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Water, Modern and Multiple: Enriching the Idea of Water Through Enumeration Amidst Water Scarcity in Bengaluru

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ABSTRACT: Numeric abstractions relied upon by modern water management are reductive by design, but their political effects need not be reductionist, as an example from Bengaluru attests. Prompted by a water supply crisis that briefly shut down an IT corridor, one multinational corporation looked to a small environmental consultancy named Avaani, and its customised enumerative technologies – metering, tariff design, water audits and environmental balance ledgers – to mitigate water scarcity and its corresponding business interruptions. This occasioned the meeting and merging of two understandings of water: the modern water stripped of place and history that is so sought by the corporation in its daily water provisioning, and the water that is imbued with moral imperatives and local histories and which is tended by the non-profit organisation. As the enumerative idioms of Avaani soon proliferated throughout the corporation and its public outreach, the non-profit largely avoided the reduction, alienation and abstraction that characterises governmental enumeration; it did so in two ways: by using data collection as a 'spin-off' to curate and compound friendly encounters between people and water, and by embedding water accounting with moral considerations. This case shows how enumerative regimes, depending on their design and deployment, may contribute to a more multiple and multiply contextualised sense of water, even in situations of water scarcity where reductionist measurement tends to abound.

KEYWORDS: Enumeration, measurement, audit cultures, groundwater, water scarcity, NGO, development, Bengaluru, India

INTRODUCTION

In 2010, a disruption to the water supply of the IT corridor of the South Indian city of Chennai reverberated over 350 km away, in Bengaluru. It was the height of summer and, due to problems related to groundwater supply in Chennai's urban periphery, water tanker operations stopped. As the main mechanism for water service for the special economic zone (SEZ), this stoppage of tanker water delivery produced a situation where, in the middle of the day, businesses were shut down, hundreds of thousands of people were sent home, and many millions of dollars in revenue were lost by the firms that operated there.

The water scarcity that stopped businesses across Chennai's high-tech industry was not merely due to an ecological shortage of water, as it was often framed by those who spoke and reported on it; rather, it was brought about by conflicts between water tanker operators who harvest groundwater outside of the city (under arrangements of varying legality) and farmers who use that water for their livelihood and sustenance. For a period of two days in 2010, a group of farmers were successful in blocking the water tankers' normally daily circuits of water extraction and delivery to middle-class and elite clientele such as corporations in Chennai's IT corridor. This ongoing conflict has been exacerbated by the growing water demands and purchasing power of the tech industry and, as news cycles indicate, it re-emerges regularly. The event was just one of many signals of an impending regional water crisis; yet, it was also unremarkable. Rainfall in 2012 and the several years preceding it was within a normal range (Raj, 2019),

and the events of that summer were neither the first nor the last of their kind, both as an inter-class breaking point and in the sudden curtailing of a water service and market in Chennai and beyond.

At an Indian tech firm based in Bengaluru that I will refer to here as Pearl, corporate managers knew all too well that this was no isolated event, even though they sat in offices a state away. As the firm attended to the immediate need to source the water required to re-open its Chennai campus, the managerial implications of the shutdown loomed large; in 2015, Ramesh, one of Pearl's head sustainability managers, said to me that, "across [Pearl's] Indian campuses, half of the water comes from private sources. If you look at many campuses across India, you'll find that they're all in peripheral areas, so the water availability is from private sources of water". As he described the precarity of depending on un- and under-managed groundwater resources in areas of acute water stress across India, Ramesh indicated that this situation applied "especially in Bangalore", where Pearl has had to shut down several times due to water shortages and conflicts.

As in Chennai, the water situation of Bengaluru is commonly considered to be pressing, if not untenable (Govindarajan, 2017; BBC News, 2018; NITI Aayog, 2018; Goldman and Narayan, 2019; Jayaraman, 2019; Rajaram and Kumari, 2019). Modernist development regimes have led to the encroachment of most of Bengaluru's water bodies, a network of lakes and canals that was built over several centuries (Mathur and da Cunha, 2006; Grönwall, 2008; Unnikrishnana et al., 2017; Unnikrishnan et al., 2020). Without lakes to absorb the roughly 900 mm of rain that Bengaluru receives in two yearly monsoons, the city's water needs are met by the ever-contested sources of the Kaveri and Arkavathi Rivers and by an unregulated groundwater market that sells water extracted from the urban periphery and beyond. Private water tankers are ubiquitous throughout the city and deliver water to a greater share of Bengaluru's 11 million residents than does the public water utility (BUMP, 2016; Goldman and Narayan, 2019), whose service tends to prioritise upper- and middle-class neighbourhoods in the city's centre. Even though municipal water was recently made available to the many who live in the far-from-peripheral urban periphery, it is still difficult to access because of water connection procedures which are complicated by the often dubious legality of past land transfers (Ranganathan et al., 2009). For those who can afford to install their own borewell, many must dig for more than a kilometre to reach water and it is not uncommon for borewells to run dry.

It is in this context of water stress that I trace the interactions between Pearl, a multinational IT company, and Avaani, the non-profit environmental consultancy that Pearl hired to plan a more water-secure future and avoid future shutdowns. With its emphasis on "governing by numbers" (Rose, 1991; Shore and Wright, 2015) through instruments of calculation and quantification such as metering and water audits, Avaani came to shape not only internal water policies but also multiple Corporate Social Responsibility (CSR) projects at the corporation. The enumerative regimes enacted by Avaani throughout Pearl's internal and external CSR programmes helped effectively manage water in two distinct ways. The first of these was as the corporation desired: water as the 'modern water' of modernist water management, a water stripped of historical, geographical and sensorial particularities (Linton, 2010; Gandy, 2014; Parrinello et al., 2020; Spackman, 2020); second, Avaani used enumeration to pursue and occasionally realise a different sense of water than many at Pearl had in mind, one that slowly became sticky with local histories, sociocultural practices and new meanings.

Measurement and quantification are a cornerstone of modern governance (Anderson, 1983; Hacking, 1990; Scott, 1998) and a considerable amount of scholarship has been devoted to understanding their political effects. Even though counting various groups and their characteristics can be put towards almost limitless political ends (Urla, 1993), much work in anthropology and related fields has drawn attention to the destructive and sometimes nefarious effects of governmental enumeration and its disjuncture from local epistemologies and sociocultural forms, especially in colonial and neocolonial political projects (Gould, 1981; Appadurai, 1993; Davis, 1997; Gupta, 1998; Scott, 1998; Dirks, 2001; Mitchell and Snyder, 2003; Verma, 2011; Bhagat, 2013). Exercises of measurement and calculation have shaped and facilitated a number of historical processes, including the control of populations, the reification of categories such

as race, caste and dis/ability, the erasure of histories, and the breakdown of social and socionatural relationships; in some cases these have occurred through the measurement of water itself (Loftus, 2006; Fernandez, 2014; Jackson and Head, 2020; Spackman, 2020). In the case presented here, however, much of the opposite transpires. Abstraction and reductionism, though present in Avaani's enumerative work, did not wholly define its political effects; after all, the politics of measurement depends very much on who does the counting and according to what agendas (Scott, 1998; Brockington, 2017). By embedding moral logics into various numerical devices and by thoroughly socialising its water auditing processes, Avaani avoided a politics of reduction, alienation and abstraction even as the non-profit deployed inherently reductionist and abstracting numerical technologies. The case I present here shows how enumerative regimes, depending on how they are designed and deployed, can contribute to a more multiple, and multiply contextualised, sense of water even in contexts of water scarcity and crisis where reductionist measurement tends to reign supreme (Muehlmann, 2012; Cohen, 2016).

While this ethnography of a Bengaluru-based corporation's CSR is focused primarily on enumeration and its political effects, what is at stake is water itself – not only the politics of its material distribution and accumulation, but the very idea of it and its relational cohabitation with the persons (human and non-human), imaginaries, and worlds of its surroundings. Enumeration has played a key role in the production of what Jamie Linton (2010) has termed "modern water", a widely held sense of water that assumes the substance to be separate from society, uniform in its essence, and thus universally commensurable with other water(s). I proceed, however, with slightly adjusted terms, replacing the 'modern' of modern water (Linton, 2010, 2014) with 'modernist' here in order to avoid signifying any unintended connotations of 'modern'; after all, modernity implicitly depends on, and is contrasted against, the problematic categories of 'nonmodern' or 'premodern' (Chakrabarty, 2002: xiv). Because modern water is water severed from the social and historical through modernist epistemologies and representational forms (Scott-Bottoms, 2019) and the water that makes modernist development possible, I propose 'modernist water' as a suitable alternative.

The fixing of water's identity as distinctly modern – or as 'modernist', as I hereby refer to it – is based on the erasure of histories and cultural geographies that would otherwise particularise various and varied waters;¹ this fixing of water as modern is aided by regimes of measurement, cartography and statistics (Linton, 2010, 2014; Swyngedouw, 2013; Spackman, 2020). Such abstracting representational forms easily strip water's identity of all but its economic value and translate water into easily quantifiable, technical and asocial terms. This consolidation process, at once material and ontological, can be violent (Loftus, 2015); it has facilitated the alienation of Indigenous groups, the poor, and others from material resources and the terms of prevailing water policies and institutions (Loftus, 2006; Hayman et al., 2018; Jackson and Head, 2020). As the promises of modern water and its infrastructures fail, it is the very bodies they are meant to nourish which are harmed (Jackson and Head, 2020; Meehan et al., 2020; Radonic and Jacob, This Issue). Crises of water supply only exacerbate these processes, in part because of the significance of enumeration in emergency management strategies.

Measurement is presumed to be neutral and objective, merely a means to an accurate description of quantum; however, it is not always as veracious or straightforward as it may seem. Estimations of leakages from water infrastructures, for instance, are based on calculations that presume "reliable technologies of counting" such as metering, but the water meters of many, if not most, water connections in cities like Mumbai are broken (Anand, 2017: 166); similarly, water meters designed to dispense limited amounts of water can be grossly variable in their measurements and thus can risk depriving those serviced of much-needed water in austere regimes (Loftus, 2006). Measurement may also contain a range of intentional and unintentional distortions. Positionality, geopolitical realities, and material resources inform the ways water scientists access and interpret the large data sets and predictive models they work

¹ See, for instance, documentation by Hamlin (2000), Mehta (2005), Anand (2017) and Walsh (2018) on the ways in which multiple waters are obscured by modern water management.

with (Barnes, 2016). In an example from Pakistan, switching to a new measurement device used to estimate water volume and velocity resulted in enhanced annual revenue collections for a water bureaucracy, though the interpretations of the device's measurements could change depending on the water customer and bureaucrat in question (Hayat, 2018). But measurement of quantity (e.g. Anand, 2015) is merely the beginning, for in the course of water's management, water and the people who use it are also commonly subjected to tariff and pricing schedules (Ballester, 2015; Bresnihan, 2016; Ballester, 2019a), valuation and commensurability metrics (Seymour et al., 2011; Tadaki and Sinner, 2014; McElwee, 2017), and water in/security scales (Sterling et al., 2017; Young et al., 2019), to name a few.

Situations of environmental crisis such as the water scarcities of Bengaluru and Chennai beget exercises of exhaustive counting and auditing, which thereby render resources legible for allocation, coordination and governing in their entirety (Scott, 1998; Alatur, 2006; Verran, 2010; Fernandez, 2014). One sees this in the Colorado River Delta of Northern Mexico, where a century of US-led extractivism has decimated the region's ecology; there nearly everything is counted as species flutter in and out of endangered status and as the river is ever apportioned northward. This dire ecological situation is rooted in an historically inaccurate but nevertheless politically fixed calculation of the Colorado River's flow (Muehlmann, 2012). In situations of severe drought from California (Brooks, 2017) to Brazil (Cohen, 2016), officials report constantly on the status of water reserves while tinkering with any rules and incentives that may better ensure that citizens conserve and save water.

Water scarcity is not only carefully managed through measurement; it is also fundamentally an enumerative claim. Lyla Mehta reminds us of this in her ethnography based in the arid region of Kutch in north-western India, where people have long harvested sweet water through various methods. When policy makers classified many villages in Kutch as having "no source" of water, despite their established traditions of water harvesting, they generated political momentum for the building of a series of large dams and water diversions hundreds of kilometres away in the Narmada Valley; these plans went forward despite that infrastructure's displacement of hundreds of thousands from their land and livelihoods (Mehta, 2005). In one gesture, the "number narrative" (Brooks, 2017) of too many "no source" villages effectively negated prevailing water cultures in Kutch; it also abstracted the Narmada River from its identities as a sacred deity, provisioner and meaning-infused waterscape. The river was thereby transformed into merely modernist water, that otherwise commonplace, universally indistinct resource of Linton's formulation.

Crisis and enumeration are entwined in other ways as well. In Mumbai, water managers mobilise discourses of water scarcity to justify increasing appropriations of water from further outside of the city; this only deepens Mumbai's role in the worsening water scarcity in those places. Alarms of scarcity are advanced through statistical representations of water that suggest tremendous chronic water deficit, but these numbers occlude other plentiful water sources in the city and even inflate assessments of population and per capita water demand. These are number-based performances of scarcity that underwrite expanding water allocations for Mumbai and generate widespread habits of water saving even as, behind the scenes, water managers largely remain unconcerned about the amount of water available for provisioning (Anand, 2017). Water crises, whether based on material shortage or discourse (on 'crisis talk', see Katz, 2011), prompts the deployment of enumerative regimes which not only facilitate the sharing of a sparse resource but may also further entrench abstracted, modernist water and the sets of relations it has materialised (e.g. privileged-use categories, people as mere water consumers), as sheer quantity becomes water's foremost virtue and as particular uses of water are limited or are suspended altogether.

But what if embracing water's multivalence and sociality were encouraged amidst the many enumerative regimes enacted to manage water scarcity? Exploring this in Peru, as global climate change alters water regimes there, Astrid Stensrud has shown how villagers and an irrigation bureaucracy alike engage in ritualised acts of gift exchange and worship with a glacier, arguing that "[w]ater can be both

countable units of litres per second and a living substance offered by a mountain being" (Stensrud, 2016: 78). As shifting weather patterns in the Andean highlands have increased glacial melt, dislodged agricultural seasons and dried springs, many anticipate a future acute water crisis; yet, a water governance that makes room for multiple and multivalent waters has emerged there. Here, I turn to south-eastern Bengaluru, where running out of water is a problem that bridges divisions in socioeconomic status; I examine, below, how the pursuit of water's multiplicity and heterogeneity is not incompatible with enumeration and can be a response to water scarcity as it unfolds.

It is important to remember that even as they reduce and abstract, numerical regimes do not necessarily resonate, mean, or motivate similarly; this holds even if they are rooted in parallel forms as sequences, sets, scales, formulae, algorithms, accounting registers or audits (Guyer et al., 2010). Audits can be just as vitalising as they can be destructive and obstructive (Strathern, 2000: 14), and the coupling of calculation with a numerate citizenry is a crucial part of democracy (Appadurai, 2012) as both a mentality and technology of governing (Rose, 1991: 673). In the creation of a national Australian water market, large data sets categorise water into parts that can be traded or bought; 'dam water bodies', for instance, are brought into commensurability with 'regulated river flows' and 'weir pools'. Here, number certainly abstracts various waters and reduces them to economic goods; numerical data, however, also merges with water itself, with numbers not only representing water symbolically but also acting as icons – signs that resemble what they represent – by literally constituting the water market (Verran, 2010). Number is, or can be, an 'inventive frontier'; it is inventive and generative beyond what many prevailing social theories can account for. It is capable of rousing passions, reconfiguring imaginations, and containing moral reminders (Guyer et al., 2010: 38). Numbers are often used to 'think through' water problems in places like California, where people compress complex relations between people, places, things and practices into number-based stories; these "number narratives", however, may describe relations of abundance just as easily as of scarcity (Brooks, 2017). Scarcity, too, prompts the creation of a strange enumerative rhetorical form, the 'countdown' (to scarcity or to extinction), which can enhance the value of something as it is counted down to scarcity, but often simultaneously further commodifies and objectifies it as well (Muehlmann, 2012).

As these studies suggest, enumeration is capable of abstraction but also of much more. In the case presented here, enumeration does not strip water of its identities nor does it obscure or collapse its social relations, as seen in other research (Loftus, 2006; Linton, 2010; Fernandez, 2014; Tadaki and Sinner, 2014; Jackson and Head, 2020). Conversely, enumeration plays a key role in promoting an enriched, multivalent and socialised sense of water. Due largely to how it is deployed, and by whom, enumeration bears the capacity to not only abstract that which it represents but also to embed moral obligations and calculations, exert a variety of charismatic influences on human belief and behaviour, and drive an accumulation of vitalising meaning- and memory-making as it facilitates direct engagements between people and water, as this case from Bengaluru attests.

TWO WATERS MEET

Sarjapur Road is one terrain in which Bengaluru's rapid growth and increasing water scarcity combine to produce a highly uncertain future. Sarjapur Road is lined with the spacious gated campuses of IT companies and high-rise gated apartment complexes. During most of the 20th century, this area was nestled well into the countryside, including the sleepy but prosperous Bellandur. In those days, Bellandur was an agrarian community that hosted an active silk and muslin industry; in 2000, however, the Karnataka state government identified Sarjapur Road in Bellandur as a new site for an IT corridor. Within five years, residents of Bellandur reported seeing weekly ground-breaking ceremonies for new IT firms (Iype, 2005). Between the 2001 and 2011 censuses, Bellandur's population more than tripled and it was soon subsumed spatially and politically by growing tech firms (Goldman, 2011). These changes in land use and property acquisition pushed many villagers to abandon their livelihoods, their livestock, their

land and other agricultural assets (such as water); as a result, many were left without a stable vocation or income. In 2007, Bellandur, along with many other outlying villages, was folded into Bengaluru's municipal governance regime as 'Greater Bangalore'; Greater Bangalore, however, was not immediately connected to the municipal water infrastructure, and Bellandur and Sarjapur Road (areas of acute and unregulated groundwater depletion) were still unconnected at the time of this research. Its residents remain left out of the key components of municipal governance, even as the area continues to be the chosen site for up-and-coming tech firms.

With two IT parks of tens of thousands of employees each in Sarjapura, Pearl is one of the thirstier inhabitants of the area. Water is essential to the company's daily work and must be provisioned for its bathrooms, kitchens, canteens and recreation facilities, and for the extensive landscaping at each location. It is also from Sarjapura that the company coordinates the water provisioning for more than 100,000 workers across hundreds of offices around the world, including nearly 50 in India alone.

But Pearl has long sought to position itself as a leader in corporate responsibility, claiming in its annual reports that "corporations are socio-economic citizens" who have the ability and, more importantly, the responsibility to impactfully "create a just, equitable and humane society". Water is thus managed according to core values of sustainability and efficiency. Aggressive policies and fixtures for water recycling have been retrofitted across many of its campuses, enabling the company to provision approximately 40% of its own water across locations. Pearl, of course, benefits from lowering its water costs and learning how to provision water in water-stressed areas, especially since water scarcity characterises most of its locations. Pearl manages some aspects of its sprawling corporate responsibility agenda holistically as one aspect of its CSR approach, stating that "not everything that counts can be counted"; water, however, is certainly one thing that is fervently counted by the firm.

Water management within Pearl upholds an understanding of water that makes it commensurable, whether it comes from water tankers or borewells and whether it is in Bengaluru or in Belgium. Pearl's claims to sustainability depend on collapsing the many waters used by Pearl's employees globally, into a total quantum as expressed in exchangeable units across time and space; salient categories do remain, however, such as recycled vs. recharged water or private vs. municipal water. Pearl's annual sustainability reports also often bifurcate between abstracting and particularising diverse waters, such as a single lake that is restored as a part of Pearl's CSR work or the inspirational images of ancient water infrastructures that are scattered throughout one annual report's design. These diverse waters as they are depicted in Pearl's CSR documents, however, come and go with each reporting cycle; they rarely refer to the waters that quench the corporation's campuses or characterise its risk assessments, which are described in abstract, global language. Risks to the continuity of their operations ultimately drive the corporation's concerns, rendering water primarily an economic good whose costs are to be minded. In this way, Pearl relies on an abstract, modernist sense of water even as the corporation retains space for water's multiplicity and multivalence.

After the shutdown of its Chennai campus, Pearl confronted the risks of water scarcity; at that point, they sought the advice of Avaani, a Bengaluru-based non-profit known for its work on rainwater harvesting and its creative approaches to urban sustainability. This overture to Avaani occasioned the meeting of two conceptions of water. Unlike Pearl, Avaani is small and agile; its few employees and volunteers work on projects at various locations in Bengaluru, rather than in a central office. They are comprised of environmental scientists and ex-tech workers who speak the various languages relevant within Bengaluru. Avaani is committed to achieving ecological sustainability in discrete urban conglomerations such as single homes, corporate campuses, and residential layouts. I often got the sense from Avaani's team members that, for them, water was more than just an interchangeable resource to be effectively managed as it was shuffled to thirsty human mouths and settlements. After meeting Avaani's founder, Viraj, in 2011, for example, I asked him to reflect on his broader relationship to water. His response inserted a degree of enchantment into the economic pragmatism that normally characterises the idea of water within modernist water management:

Viraj: For me, I have to find romance in the work that I do. See, I'm a civil engineer by training or I work on [water] finance. (...). But this [water] is the thing that actually makes life possible on Earth. The only reason we have life on this planet and not on any other ones is water. Two atoms of hydrogen and one of oxygen, could there be anything more glorious than that? That it exists in all three forms, solid, liquid, and gaseous state in nature. (...). There is something remarkable about this element. (...). I have a small collection of water from rivers, from rivers of the world. For each river I go to, I have a bottle... It's sort of an obsession.

LV: What do you think when you look at those bottles?

V: I look at it and say, "Hey, this is miraculous stuff". Over where all it's been, it's the same... To drink a glass of water, maybe Julius Caesar had drunk it too. So, there's history in the water, it's all going around. There is a continuity to it, there's a spread [cross-cultural relevance] to it, and there's a religion to it. (...). And what better thing, that the sun heats it up in the ocean, it then becomes clouds and the winds bring it 1000 km, 2000 km and then it pours as rain, and life springs up on Earth. You know, the great distillation of nature, which is working at forces which are megatons of water. It's amazing. Especially if you've been in North India where I've grown up as a child, we would look up for the rains. The summer would be fiercely hot with lots of wind and sun, so at the first rain, you would find the whole community outside on the roads. Everybody, adults, children, everybody would be there, and then the water would fall, the rain would fall, and that would be your association with rains, and it would be fantastic. (...). So, I think there is a magic about water. As a person, I feel the magic. So every day when I bring down rainwater to drink it, which I do every day, I think, "You know, I am drinking the Indian Ocean". On a daily basis.

Viraj works throughout the lattice of contemporary water governance; he is an advisor to the Bangalore Water Supply and Sewerage Board and several Bengaluru-based philanthropic organisations; he writes a weekly column on water for a nationally distributed newspaper; he runs his own non-profit, Avaani, which specialises in designing and installing rainwater harvesting structures and also works on wastewater recycling and lake restoration; he also has participated in planning India's national water policy and regularly presents at international water conferences. As his words suggest, deep participation in modernist water management does not necessarily debase water from its many dimensions of meaning and value (see also Reuss, 2008). Water, as Viraj said to me during the same interview, can simultaneously be sacred, culturally specific and universally commodified. During our conversation, Viraj advocated for 24/7 universal access to water and even water privatisation; but he also described journeys to 2400-year-old functioning wells and talked about being forever changed by many of the encounters he has had with water or with people as they related to water; these narratives portray a complex understanding of water that allowed for the simultaneity of multiple infrastructural, economic and cultural paradigms. Viraj disrupts the binary categories through which modernist water is described; he shows that water can be both 'water', or H₂O, (abstracted as a resource and commodity) and 'waters', recognized and valued for its geographical, cultural, historical, and chemical particularities.

This multivalent sense of water came out regularly in Avaani's work. Their presentation slides were often filled with images found in archival sources. As one project took them to map all of the wells and borewells in one region of Bengaluru, Avaani amassed numerous stories about, for instance, the locations of spirits that haunted a particular watery place or seers warning a well owner to be generous with his water lest he be cursed. Even as they compiled the information necessary to represent water in highly abstract cartographic forms, Avaani's staff and volunteers did not discard the water stories they came across, but rather documented them and shared them with others living in the area.

These meanings of water, even so, are not central to Avaani's purpose of achieving water sustainability in the city, a goal that frequently leads the organisation to know and represent water numerically. In this way, they are not so different from Pearl; as its interactions with Pearl show, however, rather than stripping water of its histories, sociocultural renderings, and ascribed meanings and virtues, quantification – as Avaani pursued it – could instead draw out the sociocultural relationality of water. Measurement, after all, is not only descriptive; it is also creative (Brockington, 2017).

EXTENDING MODERNIST WATER

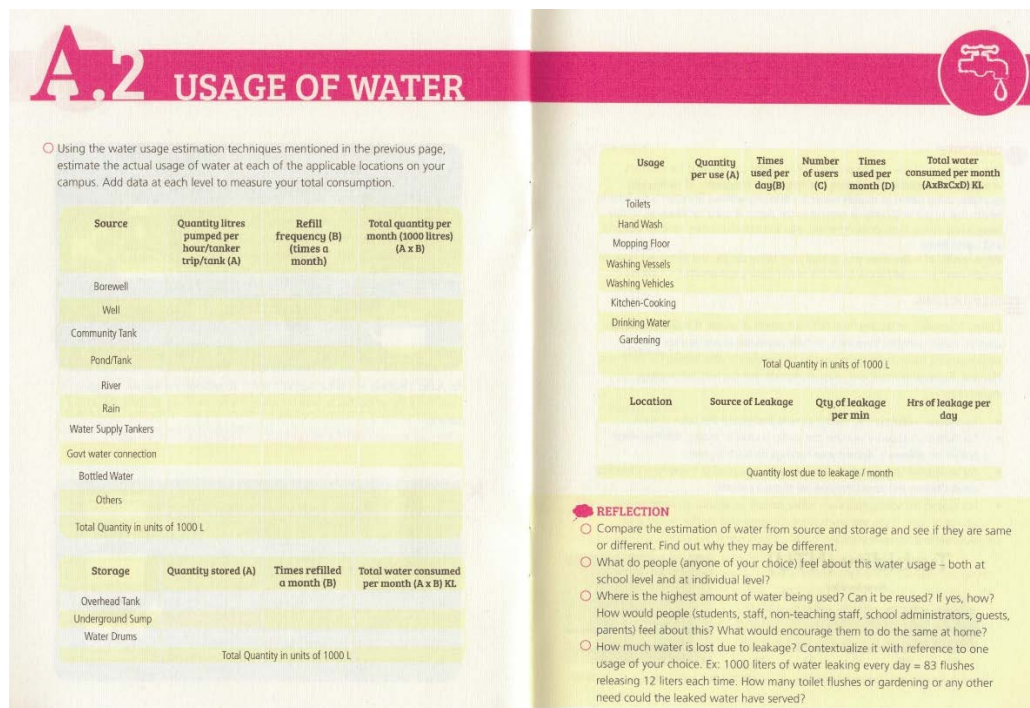
Following Pearl's incapacitating water shortage in Chennai, a water audit mediated by Avaani was conducted. The water audit and the communication process that accompanied it generated several ideas, foremost among them was a need to go "beyond the fence" of the corporation. The audit clearly showed that the company's extensive water saving and recycling, such as rainwater storage tanks that match the large surface area of its massive compounds with equal capacity for water storage, were not enough to achieve sovereignty from the water tanker market and its problematic politics.

Reterritorialising Pearl's ideas of water sustainability and responsibility from the domains of its buildings and campuses to the larger community – one defined by a shared aquifer – inserted new moral valences into the waterscape for the corporation. It suggested that water levels depend on *everyone's* water extractions and recharges and that any water taken was water that was needed by someone else nearby. As Ramesh put it, "[Y]ou cannot restrict yourself to work just within the fence (...). You may do a lot of recycling, you may do a lot of reducing the flow or the footprint of the campus, but your source is from the community (...). Groundwater is a community resource". Similarly, in the words of Avaani's founder at a public summit, "You can do all of the rainwater harvesting you want, you can do all of the [water] recycling you want, but if you're dependent on groundwater and tanker water, it is perhaps depriving others, villagers, of a water source, to some extent". These discourses of going "outside of the fence" effectively reframed the aquifer and its waters as distinctly social; it triggered both an awareness of, and responsibility to, those nearby, thereby enlarging geographical and social bounds of Pearl's sense of water responsibility to encompass not only water provisioning on their campuses but also the social implications of withdrawing from a community-shared resource.

Pearl soon began to restructure multiple CSR programmes according to Avaani's water audit, thus proliferating Avaani's understandings of water and the audit exercise as a persuasive form productive of specific meanings. Pearl soon designated the water audit as the basis for its annual sustainability education programme with over 500 schools in India. Held annually, the programme enlists students from Class 4 and above to complete a project on water. For Pearl to make the water audit central to their national educational programme shows the great value the audit held for Pearl, not just internally; having undergone the original corporate audit themselves, they asked Avaani to translate it into a broader educational exercise for the firm's CSR programme. As with the initial corporate water audit, in the educational programme designed by Avaani, quantifying water is set as the primary task but is simultaneously imbued with additional moral and social considerations.

The instructional materials for the annual school project that was authored by Avaani lead students and teachers through a highly technical accounting of water on their school's campus (see Figure 1). They are asked to address several questions, including: What are its sources and points of discharge? Is rainwater harvested? How much water is used across the campus and for what purposes? Students are also required to complete two hands-on exercises designed to give them practice in measuring, purifying, or saving and recycling water. Finally, students are required to complete a series of essays under the theme of 'Opening the World of Water' wherein they are asked to consider water in terms of all social, livelihood, and business activities; in relation to non-human entities and beings; over a global scale; as it relates to inequality; and over time.

Figure 1. In Pearl’s education programme, students compile a thorough ledger of water use in their school.



Source: Activity Book, Pearl Environmental Education Programme

The water of Pearl and Avaani’s school project is largely modernist water. It is known first through the overall measurement and categorisation of water at its sources, sites of use, and outflows, including leaks. The first portion of the assignment, which instructs students to map and measure the full 'water trail' of their school campus, follows a favoured formula of modernist water in that it presents water first in terms of quantity and then quality. This section is filled with instructions and methods for measuring water, classifying it into various use categories, testing its quality, and estimating the school’s rainwater harvesting potential. Aiming to produce a monthly summary of water use and leakage, the assignment guides students through demarcating the amount of water used or lost per fixture, activity, day and person (by assessing the number of people who use a given fixture or water source and how many times they use it per day). It also provides the calculations required to extrapolate these values over longer time periods. Based on these many values and calculations, the project thoroughly trains students to create totalising abstractions of water in the form of maps, ledgers, and summary reports.

The assignment is also framed using that double concept so linked with modernist water: crisis. In its first pages, the project instruction booklet emphasises the importance of water through establishing its scarcity. Images that take up half of each page cast water as scarce and unpredictable. One double image depicts the Ural Sea, once a seemingly large, deep blue lake surrounded by vegetation and now only a series of very small pools of water surrounded by brown desert; no dates are given for either image of the lake (the caption reads only "Ural Sea over the years"), so one can only presume what has happened by the positioning of the images – the disappearance of a sea. The text then follows the major points of a national government planning document that identifies water as increasingly scarce, echoing that the "potential to increase water supply is limited; key sources of water are changing from what it was historically (...) [and] water tables are falling across the country". Water is further described as contaminated, erratic, and a source of human conflict. Framing water in these ways abstracts water from

its socio-ecologies of use and meaning (see Strang, 2004; Hastrup and Hastrup, 2016; Ingersoll, 2016; Walsh, 2018) and the geographically specific histories that underlie water scarcity, pollution and conflict (see Carse, 2017).

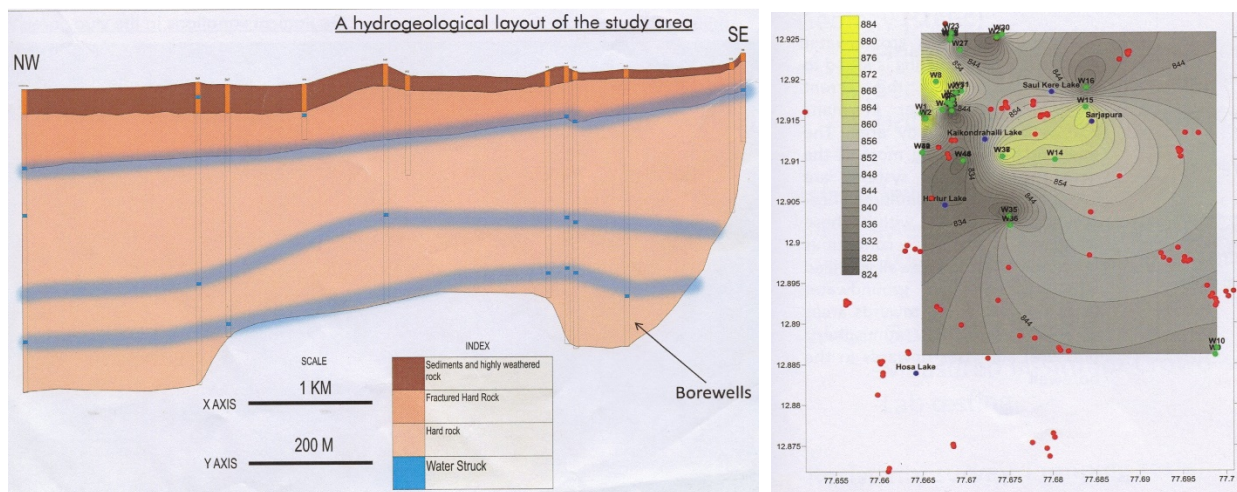
The assignment, however, is not a tutorial on modernist water; rather, it *extends* an otherwise modernist water concept by integrating considerations that resocialise and re-historicise water. The project persistently attempts to move students beyond a paradigm that treats water as an asocial and ahistorical entity that exists primarily for human consumption. After becoming experts in the measurement and categorisation of water at their school, students are asked to write an extended reflection on water as it relates to many areas of life, society and the environment; furthermore, the assignment booklet, even in its crisis-centred introduction and its emphasis on technical accounting, frequently contextualises water as having many social and ecological dimensions. On the first page, for instance, the project guide places the significance of water within its history and interconnectedness to all things by noting that, "Sustainability is intricately linked to habitat, resources, access and distribution and one such central issue linking all of them is water. Water not only has a great historical significance but has an impact on climate change, politics, agriculture, social justice, foreign policies, local culture, etc". Sprinkled throughout the water accounting portion of the assignment are suggestions for reflections that prompt students to resocialise their understandings and imaginations of water; for instance, it encourages them to identify and interview the people who are in charge of various components of their school's water infrastructure, to think about how (and how much) non-human life in the vicinity uses water, and to investigate the impacts of the school's water on people and ecologies once it has left the campus as wastewater.

The water-focused sustainability project created by Avaani for Pearl does not fully step aside from modernist water; rather, it retrofits the concept by adding questions, prompts and examples that are meant to resocialise and re-historicise it. The assignment's design, by foregrounding the technical and numerical accounting of water and reserving the 'worlding' of it for last, may suggest that water's historical and social context can be left as an afterthought or that it is easily disconnected from the more primary task of measurement; however, a different water auditing exercise organised by Avaani shows how measurement itself can moralise and socialise modernist water.

THE SOCIAL LIVES OF MEASUREMENT

The water audit also became the basis for another project, a community groundwater mapping exercise in the area of Bengaluru that surrounds a Pearl IT park. The project attempts to monitor the area's borewells and to visualise that data with maps; its aim is to better understand the aquifer as a water-provisioning resource. In the project's stated purpose of visualising the daily and seasonal fluctuations of groundwater, the maps are like the water audit in Pearl's education programme. Volunteers from the area measure borewell water every day, thus mapping the sources and current levels of water, as well as the amount of water used. Pearl, via Avaani, and their partners seek to acquire a sense of groundwater availability, as well as how quickly the aquifer's water levels respond to rainfall events and various conservation measures. As the aquifer both is the primary water source for many in the area and is being depleted at a rapid rate, the project promises, through its managerial approach, to create certainty in an area of Bengaluru with highly uncertain prospects for such dense and extractive human settlement. The groundwater mapping produces maps which depict water as static, asocial and ahistorical; however, the mapping exercise does not just enact a set of managerial lenses and practices; it is also a highly social exercise that brings together residents and institutions, who together discuss their water uses, troubleshoot, initiate water conservation efforts, and compile a fairly multivocal account of water in the area.

Figure 2. Groundwater depth and rock type (left). Contour line (right) map depicting groundwater levels.



Source: Avaani

Technical images such as three-dimensional and contour line maps depicting groundwater levels and rock type (see Figure 2) were often touted as the *raison d'être* of the project, for only if one could see the groundwater levels could one learn how to manage them. For those at Pearl, sophisticated groundwater maps, if accurate, would allow an assessment of the true impact of conservation efforts or extraction patterns for water users, as Gyan, a senior CSR manager, described:

We have around 100 borewells being monitored right now by the partner [Avaani]. (...). We're looking at various borewell parameters like yield, quality, status of the borewell, looking at the lakes in the area, looking at the quality. Through all of this data, they try to create a groundwater map of the area. We want to use this map not just as a static tool, but the community can use this map to interrogate and understand what is the impact of their demand, of their use on the aquifer. (...). They can submit [data] on this platform, they can talk about their own borewell, they can talk about the availability issues of the borewell, trying to see what is happening over time.

Although Gyan's description of the project shows it to be a social object with a high degree of community participation, it upholds highly rational theories of behaviour and citizenship. Much like reading a daily newspaper or checking a bank account, ecologically minded citizens would be able to log onto a portal which would reflect their water 'transactions' – their own use and the general availability of water in the area. Within this transactionalist vision of technocratic self-management, water again becomes the ahistorical, asocial resource of modernist water; in this scenario, however, citizens would regularly interact with this abstracted sense of water by reporting their own data and monitoring the water levels of the aquifer.

Though many in Pearl's CSR team considered the technical feat of mapping groundwater fluctuations to be the central aim of the project, this logic was not a given; Avaani sometimes mobilised the potential social uses and meanings of maps in the service of distinctly different ideas about water and environmental responsibility. Importantly, the process of creating a map was replete with many opportunities to socialise area residents to Avaani's values of water conservation. Radhika, of Avaani, downplayed the literal uses of a map:

You can do a lot of studies, [use] satellites, whatever. Depending upon the money and understanding you have, you can map the whole aquifer (...). That's been done before, but that again seems to have limited relevance. So, what if you have a map? What are you going to do with it?

Rather, she emphasised the map's performative and social utility, "[b]ecause the whole thing is about managing the resource, and maybe just not the corporate but *everybody* assuming a certain sense of responsibility". Even so, the technical maps created by Avaani and another NGO partner were not merely opportunities to socialise nearby residents into new cultures of responsible water use; they also were articulate displays of a visual-informational idiom that derived its authority in part from numbers' ability to obscure the conditions of their production (de Certeau, 1984; Urla, 1993). Meant to convey rational and scientific expertise to those who valued it (like Pearl), the groundwater maps, as data-rich visual objects *and* a thoroughly social process of data collection, were highly flexible vectors for initiating new relationships with an array of actors.

As Avaani's process of data collection reveals, making the maps occasioned a series of social situations that were far more valuable than mere quantitative measurement; once Avaani identified people who had access to a borewell and, ideally, were already interested in water conservation, they began a series of discussions with them. Many conversations fulfilled the work of training residents and businesses to monitor borewell levels and submit data to the project, but, at the same time, Avaani staff also created dialogues that elicited a sense of responsibility for water conservation. Avaani focused a lot of their communication work on what Gyan called "bulk users" – large apartment complexes, businesses and schools. The team also attempted to reach outside of the new urban elite class that was the original focal point of the project to, for instance, borewell diggers, day labourers, those living in informal settlements, and villagers whose environs had rapidly urbanised around them. (Though Avaani's team, fluent in regional languages, is linguistically capable of this task, at the time of my research non-elite groups were not widely represented in the project.)

Once communication channels opened with a particular group, Avaani maintained ongoing contact through data collection, and sometimes through technical discussions about water infrastructure on a premises. These points of contact constitute what one Avaani staff member, Nithin, described as "[using] data more as a spin-off"; in this sense, Avaani staffers work to establish an interreferential community of residences and business complexes that shares stories about successful water-saving techniques and technologies. Over time, such connections further developed into active social networks among residents and businesses in the area through invitations, casual information sharing, and, eventually, ongoing relationships. An Avaani team member on a water quality testing trip to one borewell, for instance, might invite in several area residents to come along to observe the water conservation methods practised at another complex nearby. In ways such as this, through the technical task of data collection Avaani literally brought various people into association with one another – and with water – as they pursued a total cartography of water in the area.

Avaani busied itself with mapping human settlements, open wells, borewells, lakes, layers of sediment in the ground, and how water fluctuated across these over time. But the act of identifying these sites and visiting them for measurement brought Avaani's team into contact with the people who used them and their stories about water. Radhika described how the most common narrative was one that documented the slow disappearance of water, but she told us of many other stories that had arisen as well. According to Radhika, "[e]ach well normally comes with its own story about somebody, why they committed suicide in the well or why they closed it"; other stories documented the visions of seers who had predicted the wealth, welfare or demise of people on the basis of their un/ethical uses of well water. Most discussions and narratives raised what Radhika called scientific questions, or questions that would better guide the management of groundwater; these included inquiries about why wells in a given area had such variable output or about the geography and temporalities of aquifer water storage and recharge. These stories were not merely the inconsequential fodder of interactions that were meant to extract hydrological and geographical data; rather, they invested water with personal and ecological histories and were both evidence of, and generative of, affect and attachment to the waters of the area.

Similarly, when an Avaani intern acquired old maps of the area from a government office to locate unknown well sites, the team could clearly see changes in land use, settlement patterns, and the lakes in

the area. These maps revealed a widespread historical water management practice of placing wells near a lake for water withdrawal. As one Avaani employee described it,

All these areas would be farms in the earlier times, and the farmers used to get water from the wells. The wells will have water, not – you won't take water directly from the lake but take it from the well. That is why there will always be at least two [open] wells near the lake. In all of the lakes in Bangalore, you will find that.

This method of searching for wells led the team to a house where the owner had chosen to build the home around an open well, rather than filling it in. As they collected the data needed to present water in abstract forms (e.g. data tables, maps), those working within Avaani did not exclude the place-based, socially situated, often person-specific details that had become attached to ideas of water in the area; instead, they documented and shared these stories with others, furthering the stories' abilities to carry and generate new affective relations within the waterscape. Avaani's constant invocation of accounting, however, was also intrinsic to their work and its politics because of the calculations themselves, the grammars they contained, and the effects those grammars produced in the world, as another example shows.

LIVELY ACCOUNTING

Avaani's founder once lamented to me the pricing of Bengaluru's piped water; he described it as merely "financial pricing, which is about recovering operation and maintenance costs, never economic pricing, and you can forget about ecological pricing". Viraj saw great possibilities for water bills to make clear the value of water on an array of registers; he felt that water bills could include, for instance, information about water reservoir levels, leakage in water delivery infrastructure, and embedded electricity costs. With increasing block tariffs, Viraj also explained, additional signals could be sent in the absence of the ecological feedback provided by technologies such as open wells. Unlike piped water, he said, "[t]he well talks to you. It tells you, 'summer is coming. Use me wisely, carefully. I'm available to you 24/7, but if you use me indiscriminately, I'm gone'". These signals, described by Viraj as "lessons in functionality and ecology and spirituality", could help mitigate the disconnect of people (and their consumption) from water sources. The chosen sign-vehicle for this communication work was numbers.

The application of these ideas was most evident at one node in Avaani's network: Reverie Estates, a gated residential layout off Sarjapur Road where Avaani had advocated for several enumerative devices over the previous decade. Experiments in water accounting were key to reversing certain alienations of modernist water at Reverie Estates, even as they abstractly represented water. This was facilitated by tailored calculation grammars – conversions between affect, practice, social relations and numeric artifacts (Ballesterro, 2015) – that managed to put water in the right places, embed it with moral principles, and bring residents into closer contact with it.

Reverie Estates had managed to curb several serious water issues – flash flooding, failing sewage treatment and the drying up of water sources. Because of these achievements, Avaani often directed people to Reverie Estates to learn from its story and it thereby became the epicentre of Avaani's interreferential water community. It was under such circumstances that I and several others visited the tree-covered layout in June 2015, tagging along with an Avaani employee as she took water measurements. A long-time resident, C.P.; met us and explained that water had earlier flowed freely from several borewells, unmetered and without cost, but that water problems had soon arisen, creating what Avaani called in one report a "crisis-like context that made the residents amenable to aggressive water reforms to begin in earnest".

At the root of the changes at Reverie Estates were several numerical devices, starting with universal water metering. Meters generated a steady stream of numbers that gave water new legibility and thus governability (Scott, 1998) and exposed the particular practices and households that used the most water. Permanent rules and quarterly awareness (or social pressure) campaigns were soon enacted to

reign in the most excessive water users. As C.P. told us, "This data is published. (...). [T]here is a chance for the people on the higher side to do the correction. (...). Being there [at 15 kilolitres] is more respectable than being there, at 30, 35 kl of water".

Metering was soon coupled with its enumerative twin, pricing. Over time, pricing evolved into a steeply inclining block tariff that was designed to incentivise specific numerical thresholds of water use that were made known through metering. Tariff rates were designed to amply and universally provision water within the layout while sharply curtailing what was deemed excessive water use. A paper compiled by Avaani notes that water use within the settlement dropped with each tariff change and that the strictest modifications reduced water usage by over 30%.

Another numerical device, the water balance, sent different but equally powerful signals. Deployed throughout Avaani's work, the water balance is a customised accounting ledger that details the total amount of water used, treated, disposed of and recharged, set against the 'water endowment' (in this case, the water available from rain) in a given human settlement. Place is given primacy in the ledger, as a note is made of any water withdrawn from, or wastewater deposited outside of, the boundary. This tacitly discourages water transfers from, or to, "outside of the fence", whether freshwater or wastewater. The most important figure in the water balance, the 'Annual Groundwater Overdraft', sits astride 'Endowment' at the bottom of the ledger, which is the space that denotes the final, summative state of things. This value states the total amount of groundwater extracted, after accounting for any water redirected to the aquifer for recharge.

The numerous calculation grammars built into Avaani's ledger are designed to reveal and reduce extractivism. The most potent of these draws upon a morally laden, ecological-financial concept of overdraft. Overdraft is a commonly applied term for when groundwater extraction exceeds the rate of recharge (see Scott and Shah, 2004; Shah, 2014; Narain and Narayanamoorthy, 2016), a state that can have deleterious consequences such as declining surface water levels, land subsidence, and seawater intrusion (Zektser et al., 2005); the groundwater overdraft of Avaani's water balance, however, is more akin to financial overdraft where 'debt' in its many forms comes with an array of moral connotations and costs (Graeber, 2011; Folch, 2019). Unlike more respectable forms of debt, such as fixed-interest borrowing, which can grant the borrower moral standing and favourable chances for socio-economic mobility (Dickey, 2016), overdraft is a notably dishonourable form of borrowing that implies fiscal irresponsibility, even possibly breach of trust and contract, steep penalties, and undesirable repayment conditions. This connotation of overdraft equates groundwater use with a highly dishonourable form of debt and emerges from Avaani's calculative treatment of the water endowment: though specified, the water endowment is never factored into any of the ledger's accounting. This is not a hydrological understanding of overdraft, which would cast withdrawn groundwater as overdraft only once it surpassed the water endowment value; in Avaani's water balance, conversely, overdraft begins once *any* amount of water is withdrawn, casting any use of groundwater as enumerated ecological debt. As overdraft, and not withdrawal, the water balance ledger implies that any amount of water extracted must be redeposited. The water endowment remains on the ledger nonetheless, indicating, much like a borrowing limit on a credit account, the availability and limits of water in the area.

The total groundwater overdraft value indicates the sustainability of the 'account'; however, drawing upon the moral overtones of a specific type of borrowing and indebtedness, overdraft, the overdraft value performs potent moral and metaphysical work. The higher the number, the deeper the overdraft and – so these accounting terms imply – the greater the ecological debt and moral infraction. Positioning the borrower as fiscally and morally delinquent, the overdraft value begs a response: it must be tempered. Working within the logics built into Avaani's water balance ledger, one could reduce one's overdraft amount through several strategies: minimising one's water extraction, reusing water, and

recharging.² As C. P.'s tour showed, these categories of water conservation, made urgent through the ledger's particular conceptualisation of overdraft, were materially manifested in the form of many water-saving technologies installed and adopted throughout Reverie Estates. The water balance therefore possessed a "technical worldmaking power" (Ballesterio, 2015: 268) that brought new infrastructures, economic structures, and mindsets into being, all of which were made all the more urgent by how Avaani implicitly framed overdraft.

The parity between the material world and the numerical abstractions of water within Avaani's water balance was unclear; for instance, as when money is deposited in a bank account, was water that was recharged on a particular day fully available for later extraction? Regardless of the answer, the material realities at Reverie Estates were qualitatively different from the otherwise water-scarce area; after several years, the water table beneath the layout seemed, astonishingly, to be rising, and the water balance of Reverie Estates showed it to be 'net positive', or recharging more water than was being withdrawn.

Such labels depict how numbers were key to moralising water usage within Reverie Estates. The layout's 'net positive' status contributed to its moral standing within the burgeoning water user network curated by Avaani, for this status would often be invoked to entice the water-curious to visit the layout and model its methods. Water absorbed new moral imperatives and gave rise to boundaries within the layout as well; not only were water-saving residents cast as "more respectable", the boundaries that defined respectability, or full inclusion in the water-saving paradigm of Reverie Estates, were sometimes abrupt. Those who did not recharge rainwater on their property, for instance, were charged tanker prices. C.P. felt that those who used more than 15 kilolitres (kl) per month deserved to experience the travails of the water tanker market; as he said to us,

We are going by the premise that more than 15 kl (...) we do not want to give people more than that. Those who want to use more than that should get tanker water. They should get through that difficulty. (...) [Water] is not your own thing [a privately owned commodity]. You only deserve this much. More than that, someone else has to use it, because it's a precious resource. Because of that, we do not supply more than that. Even though we have. We can extract as we want, but we do not do [that].

Water had thereby become imbued with moral principles: it was precious and thus needed to be conserved, it should not be used for profit, it was not owned by anyone, and excessive use deprived someone else of water. Anyone violating these principles, C.P. suggested, did not belong in the moral community of water use at Reverie Estates and could (or should) be banished through penalties or other exclusions.

There were rewards, however, of being inside the water community at Reverie Estates. As C.P. told us,

Our trees are very green. Half of our roads are always shady, so the temperature is also a couple of degrees lower here, compared to the rest of this [area]. (...). We also have fruit trees. Every house has invariably a mango tree there on the side. There is a litchi [lychee] tree, there are umpteen gooseberries. (...). Below there is a lady, and yesterday we were chatting. [She said,] "I have these amaranth seeds, why don't you take?" And I said, "Okay, I'll come tomorrow morning". While going, I carried one [bottle gourd from the garden]. (...). So, water has multiple benefits. (...). I'll share the message [from a neighbour about], how beautiful the whole thing is: "So tasty. Couldn't resist sharing with a few neighbours. All are singing the chorus. Thanks so much". So, look at the spirit of happiness. It is not [only] you, it goes to [others] – And it inspires people to do the same thing. (...). So, this [water] has multiple benefits actually. As a community, we have become richer. Usually we say that when we are in cities, we are cut off from one another, but here that is not there. Here a lot of people are connected to one another.

² Despite the uncertainties of water flow and percolation, groundwater recharge values were given a 1:1 'exchange rate' in offsetting total groundwater overdraft.

C.P. described the cooler temperatures provided by the trees that could now grow, thriving gardens, community pride and solidarity, and joyous social exchanges that punctuated one's day; these detailed not just happenstance niceties but an extended biography of water within the layout.

From having no water management experience to discussing the nuances of water filtration systems, C.P. was familiar with the veritable deluge of numbers and with the infrastructures used to bring water under control at Reverie Estates. Devices such as the water meter, balance ledger and recharge structures had led people like C.P. to trace the literal flows of water in his surroundings as well. (About one large recharge well that he often observed as it directed rainwater into the shallow aquifer below, our host said, "It's such a beautiful percolation system!") As he enthused about how tending to water had created the possibility for ample harvests and the social exchanges they occasioned, it was clear that enumerating water did not strip it of its social contexts. Though water – a dynamic and chimeric moving media (Ballester, 2019b) – was certainly known in quantum and through a series of infrastructures, water and water management was also steeped in relations and moral considerations.

CONCLUSION

Bengaluru's growth has been defined by rapid urban development. This has led to the encroachment on, and pollution of, much of the region's surface water. The city's rapid growth has also led to a surge in real estate speculation that further facilitates the conversion of land and water into commodities; ironically, this has rendered water an ecological limitation of agrarian livelihoods and an interruptive inconvenience to middle- and upper-class city life, but it has not curbed the financial speculation that continues to drive up the value of land in the region (Goldman and Narayan, 2019). Avaani, through acts of enumeration, is endeavouring to moralise, socialise and historicise water among tech companies and the new urban elite, the very actors who are propelling these market dynamics. Here, water becomes socialised as enumeration becomes socialised; quantification reinserts the sociocultural and historical into water, not only because accounting and its grammars are themselves social and moral but also because enumeration is practised as a highly social activity that facilitates storytelling and information sharing in the course of gathering around water. Numerical configurations such as Avaani's water audit and balance are, importantly, "lively entit[ies]" and "active artifact[s] of thick moral histories and numerical capabilities" (Ballester, 2015: 265).

In the water audit frameworks discussed here, the normally human-centric and profit-maximising accounting logics that are inherent to the modernist development that has created much water scarcity around the world (Worster, 1992; Walsh, 2008) and in Bengaluru itself (Heitzman, 2004; Nair, 2005; Dasgupta, 2015) were co-opted. By placing water – rather than humans – at the centre of their accounting formula, Avaani's water audit disciplines people into water conservation rather than the exploration and exploitation commonly assumed in management paradigms. Terms introduced by Avaani such as the 'water endowment' reference not an income or endowment for humans, but rather an endowment for the larger ecological system, water's true custodian. People learn to reframe themselves as expenditures in a larger balancing sheet of water use and thus start to competitively minimise themselves. In this respect, the language of finance renders paradoxical the most exclusive aspects of the groundwater mapping exercise in south-eastern Bengaluru: the most visible and sustained members in the project were representatives of large commercial enterprises and luxury residential complexes, leaving single-dwelling householders, daily labourers and the unpropertied as the intended, but perpetually unreached, targets in the larger water community that was in the process of formation. At the same time, because the water accounting framework created a fiscally minded water virtuousness through conservation, it curtailed the potential abuses and market dominance of larger users; in the process, it created a kind of inverse infrastructure in which it is the most privileged people who act as infrastructural extensions by directing a resource *back* towards its ecological deposits rather than upholding unsustainable water

extraction through quotidian service delivery. Could this be what modernist water becomes as ecological and economic collapse nears?

By invoking a quantification that facilitates direct engagement between people and water, Avaani actively called upon water's ability to generate and hold meanings, stories, relations, and registers of feeling and attachment. Avaani thereby became a powerful cultural broker which could – and did – strip water of its stories and social relations as and when it saw fit, for example when sending data sets to mapmakers; Avaani, indeed, heavily directed the way water was being resocialised and re-historicised in south-eastern Bengaluru. Its work did not often recapture or reclaim ontologies that had been dispossessed by the urban development and speculation that continues to characterise Bengaluru; nor did it reveal the politics of the city's water management and market regimes. Yet, even as the city's water scarcity intensifies, Avaani's technical auditing strategy layers into the idea of water the lively involvement of people, moral imperatives and historical narratives, making water simultaneously modern and multiple.

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