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Deposited in DRO:

26 January 2017

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Krause, F. and Strang, V. (2016) 'Thinking relationships through water.', *Society natural resources.*, 29 (6). pp. 633-638.

Further information on publisher's website:

<https://doi.org/10.1080/08941920.2016.1151714>

Publisher's copyright statement:

This is an Accepted Manuscript of an article published by Taylor Francis Group in *Society Natural Resources* on 16/03/2016, available online at: <http://www.tandfonline.com/10.1080/08941920.2016.1151714>.

Additional information:

Special Issue: Thinking Relationships Through Water

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Thinking relationships through water: an introduction

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Introduction

With this collection, we would like to propose and illustrate a novel approach to the study of water in society. In a nutshell, we argue that we must consider water not just as the object of social relationships: water is more than a natural resource on which claims are made, to which meanings are attached, and over which political conflicts erupt. Instead, we can gain a much deeper understanding of the role of water for human social lives if we study how social and hydrological relationships are often intimately connected. Therefore, this collection is an argument for considering the hydrological and the social together, for ‘thinking relationships through water’.

Previous research on water in social and cultural life has suggested that the relationships between society and natural resources must be reconsidered (Bachelard 1983; Linton 2010; Strang 2004, 2009, 2010). Simultaneously an element, a flow, a means of transport, a life-sustaining substance and a life-threatening force, the subject as well as the object – and very often the very means – of social and cultural activity (Strang 2005; Helmreich 2011; Hahn et al 2012; Krause and Strang 2013), water inspires novel ways of thinking about key aspects of social relations, including exchange, circulation, power, community and knowledge. At the same time, watery relationships challenge common assumptions about nature and resources, questioning their conceptual and material boundedness and stability and furthering our understandings of the human and non-human aspects of their production (Strang 2006b; White 1996; cf. Ingold 2010).

Today, water is fully and explicitly on the research agenda of the social sciences and the humanities. From being considered largely a backdrop to social, political and cultural analysis, it has been established as a research field in its own right during the previous decade and a half. Special journal issues have been devoted to water in *Technology and Culture* (2008, Vol. 49, Iss. 3) the *Journal of Southern African Studies* (2008, Vol. 34, Iss. 4), *Environment and Planning A, Society and Space* (2011, Vol. 43, Iss. 10), *Social Studies of Science* (2012, Vol. 42, Iss. 4), *Worldviews* (2013, Vol. 17, Iss. 2), the *Annals of the Association of American Geographers* (2013, Vol. 103, Iss. 2) and *Geoforum* (2014, in press). The journal *Cultural Anthropology* has dedicated a “virtual issue” to water in 2010. Furthermore, a number of interdisciplinary journals, in which the humanities and social sciences figure prominently, have been founded to focus on water issues, including *Water Alternatives* (since 2008), *Water History* (since 2009) and *Wiley Interdisciplinary Reviews: Water* (since 2014).

The current popularity of water as a research object is due in part to a general awareness of a global water crises, where water seems ever too scarce (as in droughts and provision issues), destructive (as in erosion, floods and tsunamis) or polluted (by industrial, agricultural or domestic activities, or through salinization). As water is perceived as endangered and dangerous, researchers and commentators are also rediscovering and re-emphasising the profound implications of water in human

societies and cultures. Just as life in general is unthinkable without water, so is social and cultural life. The apparent urgency of water issues, however, must not distract us from the important methodological, epistemological and perhaps even ontological challenges that shape our research and the conclusions we draw. In what follows, we shall outline some key aspects of the approach this collection takes on studying water, by sketching what it means, where it comes from, how it is useful, and by giving an overview of how the different contributions ‘think relationships through water’.

What does ‘thinking relationships through water’ mean?

With this collection, we want illustrate an approach to, and highlight the benefits of, thinking social relationships through water. By this, we mean departing from treating water as an object of social and cultural production – something that is made through social relationships and imbued with meaning through cultural schemes – and reconsider water as an important co-constituent of relationships in society, and as a material that directly informs meaning in culture.

Water and relations

In most of the literature, water is considered “one of the most pressing environmental and resource concerns” (Tempelhoff et al 2009: 1) past and present, and a political challenge due to the “plurality of worldviews, ideologies, interests and discourse related to water” (Molle et al 2008: 3). Water is therefore habitually analysed as a contested resource, which is contested precisely because of its value for all interested parties and because of the differences in valuing between them: some stakeholders may conceive of this value in monetary terms per cubic metre, for others water is particularly valuable only at specific times of the year, yet others value water for spiritual reasons, for recreational purposes, or cherish particular water from particular sources, while being indifferent about other water from elsewhere. In this framework, water is usually treated as the object of valuation and contestation. It is a passive canvas onto which these values are conferred, and about which political struggles unfold.

Let us illustrate how our approach differs from such accounts, by referring to a number of recent contributions to this journal, which represent the tendency to approach water as object of, rather than participant in, relationality and meaning-making. Apkabio’s insightful study of water perceptions and management practices in Nigeria, for instance, discusses “the impact of local belief systems, which has become the basis of local relationships with water and watersheds over the years” (2011: 593-4) and which conflict with the state-imposed commodification of water. The conflict here is between two sets of social relationships – spiritual-based and commodity-based – with water being the object of those relationships. Akpabio summarises his contribution as an “example of the importance of culture and local institutions in transmitting meanings and perceptions about water, which, in turn, shape management practices adopted” (ibid: 593). While this is certainly true, it is simultaneously a limiting approach that assumes a distinction between culture, local institutions and management practices on the one hand, and water on the other. It may be more insightful to investigate how these meanings and practices come about together with and through water, rather than treating them separately.

Similarly, in Marks and Zadoroznyi’s (2005) detailed analysis of the emergence of trust in urban water reuse systems in Australia and North America, the authors focus on institutional and cultural factors, and relegate the water itself to the background. For instance, the “social becoming of trust model” (2005: 559) they employ links four fields including “historical culture of trust” and “characteristics of agency” through a number of arrows representing “social practice”, while a line labelled “the

environment” is located underneath the scheme, out of the reach of the social practice arrows. In their analysis, trust in water reuse systems is a matter of expectation and organisation which create images about reused water and its reliability – but it is not about the water itself, or people’s experience with it, through smells, residues or availability for example. While the authors do mention water users’ concerns about such issues, they seem to be excluded from the analysis of trust. In rightly arguing for a recognition of the importance of an “input from social scientists that can address the nontechnical, human aspects of resource management” (ibid: 557), Marks and Zadoroznyi delink the flows and characteristics of the water from the relationships and images involved in its delivery and use. With this collection, we want to show that a richer account of those “human aspects” can be gained by approaching the social and material relations of water management as mutually implicated in each other, rather than as separate domains.

It is common for accounts of water use and management to frame their analysis in terms of a “social” which includes only those political, economic and kin relations pertaining between humans; water only enters into these accounts afterwards, once these social relations have already been established. Often, this analytical framework is used even when the empirical material described speaks very much of the close connection between relevant social and hydrological relationships. For example, Oberkircher’s (2011) detailed description of strategies for coping with irrigation water scarcity in Uzbekistan abounds in examples where (social) relationships cannot be understood without simultaneously thinking in terms of water flows. Arguing for taking the heterogeneity of specific social arrangements, including land rights, into account when designing water management, Oberkircher mentions the differences of farmers whose fields are located upstream and downstream along the irrigation canal; the relationships between soil characteristics and water requirements; the relative altitude of a field to be irrigated; the availability of pumps, owned, leased or borrowed; and the connections with technocrats in the irrigation association. Relations with water and relations with other people seem to be closely related. For instance, patronage networks are facilitating water flows, and the relative location along the canal influences the sort and quantity of water available. Oberkircher (2011: 1275) explains that farmers use the same term – “no water” – to describe water shortage, a general decline in water availability, and the lack of technical and social water control. However, in spite of describing lots of instance of water relationality (e.g. 2011: 1281), Oberkircher’s conclusions are all “social”: “the adoption of water-saving technology is influenced by (1) the adequacy of the technology, which is shaped by the social construction processes during its development, and (2) the political context of agriculture and the space for agency and innovation this context grants” (2011: 1283). She thereby sidelines the role that water itself plays in the construction processes of technology development or the negotiation of the political context of Uzbek agriculture. It must be emphasised, however, that such omissions can hardly be blamed on these authors, but simply reflect standard social theory.

Water and meaning

Similar observations can be made about the standard treatment of the meaning of water. The description of the scope of *Wiley Interdisciplinary Reviews: Water*, for instance, summarises that the journal is interested, alongside a range of themes in hydrology and engineering, in “those interpretations that we, as a society, have brought to water through art, religion, history and which in turn shapes how we come to understand it”. Meaning, in this view, is something that people – or “society” – project unto a world that would be meaningless without this projection (see Ingold 2000 and Kohn 2013 for more detailed analyses of this problem). Such an approach to meaning has a long

pedigree in the humanities and social sciences, where culture is seen as a 'veil' between human beings and the 'real world' (e.g. White 1958, quoted in Sahlins 1976: 105). This approach implicates that this world has no meaning unless ascribed to it by human symbols, and that we can never know the world directly, unmediated by the symbolic order to which we are accustomed. The meaning of water is thus attached to a material substance to which humans have no direct access. Again, a few examples from scholarship recently published in this journal will illustrate this point. While these publications have made valuable contributions to understanding water in a human context, we argue that their analyses may productively be taken one step ahead by exploring more directly the role of people's relationships *with and through* water for the construction of meaning *of* water.

Singh (2006) describes how common pool water management in central Indian villages functions not primarily through the existence of particular institutions that modify the rational choices of individual water users, and argues that water management hinges on crucial symbolic dimensions that integrate it with the caste system and holy-profane distinctions. While this is a most valuable corrective to overly simplified frameworks of decision-making and water use, Singh analyses the formation of the meanings of water as fundamentally unrelated to the water itself. She describes people's "symbolic orientation" towards the environment as a perspective that "endows environmental features with some symbolic significance or meaning that is not actually an intrinsic quality of the physical feature itself but is imposed on it by the culture" (2006: 358). Culture, in this account, exists as a separate sphere of reasoning, which is applied to water, a resource basically meaningless before its endowment with symbols. As mentioned above, this is a common approach in social science and humanities research.

Parag and Roberts (2009) consider a lack of trust in tap water as the prime factor for increases in bottled water consumption, and propose ways of re-building this trust. They focus on the policies surrounding tap water provision, and argue that trust can be increased by enhancing transparency in problem analysis, decision making and enforcement of standards, as well as engaging impartial institutions for testing and certifying water quality. In their analysis, trust is created or weakened in a field of conflicting messages about water quality: "The public sphere is packed with shiny and tempting commercial messages from the bottled water industry, while no message supporting the public water systems comes from neither the providers nor the state. With no promotion of the public water systems, the industry's implicit message is the only one heard by the public and eventually perceived as true" (2009: 634). In concentrating on these messages, however, Parag and Roberts eclipse all the other factors in making or unmaking trust in tap water, including people's sensual experience of the water – how it smells and feels, for instance – as well as people's understandings of being connected through the mains system with other, and possibly polluting, users, or of the implications of service privatisation for public trust (see, e.g. Strang 2004).

In an analysis of water tanks in rural South India, Reyes-García and colleagues (2011) emphasise that these tanks are important assets not only for irrigated agriculture, but for a host of other uses as well, including drinking water provision for people and livestock, fisheries and washing clothes. The more socially and economically marginal groups – scheduled castes and landless villagers – mentioned an even larger variety of beneficial uses of the tanks than others. These insightful findings are coupled, however, with an analysis that separates people's stated uses of the tanks into economic, ecological and sociocultural functions. In spite of sophisticated statistical analysis of the stated uses of water tanks, these categories seem to be taken for granted, which results in a set of findings that reproduces the division. The authors conclude that their analysis "provides a local ranking of the importance of the economic, ecological, and social functions of water tanks, a ranking that suggests that local people give

more importance to the economic and ecological uses of water tanks than to its sociocultural functions” (Reyes-García et al 2011: 497). Whereas they feel they add to previous research about the integration of social, cultural, economic and material aspects of water tanks in South India (e.g. Mosse 1997), we argue here that such analytical division of different aspects of water use may constitute a step backwards. Separating out the sociocultural from the economic and ecological reifies these concepts as impervious spheres of life that can be listed and weighted against each other. Thinking relationships through water, however, works in a fundamentally different direction: it explores the connections and indeed mutually constitutive nature of the ecological, economic and sociocultural aspects of human life.

The current collection thus aims at contributing to a shift, or de-centring, of the standard approach to water, building both on a number of empirical cases and on recent theoretical advances in the humanities and social sciences. We foreground instances where water is not just the object, but part and parcel of social and political relationships, and we emphasise how water’s meanings are emergent from these relationships, rather than projected on external objects (cf. Strang 2005, 2006). This conception resonates with theoretical developments that have begun to reconsider the social as part of a wider set of relationships, which may be called ecological (Ingold 2000, Kohn 2013). Social relationships are thus more than merely the links between conscious, human actors, but include their relations with animals, places, things and materials. The non-human participants in these relationships, however, are not just passive receivers of human signification, but their properties and behaviours actively contribute to the formation and transformation of these relations.

Where does ‘thinking relationships through water’ come from?

The approach we advocate in this collection is informed not only by the specific empirical settings about which we write, but also bolstered by recent theoretical developments in the social sciences and humanities. One of these developments grew out of the dissatisfaction of growing numbers of anthropologists, historians and geographers among others with the analytical separation of material and sociocultural domains of life. This led to reconsiderations of the relationships between the social and biological (Ingold 1990, Ingold and Palsson 2013), the significance of material culture (Appadurai 1986, Ingold 2012, Strang in press), and the dynamics of landscape (Ingold 1993, Cronon 1995, Wylie 2007), among other fields. The bottom line of these developments is that material and social forms and functions are not fundamentally separate, but in fact grow and change in constant correspondence. The other development is marked by what has become famous as Actor Network Theory (Latour 2005), an approach that conceptualises the social sphere not as a given entity, but instead investigates how social relations are made and retained, through economic, legal or other means, and most often with the help of various material things. This method thereby explicitly included non-human actors into the analysis of social relations.

With a few notable exceptions (e.g. Blackbourn 2006, Strang 2004, Kortelainen 1999, White 1996), water has only been considered in these debates rather recently. Following Ingold’s (2007) comments about a similar absence of wind and rain in discussions of materiality, this is perhaps due to the particular properties of water. In contrast to stones, trees, or animals, water is not so easily construed as an object, i.e. an entity with which a human being (construed as another entity) can have a relation. On the other hand, this volatility of water and its ubiquity and centrality for all organic life also provides very productive vantage points for rethinking not only its social and cultural roles, but also the

meaning of relationality itself. In part because humans are literally partly composed of water, our social relationships – with fellow humans, other species and the places we inhabit – are also physically about water.

More recently, human relationships with water have received increasing attention in the humanities and social sciences. Orlove and Caton (2010), for example, have mapped how anthropological research is relevant for a whole range of contemporary water issues, as it can highlight the multiplicity of values and knowledge and the intricacies of governance and politics in a context where water studies habitually reduce water to a resource the value of which can be expressed in money. Johnston and Fiske (2014) have argued that a re-evaluation of this common reduction of water is direly necessary given the current regime's disastrous effects on "biocultural health". This sense of water crises has also inspired a range of other studies on contemporary water relations in and through governance, technology, urbanisation and commodification (e.g. Wagner 2013). Yet other studies have investigated the abundant metaphors by which watery characteristics are being used for describing social and cultural phenomena (Strang 2005, Morphy and Morphy 2006, Helmreich 2011, Féaux de la Croix 2011, Rockefeller 2012, Krause 2013). These works have shown, for instance, that such apparently self-evident terms as 'flow' and 'immersion' are in fact rather specific, and often simplifying, ways of talking and thinking about social and cultural life. They often hide as much as they reveal.

However, some of these works have also illustrated how the formation of watery metaphors is closely related to sensory experience of water flows, sounds and tastes. "The meanings encoded in [water] are not imposed from a distance, but emerge from an intimate interaction involving ingestion and expulsion, contact and immersion" (Strang 2004: 5). Watery metaphors and meanings are closely linked to human experience of its material qualities. This sensibility towards the materiality of water is crucial for the current collection, and currently widely discussed in the social sciences and humanities. Fontein, for instance, has argued that "the politics of water does not simply revolve around a need to deal with the scarcity of an essential 'natural' resource. The social and political dimensions of water can take many forms. Importantly, however, these other cultural, social and political aspects of water are finely interrelated with water's many material qualities" (2008: 749). This sensibility has opened up possibilities for new approaches to watershed management as "infrastructure" in the social as much as the material sense (Carse 2012), or to drinking water provision as conditioned by "pressure" that is simultaneously physical and political (Anand 2011). Highlighting that water is physically part of political processes, rather than just the object of these processes (Bakker 2012) has led some to suggest that it may be insightful to study human society as "water cultures" (Bijker 2012) or "water worlds" (Barnes and Alatout 2012, Orlove and Caton 2010, Hastrup 2009). Furthermore, anthropologists (e.g. Strang 2005, Mosse 2008) have noted that the study of water relationships, with their social and cultural specificity as well as their undeniable universality, creates very insightful comparative material. Finally, ethnographic accounts of water in specific contexts open up a useful conversation about the relative benefits of approaching water, on the one hand, as a ubiquitous (and generally universal) substance and, on the other, as a multiple and particular phenomenon, with real differences in quality (e.g. hardness, freshness, chlorine content, green, grey, or blue water, etc) and behaviour (flowing, sluggish, abundant, variable, chaotic, etc) (cf. Linton 2010).

With its invariable physical properties, its physiological functions, and its inherent relationality – manifest and socially organised in a wide variety of ways – water potentially provides the same basis for comparative analysis as kinship, food, land tenure or other centrepieces of anthropology as a cross-cultural discipline. (Mosse 2008: 939)

In this spirit, our collection treats ‘thinking relationships through water’ as a comparative approach that allows us to consider the materiality of social relations as well as the sociality of material relations. This also means that it opens new avenues for exploring the generation and use of water metaphors as simultaneously informed by and formative of relationships with water.

How is ‘thinking relationships through water’ useful?

What is the point of complicating established approaches to water in society and culture? What additional insight would be gained from thinking relationships through water, for instance in the ways outlined above regarding recent contributions to this journal? These questions can be answered from two different, but converging perspectives. The first one comes from scientific hydrology, where researchers have grappled with the limitations of studying and predicting water flows through an approach that excludes human action, or at best treats humans as external influences. Societal participation in the distribution of water, through drainage, irrigation, flood protection, hydroelectricity production, de- or re-forestation, and surface sealing, to name but the most obvious activities, are making hydrological models based solely on non-human dynamics increasingly obsolete. Therefore, hydrologists like Sivapalan and colleagues have begun to design a field they call “socio-hydrology” where “humans and their actions are considered part and parcel of water cycle dynamics, and the aim is to predict the dynamics of both” (2012: 1271), including their co-evolution and emergent qualities. This approach has been applied, for instance, to examine the relationship between flood risk and flood protection (Di Baldassarre et al 2013) by modelling a “human-flood system” for floodplain settlements. As the authors caution, however, such models are necessarily simplified, and possibly simplistic, neglecting both societal (for instance concerning vulnerability) and hydrological heterogeneities. Lane (2014) went further and argued that socio-hydrological modelling itself contributes to reshaping the world it models, as it often works towards making the world conform to the models, rather than vice versa. He reviewed key findings from science and technology studies, including the understanding that the particular practices involved in generating scientific knowledge critically shape the knowledge produced. And he concluded that socio-hydrology needs to be much more reflective, taking account of the distribution of hydrological knowledge between certified and non-certified experts, the performativity and improvisation in hydrological modelling, and the social processes involved in distilling a model from a messy world. In this account, thinking relationships through water is useful because it deconstructs boundaries between different kinds of knowledges and disciplines, it reminds us of the various socially and materially situated processes of knowing water and society, and it shows that hydrology and sociology are better thought together than each on their own.

A second perspective comes from the humanities and social sciences, where researchers are empirically exploring and theoretically developing the close links between social and hydrological relations the world over. Linton and Budds (in press), for instance, have argued that distilling a hydrologic cycle, i.e. a model of idealised water movement, out of the actually much more complicated reality of water circulation – and non-circulation – on earth is itself a political move. The assumption of the hydrologic cycle not only makes all human involvement with water appear like a deviation from an ideal state, but also makes some forms of water – especially the ‘blue’ and flowing kind – seem more desirable than others, for instance the ‘green’ or ‘brown’ water stored in plants or soil. Therefore, considering social and hydrological relations together, rather than as the adding together of two fundamentally different ways of relating, opens up a more critical and politically more sensitive approach. This applies to conventional politics as much as to a political sphere more widely construed,

for instance including non-human life as well. Chen and colleagues (2013) emphasised the latter in their plea for a “hydrological turn” in cultural theory:

If we think of politics as the practice of speaking and acting together on matters of common concern, then water may be the most exemplary of political substance; it is an intimately and continuously shared ‘matter’, in both senses of the term [, and may] shift our focus toward those multiple others – human and otherwise, part, present and future – with whom these watery matters are shared. (2013: 6)

In short, approaching the materiality and sociality of water as an integrated set of relationships not only reveals how social relations are implicated in water flows and vice versa, but also reconfigures the analytical and ethical space. The fact that we share water with – or withhold it from – other humans as well as other animals, plants, soils and watercourses, makes water into an excellent element to explore the political dimensions of its use and distribution, which are simultaneously ecological and social. Once we realise this, however, the social and the ecological are not the distinct spheres of reality any longer, which they have been portrayed as for too long; rather they emerge as two labels for the multifaceted, but basically continuous field of relationality. Thinking relationships through water helps to chart this field, and to avoid some of the analytical and political shortfalls of considering water and society as two distinct aspects of the world.

How does this special issue advance ‘thinking relationships through water’?

By analysing specific ethnographic contexts, the contributions show clearly how water flows are fashioned by a combination of topography, power relations, built infrastructure, institutional arrangements, property relations, money and market forces, ideologies, and social networks. What unites the papers in this volume is the unpacking of the particular social and cultural ways in which certain forms of water are made to flow, and how the properties of water itself are integral to this process.

O’Leary writes about the daily routines through which Delhi slum dwellers, in particular women, procure drinking water. These centre on waiting for a municipal water truck on the edge of the settlement, often for hours. Thinking through the metaphorical and material relations of affluence and stagnancy, O’Leary contrasts the rhetoric of upward mobility with the reality of immobility imposed by the idiosyncrasies of water supply. Through detailed descriptions of the slum dwellers’ waiting practices on the side of the road, O’Leary evokes the frustrations and coping mechanisms that people have developed, and illustrates how timing is a critical aspect of water flows and relations. Many slum dwellers experience their waiting for water as ‘insurmountable stagnation’, and the need to re-perform this stagnation daily as the denial of their opportunities for personal development and economic progress, as it conflicts with their religious schedules and employment prospects. O’Leary concludes that the present water delivery system turns people into infrastructure, obliging them to facilitate water movement that in better-off quarters is carried by pipes. Reduced to hydraulic infrastructure, these people are unable to realise other, more human goals.

In Senegal, where Gomez-Temesio describes the local population’s efforts to obtain and maintain a reliable drinking water source, the infrastructure in question is a borehole. Her research makes clear, however, that the water supply is not just a matter of constructing boreholes, but as much about

invoking social relations with powerful staff in the state bureaucracy. Water flows are maintained through continually making claims on so-called 'sons of the soil' who now work in central government. Gomez-Temesio's research participants maintain that these 'sons' are indebted to their home communities, without whose support they would not have reached the position they presently occupy. Therefore, they are obliged to return favours to their places of origin, such as the construction and maintenance of boreholes. Whereas water is officially provided by the Senegalese state to its citizens, in practice both the status of citizens and the workings of the state are mediated by these reciprocal relationships.

Drinking water in Kiribati has traditionally come from shallow wells on people's properties, writes Bønnelykke-Robertson. Digging and using a well was tantamount to asserting a claim to the land around. People made homes where well water was agreeable, and if they disliked a place, they blamed it on the water quality. Since the introduction of piped water supply in the late 1970s, this relationship has been upset: the water now comes from land that is kept free of human occupation, and is pumped – at irregular intervals – into people's homes in areas where well water is no longer deemed safe to drink. Government officials, development personnel and engineers point out that this system is the most sustainable for the atolls' fragile water resources, and the most hygienic for the population. They even tolerate that almost nobody pays for water provision. The more frustrated they are by the repeated acts of vandalism against the public water infrastructure, where parts of the pumps are stolen or burnt, and major pipelines destroyed. Bønnelykke-Robertson concludes that technologies like wells, pumps and pipes do not just allocate water, but embody fundamentally different moralities concerning the relationship between people, water and land.

Wilk reports on the rituals of water management in a traditional Valencian irrigation association. The constitution of this association and the structure of the weekly water court sessions are directly related to the flows of water through the canals it manages. The particular layout of the irrigation system simultaneously makes allies and enemies, uniting association members against external intrusions, but also internally pitting upstream and downstream irrigators against each other. The water court procedures are geared at arbitrating these conflicts, for instance by allocating a central role in conflict litigation to a judge from a canal that is not directly connected to the canals of the claimant and defendant. Despite numerous historical, as well as ongoing, attempts to dismantle the irrigation association, privatise the water and use the land for the growing city of Valencia, the court has been successful in preserving its centuries-old tradition and legal uniqueness. Even as it is turned into a tourism attraction and listed as UNESCO Cultural Heritage, the court continues to enact the hydrosocial relations of common property irrigation.

Investigating the concerns of floodplain residents in southwest England, Krause elucidates how the materialities of flood water and floodplain landscapes form an intrinsic part of the residents' social and political relations. People who have witnessed recent and historical flooding are especially critical of structural alterations of the landscape, including new housing estates, road embankments and other people's flood defences. The trope of 'building on the floodplain' condenses multiple anxieties about the effects of different flood-defence regimes upon each other, ideas about the 'right' kinds of flows, landscape appreciation and suburban sprawl. When floods do happen, floodplain residents are keen to distinguish different kinds of flood waters, depending on with whom and what the water has been in contact previously. The event of a flood, as much as the planning of flood risk management and the coping with past flooding, galvanises, reflects and creates relations that are simultaneously social and hydrological.

De Rijke, Munro and Melo Zurita investigate conflicts over water and coal seam gas in Australia's Great Artesian Basin. (TO BE COMPLETED)

Reinert writes about a large mining project in northern Norway. The project is in the planning stage, with one major point of contention being the likely contamination of the local fjord by the mine's tailings. Reinert illustrates that in the course of debates about water pollution, a number of watery metaphors are being rehearsed and put to different uses around the project. He explores three of them – ripples, cycles, and depths – and discusses what specific characteristics of water they highlight, and with which consequences for the configuration of the mining project. The 'ripple effect' that is said to multiply and redistribute economic benefits from the mining activities across the region is based on the image of a smooth water surface affected by a single impact of external origin. Mine champions use this to propagate the positive effects of the project, while opponents employ the same metaphor to invoke the dangers of spreading pollution. Opponents also refer to the hydrologic cycle to emphasise that – in spite of social, economic and cultural differences – people and ecosystems are connected through water, for better or for worse. The cycle metaphor becomes a tool for rallying wider support against the mine, and for countering claims about the containment of its negative impacts. Finally, the depth of the fjord where the mine tailings are meant to be disposed is also invoked as a figure to think with, for instance by mining planners interested in mapping and 'conquering' the 'new world' of the deep, where depth is sometimes made invisible, as a non-place for waste disposal, sometimes presented like an intricate reservoir of opportunity.

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