to take matters into your own hand. On some days, the problem looks insurmountable. But you look to the future, you still have hope. The way you thoroughly know water also has to do with your plans for the future: you're familiar with the rhythms of the tide, the speed of land subsidence, you expect that the government will lift the streets and fix the riverbanks eventually. So you invest in the present, you outlive the next flood.

The drainage system of the Indonesian city of Semarang, capital of Central Java, is supposed to prevent flooding in the rainy season and channel waste water into the ocean. It never guaranteed full safety from floods, but it is able to absorb surplus water and often prevents dramatic overflow. That is, the system most reliably prevents flooding in the central districts, home to Semarang's municipal and provincial government offices, shopping malls, and hotels. Places like Kemijen or Tambak Lorok, densely inhabited neighbourhoods located in the north of Semarang, where the drainage system meets the ocean, struggle with flooding. In addition to seasonal floods, they are regularly visited by 'rob'. This term loosely connotes both the incoming tide and pools of flood water in streets and houses.

As the local poet Djawahir Muhammad put it in the famous poem "Semarang Surga Yang Hilang" (Semarang, A Lost Paradise), the city's expansion resulted in the destruction and subsequent suppression of a lush coastal swamp. In view of permanently flooded patches of land and houses, and residents' efforts to ward off water returning from the ground and canals, the swamp seems back with a vengeance. Poor residents are doubly disadvantaged: first, in the absence of reliable water infrastructure, the swamp has been turned into a toxic environment by industrial pollution and landfill. Second, the government's plans for addressing the "rob" problem require space for water retention, leading to the "clearing" of land. Many residents are threatened by eviction and may lose their ties with Semarang's coastal ecology, their social networks, and their livelihoods. They are forced to lead highly precarious lives between punitive government interventions and resurgences of poisonous water.

Note from the author: I have spent ten months in Semarang conducting ethnographic research in areas affected by regular flooding. While I lived in affected areas, I do not consider myself a flood victim. The use of the second person is a stylistic device meant to approximate and dramatize the experience of enduring recurrent flooding. I do not pretend to represent an indigenous perspective and acknowledge the ultimate impossibility of "knowing" how it feels to be a permanent resident of Semarang's coastal neighbourhoods.

Powerful Connections in Victim Voices

by Patricia J. Rettig

A flash flood raged through a constricted Colorado canyon one summer Saturday evening and effected the entire United States. Today, more than 40 years later, the voices of survivors and first responders evoke the terror of that dark night and the exhaustion of the recovery efforts.

> "The noise was the thing that was so impressive to me. Well, you can tell, of course, I know the river pretty well, and it's completely changed, and the big change is these huge rocks. And you could hear them at night, grinding down through there … with this roar that you just can't even believe. These giant rocks rolling by underneath the water. And, of course, towards the evening, why the trash settled down, and, oh, around two or three o'clock in the morning there weren't a lot of trees coming by; there was still an awful lot of water, but the noise was just really frightening." –Richard Huffsmith, Cedar Cove resident (http://hdl.handle.net/10217/76222)

More than eleven inches of rain falling in a matter of hours overwhelmed a modest mountain stream, changing—and taking—lives. On July 31, 1976, the state was on the eve of its centennial, and the country had been celebrating its bicentennial all summer. The Olympics boosted national pride and the celebratory mood.

In the Big Thompson Canyon, a steep, rocky stretch to the west of Loveland, a town 50 miles northwest of Denver, campers enjoyed a classic Colorado weekend and tourists drove to or from Estes Park, the town topping the canyon, and its main attraction, Rocky Mountain National Park. Canyon residents went about their lives, observing an early darkening due to low, heavy clouds, and the start of some rain. Residents in small communities like Glen Haven, Drake, and Cedar Cove would not be surprised by rainfall on a summer evening, but they took notice when it did not stop.

> "Yes, we could see the water as it came up higher and higher, and in fact, it looked like an ocean. And it built up to that volume so quickly, it was almost like one minute it was just rain, and then the next minute it was all this water, and then things started going down the river, like the first one was Ernie Conrad's green bus, brand-new, and some other cars, and some of them had their lights on and we didn't know whether the people were in them or not, and all sorts of things started coming down the river. And then I looked out, and there used to be a trailer house over there ... and it just sailed right across my yard, and went down, it took our well with it, and our propane tank, and it just disintegrated." –Dorothy Ferguson, Glen Haven resident (http://hdl.handle.net/10217/76215)

The rain showers that covered the upper canyon started around 6:30 in the evening and really got going in the next hour. Within two hours, the Loveland police received notification of dangerous road conditions in the canyon. By 9 p.m., multiple warnings of flash floods were issued, but with only one road through the canyon, evacuations faced limitations; the road followed the Big Thompson River's course. Neighbors began phoning each other to urge movement to higher ground, while police and emergency personnel did what little they could.

> "You could see the water and some of the debris splashing up on the highway. And we hadn't even completed our U-turn, and it sounded like a freight train coming. And it hit us. It's very hard to describe the terror one feels at that point, because I recall myself being in hysterics." –John McMaster, Loveland Ambulance Service (http://hdl.handle.net/10217/76229)

Panic and tragic scenes occurred along the length of the canyon, while at the mouth, people remained in disbelief about flash flood warnings since they had not witnessed any rain—until the wall of water arrived. During the darkest hours of the night, foundations were washed out from under buildings, and entire houses were washed away. Some cars were floated off of roads or driveways, while others were completely obliterated, discovered as mangled hunks of metal in the daylight. Though the worst of the rain ended overnight and the wall of debris-filled water spent its fury before reaching the plains below, rescue efforts took days, and recovery took years.

> "Really, at that point, there were, in the morgue, only two or three policemen, a couple of the coroners, and the rest of the people were essentially the Mental Health people. On observing the battered and unrecognizable condition of most of the remains, it became pretty darned apparent that identification was going to be a most important process in this" –James Dooney, Larimer County Mental Health Clinic director (http://hdl.handle.net/10217/76258)

Including the five people never found, the final death toll came to 144 men, women, and children. Only one third were local residents, the rest visiting from locations both within and beyond Colorado. No one had been prepared, as visitors never expected disaster to hit, and residents had not experienced such a flood for 25 years. Extending beyond local impact, the devastation touched Texas, Iowa, and Georgia, through both loss of human life and contributions to recovery. Through media coverage, the whole country paid attention.

The ongoing power of the fleeting storm and of the intense personal experience resides in the words of the survivors. The emotion emerges unmistakably in the recorded voices. Ordinary citizens who experienced an extraordinary, unexpected event shared their words, emotions, and stories at the invitation of an oral historian, David McComb (1980), a history professor at nearby Colorado State University. The voices, from very different perspectives, are among more than forty McComb captured in the aftermath of the Big Thompson flood, Colorado's worst natural disaster.

More than a standalone local history project, the voices McComb recorded add up to a vicarious experience for those not there. Reading or listening to these personal perspectives on a communal catastrophe today provides a method of time travel. No one desires a first-hand experience with a devastating flood or other natural disaster, yet it is a universally imminent risk. Mentally standing in someone else's waterlogged shoes, yard, or home shows us the impact of unpreparedness. The recordings humanize history, giving a voice to the past, taking listeners in the present to a particular event with timeless experiences.

Though floods are typically examined in terms of numerical data—rainfall, stream level rise, deaths, monetary losses—the human voice telling a narrative story best inspires true understanding and empathy. When oral historians such as McComb focus not on numerical or scientific data but rather on factual and contextual data through insightful eyewitness interviews, they can impart knowledge from various human perspectives across the entire event timeline. Better than the data collected and economic tally, superior even to after-

math photographs or instantaneous media coverage, human voices sharing stories convey what we would all want to avoid. We can learn from them, from the whole experience, how to better prepare and how to recover. The lessons connect each successive learning experience back to a time before.

For the future, scientists predict more frequent floods and other types of natural—and human-caused—disasters. These disasters expose society, laying life bare and showing the vulnerabilities of human-created systems and cultures in ways that everyday activity does not. After such events, some communities go back to normal, to status quo. Other communities change. When disasters cause change, they become historical events worthy of documentation and study. The Big Thompson flood had nationwide impact by improving disaster warnings and communications, recovery procedures, and local floodplain regulation (Gruntfest 1987).

Voices of flood victims hold power. Survivors share experiences unknown and unimaginable outside the devastation. First responders reveal the challenges—logistical, physical, and emotional—they encounter. These human voices connect us across time and space not only to those people and their specific flood experiences, but also to the knowledge of what could happen to us and our communities. When combined with media coverage and scientific study, amateur photographs and home movies, victim voices complete the historical reflection and retelling of disastrous events.

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Where Have the Rains Gone?
Fish, Mosquitos, and Water Management in Coastal Ecuador.

by Michael Vina

The south-central coast of Ecuador has always been subjected to both abrupt and gradual climatic variations. Rainfall that has recently become highly unpredictable, and moderate to prolonged droughts are part and parcel of people's daily worries. Coastal Ecuador from north to south presents a mosaic of habitats and ecosystems, ranging from lush, verdant landscapes to a mixture of dry tropical, humid, and cloud forests, to extremely arid environs as one nears the Peruvian border. Indeed, within a small pocket in the larger Manabi province, a micro-climatic regimen takes hold of the area between May and November, when strong onshore winds coupled with the presence of the Humboldt current produces perpetual gray skies and a persistent drizzle known as *garua*.

While fishers and farmers note the importance of heavy rainfall between December and May, the constant *garua* was cited as the most important weather phenomenon, helping to maintain soil humidity during the absence of heavy rains and providing much-needed relief from the relentless sun of the previous six months. Such is the anticipation for the *garua* that many locals express a deep satisfaction when they sense that the gray skies and light drizzle will begin to dominate the region. Decades ago, when Heriberto was just a child, he would run along the sandy streets, flailing his skinny arms in the air while screaming, *'llego la garua! Llego la garua!'* (the *garua* has arrived!). Such was his infatuation with the draping drizzle that it was not long before the rest of the community nicknamed him 'Garua'. These seasonal rhythms have been significantly altered where the once ubiquitous drizzle is no longer as present as it used to be, and heavy rainfall typical during the other half of the year has become sparse and sporadic. The reduced rainfall has limited the movements of organisms from the sea to the estuary and vice versa, restricting the combination of lifeforms that generate curiosity, excitement, and sustenance. Many locals partly attribute the unpredictable nature of the weather to the tug of war between El Niño and La Niña, two major climatic phenomena linked to wind patterns, oceanic currents, and fluctuating sea-surface temperatures that not only affect coastal Ecuadorian rainfall patterns, but also trigger droughts and floods across the globe.

Locals cite their experiences during the mega El Niño events of 1982 and 1998 as significant historical and ecological markers. The narratives that accompany these memories reveal the creativity and improvisation released in times of uncertainty fanned by increased climatic variability, but they also unveil the constant interplay between well-being, abundance, scarcity, death, and life. Floods spawned by El Niño cause much devastation but also inject life and vitality to soils, vegetation, mangroves, estuaries, fish, and crustaceans, in effect reshuffling the coastal landscape, causing disorder and order interchangeably (cf. Strang 2004:65).

In the small mangrove estuary bordering the town of Las Tunas and along the intertidal zone, water appears as stagnant puddles, interconnecting lagoons, tranquil ponds, and raging rivers which all in one way or the

other draw humans and nonhumans to share "sites of active engagement" (cf. Todd 2014:224). Fishers are captivated by the multiple uncanny forms that water and sediments can take, whether for sustenance, recreation, or mere contemplation. In addition, the movement of water generated by strong swells and tidal surges during El Niño creates a series of temporary lagoons near dry sections of river mouths and adjacent mangrove dunes, where locals have harvested fish, shrimp, and crabs, which they describe as "something that has always been done." Some lagoons hold only shrimp, while others contain shrimp and crabs, and yet many other larger bodies of water can include several fish species in addition to crabs and shrimp, a cornucopia of life forms partly generated by rainfall, sediments, and movement. Imagination and ecological knowledge direct engagement with different marine organisms, but imaginaries of the sea and estuary are also produced and reaffirmed through the spontaneity and perpetual "habits" (Kohn 2013:63) of fish and different water configurations. In this way, water affords the interweaving of imagination and ecological knowledge.

Both the *garua* and steady rainfall are also crucial for marine environs. It seems that certain fish that crave a combination of fresh and salt water also miss the rains, as fishers note that the brackish waters that emerged near the coast during months of sustained rain created favorable conditions for several fish species to feed and reproduce. Now fish such as snapper (*Lutjanus spp.*), snook (*Centropomus viridis*), and schools of mullet (*Mugil cephalus*) appear infrequently in both large numbers and large sizes. Of these fish, the chalaco (*Dormitator latifrons*), a mostly freshwater species that craves El Niño conditions and spends its time swimming back and forth in fresh and brackish waters, plays a vital role as a culinary delicacy and as emergency food (Ellen 2007:24) during intense El Niño events when the flow of market goods diminishes. While traversing the mangrove with Heriberto after a few days of spontaneous rain, he noted the voracious appetite of the chalaco as it snipped mosquitos and other flying insects from the surface of the water. It was then that he revealed that many households place chalacos in their water tanks and cisterns to consume the pesky mosquitos and their larvae.

Flooding rains cause a boom in mosquito populations but also increase the presence of chalaco in and around mangroves, estuaries, and intertidal zones. With this increase in chalaco, locals recognize that mosquito populations tend to taper off. Chalaco is a versatile fish, but even more versatile is the *Aedes aegypti* mosquito, responsible for spreading illnesses such as dengue, zika, malaria, and most recently chikungunya. This mosquito can thrive under near-drought conditions if it can find water in and around homes and stagnant puddles across the landscape. The cisterns used to manage water for household needs, including hygiene, cooking, washing clothes, and nourishing home gardens, provide an ideal repository for the mosquito's larvae.

El Niño replenishes aquifers, fills up rivers and lagoons, and supplies pipes with water allowing it to be pumped into people's homes. In 2012, the Ecuadorian army corps of engineers installed water pipe infrastructure and meters to provide and charge for running water delivered to settlements in this rural area. State representatives promised that clean water would be delivered daily. Besides this, the engineers recommended that people destroy their cisterns because running water would become the norm and the cisterns did nothing more than attract breeding mosquitos. However, people resisted these recommendations, knowing well that promises made by the state tend to be ephemeral. Water management has a long history in the area as Pre-Hispanic populations depended on cisterns and water catchments known as *albarradas* for thousands of years to help capture and store water from rainfall (Marcos 2003). At higher elevations in the cloud forests of Manabi, remnants of pre-Columbian cisterns that were used to accumulate drizzle for agricultural purposes can still be found by the attentive observer.

During an outbreak of chikungunya in 2015, the state mobilized a broad fumigation campaign, consisting of pickup trucks equipped with spraying technology, which clouded towns with noxious fumes for several hours. When the spray seeped into households, people's memories of chalacos and cisterns emerged. With it grew the desire for rainfall so that the estuary could come back to life, providing the much-needed presence of chalaco to consume and take home to be placed in cisterns. Not only were people reminiscing about the days of predictable rainfall, but they also vehemently criticized the state for failing to supply a steady stream of quality water. They juxtaposed the murky pipe water, often filled with worms, with the cleaner water they

used to fetch at the river's edge decades ago before the town river dried up and ceased to flow. Many locals were content that they had not destroyed their cisterns as the state provides running water only twice a week, leaving people reliant on traditional strategies to collect water or to negotiate prices with water tankers that use pumps to extract water from aquifers. Regardless of where the water comes from, it always ends up stored in a cistern, and, if the rains allow it, with hungry chalaco ready to help manage mosquito populations.

In this short piece, I have attempted to dispel the notion that coastal settlements solely consist of humans living among humans. I have illustrated that these communities instead consist of humans living and dwelling with a broad range of multispecies relations and climatic disruptions. Distinct kinds of water—brackish, salt, fresh—intervene in the lives of people, fish, mosquitos, and several state institutions. In our analyses, these socio-ecological relations must include humans alongside other living selves, but also the substances such as water that weave our lives together. The seascape's watery contours as well as its sneaky and slithery inhabitants offer rich empirical observations and broad imaginative possibilities (Harris 2015). Across these transitional landscape patches, relations forged between humans, waters, insects, fish, and infrastructure also provoke stories of environmental change as well as expose a plurality of knowledges that inform a dynamic assemblage of local strategies through which coastal communities grapple with uncertainty, risk, and vulnerability.

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Rediscovering Rivers in a Brazilian Megacity

by Douglas McRae

Virtual explorations of the rivers of São Paulo. Photo courtesy of Estudio Laborg.

What is a watershed, and which one do you live in? When you turn on the faucet, where does that water come from? When that water runs down the drain or when you flush the toilet, where does it go? And when you see a rivulet of rainwater flowing in a gutter or hear the rushing sound of a fast-moving torrent under a manhole cover, is it just liquid runoff—or is it a river? Such questions often go unasked in modern city life, though they become more pressing in moments of scarcity (periods of drought) as well as overabundance (flooding). In São Paulo, Brazil, a collaborative installation between researchers and designers has sought to reignite these questions in the minds of their fellow Paulistanos, imparting a vision of the city's hydrological reality through an exhibition combining history, geography, ecology, and visual art.

São Paulo, like many large urban areas in the Americas, has a complicated, if not downright destructive relationship with its waterways. While visions of its rivers as a place of leisure, sport, and fishing exist in living memory, industrialization and demographic expansion have taken their toll over the past century. Additionally, water-related crises have manifested in several forms within the broader metropolitan region. Drought,

pollution, inadequate sewage management, and clandestine residential development into protected environmental areas have exacerbated underlying issues with the city's water infrastructure. Many rivers and streams have disappeared under pavement, or became congested drainage canals.

Since 2010, two researchers of São Paulo's rivers, geographer Luiz de Campos and architect José Bueno have coordinated the Iniciativa Rios e Ruas (Rivers and Roads Initiative), raising awareness of the city's forgotten rivers through educational and community activities. In addition to leading walking tours in neighborhoods around the city seeking to uncover its forgotten courses of water, Campos and Bueno also organize educational sessions with students, and in general raise awareness regarding aquatic nature in the city. Another important aspect of their work has involved "reclamation" activities: physically uncovering and rejuvenating submerged headwater springs of forgotten or hidden rivers and streams. "Even the smallest improvement makes a big difference," Campos told me in an interview, and such improvements can lead to the revival the plant and animal life in neighborhoods otherwise enveloped in concrete and asphalt.

In 2015, the year of a critical drought in São Paulo, a small design firm called Estudio Laborg contacted Campos about the possibility of collaborating on an installation reflecting the vision of Rios e Ruas. Alexandre Gonçalves and Charles Oliveira, the lead designers at Estudio Laborg, had started working together creating live abstract visualizations to accompany sets at electronic music festivals. Later, they applied their visualization skills towards creating projection-mapping installations, projecting bright, and at times psychedelic, animation onto historic structures in São Paulo's downtown area. Interest in the city's hydrological history led them to conceptualize an interactive map. "We realized that it would be necessary not only to gather data and measurements," says Gonçalves on developing the installation, "but also to adopt a pedagogical approach and a methodology."

The Rios des.cobertos exhibit, at the SESC Vila Mariana, photo courtesy of Estudio Laborg

The eclectic influences of Laborg's previous projects are evident in the stunning result, entitled "Rios Des. cobertos" (Rivers Un.covered, or Dis.covered). The exhibit consists of a 3D mapping projection over a scaled topographical model of São Paulo's central urban nucleus. By selecting programs on a touch-screen control panel, visitors to the exhibit project different neon-bright "masks" from the ceiling over the topographical model's rugged surface, displaying an animated bird's eye view of the core of Brazil's largest city and its underlying network of rivers. Audio effects recreate the sounds of the traffic-filled expressways or the downpour of summer storms, while a television monitor provides text narration for the selected program.

The exhibit has been hosted for over a year within city's network of SESC community centers, most recently in the Pinheiros neighborhood, west of the city center. The area shares its name with the Pinheiros River nearby, itself a tributary of the Tietê River that divides the center and northern areas of the municipality of São Paulo. In the middle decades of the past century, planners subjected both rivers to rectification, in an effort to stem flooding, promote lucrative real-estate development, and, in the case of the Pinheiros, reverse the river's flow in order to supply water to hydroelectric reservoirs in the extreme south of the city. The Pinheiros and the segment of the Tietê that passes through the metropolitan region today are putrid, highly contaminated from receiving the bulk of the city's mostly untreated sewage. The exhibit argues generally that the city's inhabitants have forgotten how to coexist with rivers. Only by recognizing the current imbalance can the city imagine a different ecological future.

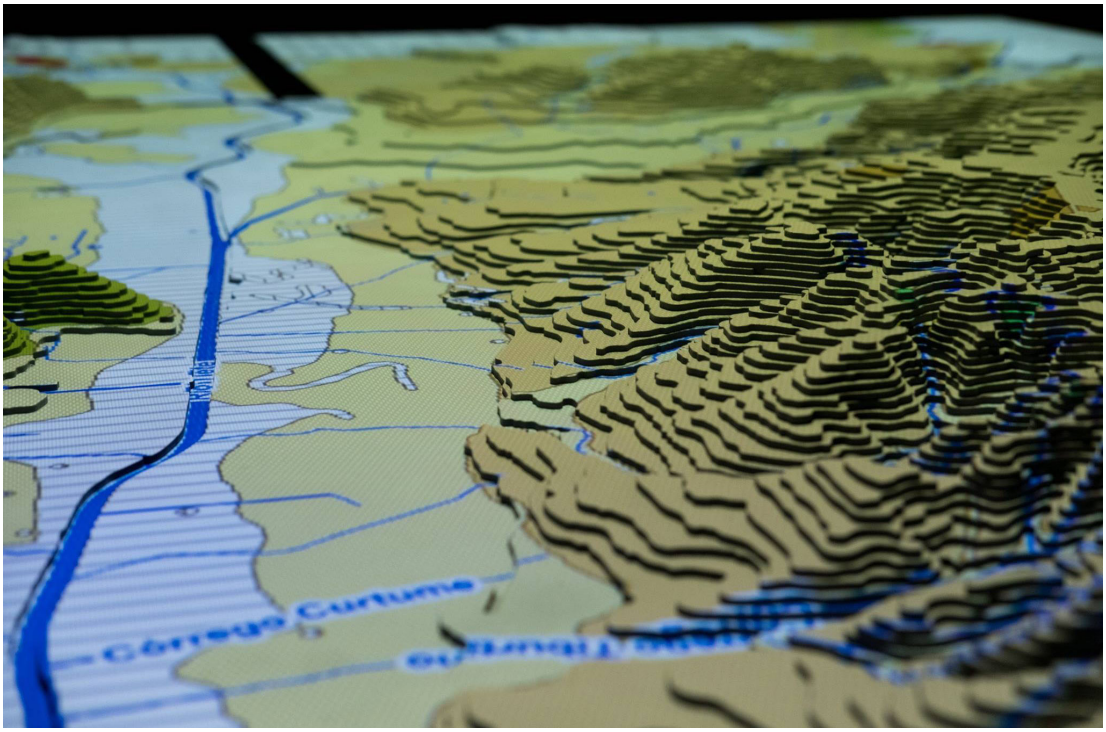
The city of São Paulo, which traces its origins to the mid-sixteenth century, expanded from its initial point on a fortified hilltop across the surrounding plateau that encompasses the present-day metropolitan region, positioned between the tropical Atlantic coast and the fertile backlands of the Paulista West. The exhibit's topographical model throws into sharp relief the contrasts in heights between different levels of the modern city, ranging between 700 and 820 meters above sea level. Anybody who walks any long distance in central São Paulo realizes that the city is full of steep inclines, yet on this map the "Espigão Central" or central spine, clearly emerges as the most salient geographical feature, jutting up like a miniature mountain range. Avenida Paulista, one of the city's central axes, runs along the Espigão for several kilometers, marking the divisions between the river valleys that crisscross the plateau. These expanses of valleys contain rivers, each one of which subsequently flows towards várzeas (lowlands or floodplains) that drain into one of the three most prominent rivers: the Tamanduateí, Pinheiros, or Tietê.

View of the Pinheiros River. Photo courtesy of the author

In designing their model, the designers ultimately recognized that they could only profile a segment of the municipality of São Paulo. “We had to choose one area of the city to represent,” says Gonçalves. “Depicting the entire municipality would impede the recognition of monuments and landmarks.” Additionally, part of the exhibit’s purpose was to emphasize the absence of rivers in the current cityscape—a reflection that they hoped the visiting public might take back to their own neighborhoods and cities.

In selecting a program on the control panel, visitors trigger an animation of this fluvial drainage in motion, illuminating the component parts that contribute to the Upper Tietê watershed, the region where the Tietê’s headwaters are located. The formerly sinuous curves of the Tietê and Pinheiros in particular vanish with the passage of time. Other rivers are highlighted: for example the Sapateiro River, which flows south of the Espigão into the Pinheiros, feeding the lakes in the city’s sprawling Ibirapuera Park. Another, the Verde River, is artificially split into two different courses, and occasionally causes massive floods in the lower areas of the Vila Madalena neighborhood. One can observe how the city developed at first bounded by these rivers, later growing over them and causing them to fade from both sight and mind. Campos often reminds audiences that Paulistanos are rarely more than 300 meters from the course of a river. “Most Paulistanos have a vision of a city with three or four rivers” Campos explains, when in fact, any stream of water above or below ground can signify a forgotten river.

Each layer of the topographical model was meticulously cut and stacked by Laborg designers, scaled in a way that generates a uniform projection while maintaining a realistic visual representation. Toggling between different overlays, one may simultaneously project micro-watersheds over modern neighborhoods, streets along hidden streams—many of which have been converted into underground channels yet still share the same name with the street or neighborhood that covers them. The process of building this model was not just a process of consulting maps and digital databases, though these were key. On their walking tours, Campos and Bueno seek out long-time residents of what were once suburban, even semi-rural areas earlier in the previous century. These informants tell stories about the rivers that once ran right outside their doorways. Bueno emphasized in a recent talk that often those who live beside rivers are the ones who best understand them. Working with historian Silvana Jeha, who wrote the exhibit’s texts, the team sought to re-signify the city’s geography, synthesizing the vast if diffuse aquatic memory of the city.



Detail view of the different levels of the model, each step representing five meters.
Photo courtesy of Estudio Laborg.

Urban history and memory are also inscribed on the landscape model of the exhibit. Visitors can trace the paths of the roads that radiated out from São Paulo, connecting the colonial town to the current Brazilian city. Bridges facilitated movement between agricultural communities on the outskirts of the nineteenth centuries, while fountains supplied water from a series of precarious tanks and reservoirs. Pointing out these landmarks, many of which no longer exist, reinforces the idea that something has been lost, as the city has become more alienated from its water sources.

That could change, and the creators of Rios Des.cobertos are optimistic. “Change will definitely take place” says Campos, “and our work with Laborg will help bring that change more quickly.” (The team is also developing a similar exposition to be circulated in towns located in the Middle Tietê watershed, downstream from São Paulo.) Visitors, from retirees to practicing civil engineers have provided further information after visiting the exhibit, while younger generations have recorded their amazement in the exhibit’s guestbook, displaying a new awareness of their city. Rios Des.cobertos challenges visitors to take another look at the cities we inhabit, not just to reflect wistfully on the vanishing of historical landscapes, but to imagine how a city might start to restore some semblance of balance with its rivers.

Douglas McRae is a PhD candidate in History at Georgetown University, where he also earned an MA in Latin American Studies. He was the recipient of a Fulbright study and research grant in 2017 to research the environmental and social history of urban water and sanitation services in São Paulo, Brazil.

Water Research and Teaching at the Department of Social and Cultural Anthropology, Goethe University Frankfurt

by Karlheinz Cless

Water is a renewable resource, which is universally and generously available. Its clean, safe and humanly usable form, however, is becoming increasingly scarce, which leads to the death of millions of people, mostly children and disadvantaged. This scarcity creates conflicts over usage, and raises questions about control and responsibility. It provokes debates about human rights and policies for management, and the role of communities, governments, global institutions and private investments.

We need to better understand usage patterns, attitudes and consciousness with regard to water, along with the roles played by education, the medical profession, religion, politics, legalities, and global organizations (governmental, charitable, commercial) in relation to water supply and consumption. This requires a multidisciplinary approach involving natural, political, social and human sciences, from both theoretical and political fields.

With this in mind Prof. Dr. Hans Peter Hahn and the Department of Social and Cultural Anthropology at the Goethe University in Frankfurt/Main researches and teaches around the subject of water as a life essential, its social dimensions, and as a material that connects people, cultures and their global complex entanglements (Hahn et al 2012, p.23ff).

Workshop “People at the Well”

The department inaugurated this research focus with a workshop titled “People at the Well. Kinds of Water and its Usages”, organized by Hans Peter Hahn, Department of Social and Cultural Anthropology, Goethe University Frankfurt, Jens Soentgen, Wissenschaftszentrum Umwelt, University Augsburg and Karlheinz Cless, also from the Frankfurt Department, on September 23 and 24, 2010. The event gathered a number of highly recognized experts from various disciplines, in particular, as a keynote speaker, Richard Wilk, Anthropologist from Indiana University, whose research focuses on the USA, West Africa and Belize, who worked for UNICEF and USAID, and who published “Bottled Water. The Pure Commodity in the Age of Branding” (Wilk, 2006). He explained how people in different cultures develop meanings around water, how water develops magic and how these meanings are used by the bottled water industry to build up the image and personality of their brands for marketing. He criticized how this magic is used to commercialize water and lead to waste and unnecessary environmental effects through transport and packaging. Further participants included, among others, Akhil Gupta, Professor of Anthropology at UCLA (University of California, Los Angeles), as well as Petra Döll, Professor of Hydrology at Goethe University Frankfurt. The latter is a contributor to the IPPC (Intergovernmental Panel on Climate Change) at the UN, and added her perspective on climate-change-related projections regarding the future supply of rain and water, including regional modeling.

Among the contributions were topics such as “Water Magic” (Wilk), “Water as Substance and Meaning” (Hahn), “Dew” as a particular form of water (Soentgen), and “Virtual Water and Water Footprints” as a phenomenon related to globalization (Meissner). Consumption, production and income generation in Ghana were covered by Eguavoen and Cless. The workshop topics also covered regional issues from Mumbai (Anand), Amazonia (Hilbert), and Tamil Nadu, India (Weiz).

Together they gave deep insights into religious meanings, art, agricultural usages, water management, politics, control, development, and commercialization. They covered rural and metropolitan contexts as well as water-rich and water-scarce regions. In this way the workshop also enabled the participants to recognize numerous regional and interdisciplinary connections.

While existing literature focused primarily on macro perspectives, i.e. water politics, the workshop and subsequent research seeks to better understand the differences between various kinds of water, their specific usages, and the resulting cultural meanings in culturally specific contexts. The micro perspective is a precondition in order to properly understand the rationality of particular water usages. How are different kinds of water and their qualities perceived? How are they differentiated and used? How are cultural differences influencing perceptions and usages? How are such differences influencing the usage of mineral water, tapwater, rainwater, seawater, water from wells, treated, boiled and recycled water?

Throughout the workshop, it became obvious that all life is deeply connected with water, and water is deeply connected with anthropology. We cannot think of water without thinking of the people, the ways in which they use water, their perceptions of water, and the resulting meanings associated with water. In our (Western) cultures we take water as a given, because we are used to turning on the tap and consuming it. We hardly think of its origin and value. We only start thinking about and becoming conscious of water when there is either too much or not enough.

As all living creatures consist predominantly of water, there is no life without water. At the same time, we recognize that water is never just H2O. It is a peculiar substance, which by itself is not even scientifically fully understood and still subject of research and debate. At the same time, it is always “enriched” with minerals, chemicals, bacteria and viruses, as well as with myths and religious meanings, and loaded with positive or negative additions or connotations. The contributions to the workshop were published in an edited volume (Hahn et al. 2012).

Over the years up until 2014, Karlheinz Cless concluded his own research in semi-arid regions of Ghana, India and China, finished his dissertation, and published the results in “Menschen am Brunnen. Ethnologische Perspektiven zum Umgang mit Wasser” (2014). It shows the cultural differences in the perception, usage and meanings of water, their complex entanglements, and the social relevance of habits and practices. It is also intended to contribute to the appreciation of water and offer ideas for future research.

Teaching Water Anthropology

Since 2013 the Department of Social and Cultural Anthropology offers a seminar on water under the heading “Water is life”. Since 2014 the department offers a seminar titled “Water: Control and Commercialization”. For the first time the format includes contributions from outside organizations. The content of this seminar ranges from commercialization, through bottled water and its industry, private vs. public water supply, to include projects of the German development organizations, control through dams, and consequences for the affected people. It benefits from contributions, participation and cooperations with ZEF, Bonn (https://www.zef.de/zefhome), DELTA, University of Cologne (http://www.delta.uni-koeln.de), Bundesamt für Gewässerkunde, Koblenz (German Federal Institute of Hydrology, http://www.bafg.de/EN), ISOE (Institut für Sozial-Ökologische Forschung, Frankfurt, http://www.isoe.de/), GIZ (Gesellschaft für Internationale Zusammenarbeit, https://www.giz.de), Hassia Mineralbrunnen (https://www.hassia.com) and Nestle Waters (http://www.nestle-waters.com).

One central theme underlying the seminar revolves around the process and consequences of water commercialization. Aggravated by climate change and environmental pollution, water in its humanly safe, clean and consumable form is becoming increasingly scarce. This leads to vulnerability, distress, and conflicts over availability, usage and control. With increasing scarcity, things and materials very generally increase in value and in terms of how much they are appreciated, and often become commodities with prices attached to them. This process is increasingly happening with regard water. Despite recognizing safe drinking water as a human right, it is unclear how this right can be broadly realized, given to people and achieved by everybody. How far do the responsibilities of governments, NGOs, companies and organizations reach towards attaining this goal, and where do the responsibilities of individuals, families and communities start? As a natural resource, water has to be free of charge or at least affordable for everybody. But what is a fair price or charge for the provision, cleaning, transport, investment in and maintenance of infrastructure to make water accessible?

The seminar recently taught at Goethe University has three fundamental objectives. First, it enables the students to gain a greater appreciation of water as a substance and material, which in turn is a precondition for its careful use and a contribution against its increasing commodification. Furthermore, it supports the participants in developing an understanding of the cultural dimensions of each and every activity in the water sector, and to learn that water usage and provision always has a cultural dimension beyond functionality. Finally, it also has an applied dimension for social and cultural anthropologists. The seminar is an attempt to open the minds of the students to various fields in which anthropological insight can be useful and applied beyond science and academia.

The students prepare each session through their own research about the subject based on literature, publications, information available online and empirical data. They present their findings for information and discussion. In this way the participants are prepared for the expert covering their subject in the following session.

Of particular interest and relevance are the sessions and discussions around dams and their cultural dimensions. Dam projects have typically been discussed in terms of their ecological, financial, control and economic benefit aspects. More recently, cultural aspects including loss of subsistence, territory, knowledge, and cultural and religious grounding have increasingly been recognized as equally relevant. In this field, it is vital to do better research, to understand and consider the cultural traumata of individuals, families and communities while they learn to adopt new lifestyles, professions, and ways of living in new environments. Another subject that is generally interesting for course participants has always been the handling of risk associated with water, floods, and high or low water levels in and around rivers or river deltas. It was very eye-opening to recognize the culturally different perceptions and handling of risks associated with floods and flood warnings, on both an individual and a community level. These insights in turn are relevant for programs planned and implemented in the context of international development projects.

A particular feature are cities and agglomerations and their particular challenges for water in society. The socio-ecological systems and dimensions are changing permanently and require historical research and considerations. Understanding infrastructure historically leads to better cultural understanding of religious and ritual forms as well as lifestyles. In this context the research of informal settlements and their infrastructural challenges leads to a better comprehension of communities, social interaction, and relations between authorities, bureaucracy and individuals.

A further instructive project that is discussed during our visit to ISOE (Institute of Socio Ecological Research) is CUVE Waters (http://www.cuvewaters.net), implemented in Namibia to help store, recycle and efficiently use (through drop irrigation) water in semi-arid conditions. In cooperation with the University of Darmstadt and local authorities, new technologies are implemented and used. Planning, cooperation, implementation and sustainability involve a deep understanding of local cultures, and experience shows that more ethno-

graphic research during project preparation and implementation could improve project results.

The sessions about myth, religion and art make students aware of the deep cultural meanings associated with water. They create awareness of our own superficial, technical and functional perception of water because of its universal and easy availability. It provokes a rethinking of our own habits and behavior related to the usage of water. It also leads to a rethinking of water planning recommendations.

The seminar participants' visits to the company offices of Hassia and Nestle take the participants in yet another investigative direction. Hassia, as a major local provider of bottled water, helps them to understand the source and the origin of mineral water, as well as issues such as quality control, production, and also the long history of selling water in clay pots. Nestle, often criticized for commercialization, exploitation of natural resources, and profiteering from a common good, point to their own dependence on the availability of safe drinking water for their business model.

The seminar is popular and enjoys favorable comments from its participants and the student council because of its practical aspects and its orientation beyond classic university and science fields, through which it offers professional perspectives.

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