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HOW WATER CHANGES (EVERY)THINGS

A feminist study of how 'water worlds' shape processes of rural agrarian transformations in Maharashtra, India

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Introduction

In the semi-arid regions of Maharashtra, India, water is central to processes of agrarian transformation and in articulating gender relations (Krishna and Kulkarni, 2019). Driven by discourses of naturalized water scarcity (Mehta, 2007), infrastructure projects in the Indian countryside have historically delineated a pathway of agrarian transformation as the transition towards an irrigated model of commercial agriculture (Bharucha, 2019; Shah et al., 2021). This narrow focus on supply augmentation is evidenced by the turn towards wastewater reuse schemes as the silver bullet to both stabilize agricultural production under a changing climate and increase farmers income (Jamwal et al., 2014; Zhang & Shen, 2019), with little attention paid to the state and quality of return flows. Yet, in a monsoon-dependent landscape like Maharashtra, where water comes first and foremost in the form of precipitation, the persistent "hydrocracy" (Joy & Janakarajan, 2018, p. 3) of the Indian water sector has neglected the richness of agriculture knowledges and livelihood practices tied to the dynamics of monsoonal rainfall (Tozzi et al., 2022).

Reducing water to a measurable substance to be harnessed and put to productive uses, this 'irrigation at all costs' mentality is problematic as much as misguided, as it erases multiple forms of gendered labor taking place across the productive and reproductive divide (Harris, 2009). More crucially, it ignores how farming practices and livelihood dynamics are articulated through and shaped by the different forms water takes as it moves across a landscape (Sultana, 2011). Whether abundant or limited, precipitating or flowing, visible or invisible, pure or contaminated, water in its multiple material forms brings together different actors (human and otherwise) (Bakker, 2012; Barnes, 2013) whose configuration plays a role when it comes to articulating gender-water relations in a place.

In this chapter we think with the relational materiality of water – as co-emergent between water's biophysical characteristics and sociocultural situatedness (Krzywoszynska & Marchesi, 2020) – to reveal how this relationality matters to the unfolding of gender dynamics in specific contexts (Figure 25.1). Bringing together feminist-informed agrarian studies (Harris, 2009;

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Figure 25.1 Women farmers in rural Maharashtra.
Source: Illustration by Sara Filippi Plotegher.

Sultana, 2011) and post-humanist approaches (Haraway, 2003; Puig de la Bellacasa, 2017; Tsing, 2015) we examine processes of agrarian transformation through the lens of a transition between different forms of waters moving across the landscape and probe the shift in gender labor relations this transition entails. In doing so, we use the lens of 'water worlds' which, following Barnes and Alatout (2012), we describe as assemblages of practices, knowledges, technologies, histories and ideas, brought together around specific manifestations of water. Taking relationality seriously therefore reflects our commitment to go beyond seeing water as a predetermined substance or a substrate upon which social relations leave their marks (see Linton, 2010). Instead, we conceptualize water as a 'socio-bio-physical' element (Krzywoszynska & Marchesi, 2020, p. 194), an agential substance whose material affordances play a role in shaping the elements, knowledges and practices different waters entangle.

Reflecting on the transformation of the Indian agrarian landscape from a predominantly rainfed to an irrigated 'water world', we use rainwater and wastewater as our two watery manifestations and follow a series of more-than-human elements these worlds bring together as our analytical entry point. Focusing on soils, animals, tools, wells, seeds and moisture as they are variously enrolled through this transition, we interrogate how gendered knowledges, farming practices and labor relations are reassembled as a result. Our objective is to reflect on the concrete political possibilities behind what Tsing (2013) calls 'critical descriptions' – narrations of socialites that are more than just human – to thicken understandings of the gender and intersectional dynamics that imbue processes of rural agrarian transformation in the Indian countryside and beyond.

The remaining part of the chapter is structured as follows; first we introduce the empirical cases the chapter draws upon and our methodology. After describing the literature that informs our thinking, we focus on three more-than-human elements that become significant in articulating gender relations in our two water worlds. These are: (1) water solutes and sediments (2) soil organisms and (3) goats. In the concluding section we reflect on how a more-than-human attentiveness enriches feminist analyses of rural agrarian transformation. We suggest an avenue for feminist post-humanist scholarship to move beyond metaphorical sensitivity to our watery interconnections (Neimanis, 2017) and engage politically with the obligations of our more-than-human relatedness.

Presenting our water worlds and methodology

Inspired by feminist methodologies that let small stories speak to larger issues and concerns (Gibson-Graham, 2014), we draw on ethnographic research from two rural areas of Maharashtra (Figure 25.2). The first is the Arvi sub-district in the rainfed region of Vidarbha.

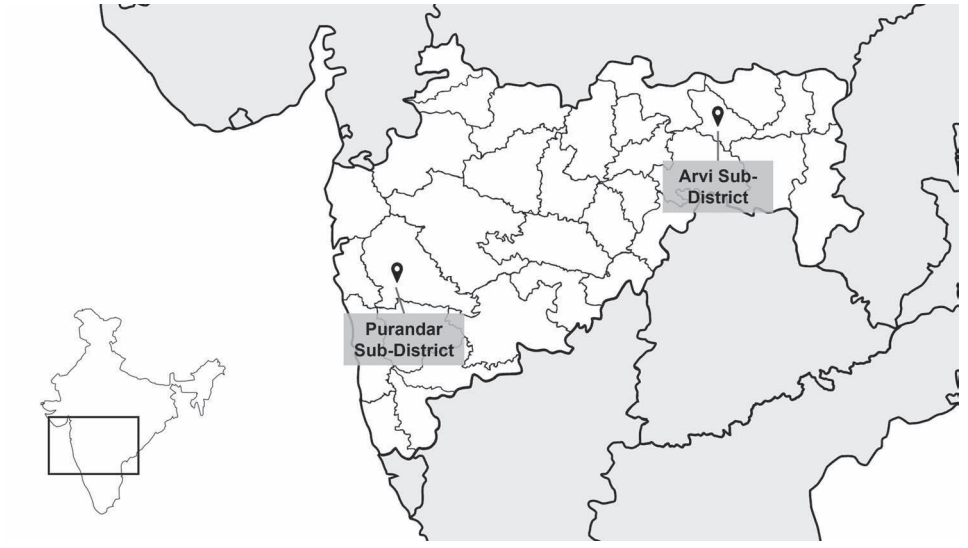

Figure 25.2 Map of Maharashtra indicating the two sub-districts where this research was conducted.
Source: The Authors.

This area lacks surface irrigation, and while few farmers owning land closer to the valley have access to groundwater, the majority of smallholders are completely dependent on the monsoonal rainfall which they use to cultivate cotton and soybean (as cash crops) together with pulses. Outside of the monsoon season unirrigated farmers (both men and women) work as laborers in irrigated fields or migrate to cities for employment. Over the years, policies pushing for the extension of Green Revolution technologies, like high yielding seeds for selected crops dependent on the use of fertilizers and irrigation have driven a situation of agrarian crisis (Reddy & Mishra, 2010). Rampant levels of rural debt incurred to purchase costly farming inputs (Sethi, 2021) and the damaged ecologies caused by overuse of chemicals needed to sustain production in increasingly depleted soils (Patel, 2013) bear witness to this state of distress.

The second case is Pravah,[1] a village in the Purandar sub-district which, from the early 2000s, has been served by the Purandar Lift Irrigation Scheme. Built by the Government of Maharashtra, this scheme consists of an infrastructure that transports mostly untreated water – or 'wastewater', as the government defines it (Government of Maharashtra [GoM], 2018) – from the city of Pune to 60 drought-prone villages in the Purandar sub-district (Chiwhane et al., 2015; Jagtap & Manivanan, 2019). The 'Purandar water' – as farmers call the wastewater delivered by the infrastructure – is purchased by farmers and stored in open ponds, where it percolates into the aquifer, recharging (as well as contaminating) wells before being used for irrigation. Before the implementation of this scheme, the agricultural season was limited to the monsoon months, after which farmers used to move to work in nearby villages and towns. Women would be mostly employed as agricultural laborers, while men often worked in local industries. Beyond making agriculture possible throughout the year, the availability of irrigation has shifted the cropping pattern from food crops for household consumption to commercial crops, mostly flowers and onions. While men continue working in industries in nearby towns, it is women who increasingly perform all farming tasks (including irrigating crops), suggesting how the infrastructure project is having repercussions on the gender dynamics of the community.

Beyond the declining profitability of agriculture and its increasing uncertainty because of the financialization of the sector and changing climate (Gupta, 2017; Matthan, 2023) an important backdrop shared by these two cases is the feminization of agriculture (Pattnaik et al., 2018). This phenomenon describes the increasingly central role women play as agricultural laborers and cultivators, while their identity as farmers and access to land rights remains curtailed by an institutionally patriarchal system with strong class and caste connotations (Krishna & Kulkarni, 2019).

The material presented in this chapter comes from ethnographic research conducted by Irene in Pravah between 2019 and 2022 and Arianna in two villages in the Arvi sub-district in 2022 and 2023. In March 2022 we went together to Pravah and conducted in-depth interviews with farmers and spent time exchanging ideas and reflections on our respective field sites. To reverse established research dynamics, we used 'guided walks' as a qualitative research method (Kusenbach, 2003) asking farmers to show us around their land and share their farming knowledges, or simply participated in people's everyday lives whilst engaging in conversations. During our time in the field, we took detailed field notes and pictures to document farming practices and day-to-day dealings with different waters.

Gender and water in agrarian contexts: exploring invisibilized labors

Feminist scholars working in agrarian contexts have explored how gender and other intersecting axes of social differences are (per)formed in relation to historically and spatially situated environments (Harris, 2006; Nightingale, 2006; Sultana, 2009). Hierarchies of power, they argue, shape how people relate to and are knowledgeable of their environments, which in turn affects dynamics of access, control and use of ecological resources. Feminist water scholars in particular have emphasized how gender relations and water practices are interwoven (Bossenbroek & Zwarteveen, 2018; Harris, 2006; Krishna & Kulkarni, 2019; O'Reilly, 2006; Sultana, 2009) proposing the notion of 'waterscape' (Baviskar, 2007) to reflect on the co-constitution of water and social relations of production and reproduction in simultaneously material and discursive ways.

In the context of water infrastructure projects, Carney (1993) for example describes how an irrigation scheme in a wetland region in The Gambia went hand in hand with changes in gender roles. She shows how, on the one hand, the project increased the work burden for women and reaffirmed a patriarchal system of male-headed landholding, while on the other, it led to women renegotiating access to resources, as they refused to work on irrigated fields without proper remuneration. Harris (2006) adds further texture to our understanding of gender as a relation that plays out in historically and geographically situated ways. Examining the transition to irrigated agriculture in southeastern Turkey, she suggests that rapid socioenvironmental changes like those triggered by the advent of irrigation rearticulate embodied experiences of social identities across gender, class and ethnicity lines. State planners and gender analysts, Harris (2006) argues, should take more seriously how the enactment of intersectional identities are impacted by changes in water availability and quality introduced by infrastructure projects.

This is particularly true in rural Maharashtra where, despite women performing much of the daily work in the farm, the idea of a 'farmer' reproduces the imaginary of a higher caste male landowner (Agarwal, 2003). Women, particularly from scheduled castes and tribes,[2] with limited financial resources, who are single or widowed, remain excluded or silenced, both institutionally and socially (Bhat, 2016; Krishna & Kulkarni, 2019) due to patriarchal norms that shape the gendered division of labor within and outside the home. In fact, while most men oversee market activities and manage farming incomes, women perform most of the domestic/reproductive tasks – or unpaid care labor. Further, even when playing a role in cultivating commercial crops, women's work still gains little public recognition (Ahmed & Zwarteveen, 2012).

Thus, while neoliberally oriented land and water reforms may have marginally improved women's participation in male-dominated spaces (Ahlers & Zwarteveen, 2009), for Krishna and Kulkarni (2019) there is still an urgent need to recognize and value their labors. For this reason, while we speak alongside a long feminist tradition that showed how identities are not fixed but 'in the making' (Sundberg, 2004), we mobilize the lens of 'women farmers' as an empirical entry point and a pragmatic guide for our political goal as feminist scholars aiming to zoom into what is at the margins. As an analytical prism, 'women farmers' therefore helps us unfold the invisibilized dimension of gendered labor relations, while theoretically adhering to an understanding of identities as a fluid 'performative accomplishment' (Butler, 1990, p. 162) that intersects with multiple axes of difference.

When it comes to water itself, a critical review of feminist scholarship in agrarian contexts also reveals some limitations. In fact, while enriching understandings of the operation of gender as a relational accomplishment that is shaped by (and in turn shapes) different

waterscapes, an engagement with water as a substance that makes a difference has remained marginal (for exceptions see Barnes, 2013; Savelli et al., 2022). In this regard, feminist post-humanist scholars (Ballestero, 2019; Cortesi, 2021) have begun interrogating how water is not passive and inert but rather vibrant and agential (Bennett, 2010; Strang, 2014) – an unruly substance whose material affordances matter in weaving specific water worlds (Barnes & Alatout, 2012). Troubling a chemical ontology of water as H_2O molecules (Cortesi, 2021), ethnographically informed studies have shown how water is an inherently relational element whose biophysical characteristics and socio-historical significance *together* play a role in shaping human-water relations in specific places. Examining flood-control infrastructures in Bihar, India, Cortesi (2021) for example questions prevailing understandings of rivers as 'a matter of only water' (p. 870). By showing the ontological inseparability between water and the sediments rivers contain, Cortesi's analysis explains the failures of embankments designed to seal off the land from its periodic inundations, as farmers have historically breached these barriers to let nutrient rich waters enter their fields.

When it comes to gender relations and livelihood dynamics, engaging with the relational materiality of water and other ecological elements also broadens questions around invisibilized labors, as it redefines labor as a co-constituted practice of 'working with' the more-than-human world (Battistoni, 2017; Besky & Blanchette, 2019; Krzywoszynska, 2020). Rather than being imposed from above, processes of agrarian transformations therefore entail changes that enroll more-than-human elements as active participants in transforming agrarian environments. Barnes (2013) for example shows how by reducing water to crop intake alone, the idea of 'virtual water flows' erases the labors of both people who bring water to the field, and that of water itself, as it alters the ecological fabric of the landscape it flows through. Through the case of rice cultivation in Egypt, Barnes (2013) highlights the work water does as it washes salts from the soil, thereby maintaining the fertility of the land. Building from this literature, we argue that inquiries into transforming waterscapes should listen more carefully to these more-than-human labors as co-constituted through assemblages of people, waters, soils, animals, whose shape determines how gender and intersectional dynamics unfold in the rural world.

In this spirit, we now turn to three elements, asking how attending to the worlds gathered around water's different manifestations – as rainfall or wastewater – allows us to better understand the gendered labor relations enrolled into processes of agrarian transformation and the more-than-human entanglements that support them.

Solutes, sediments and other things waters are made of

Thinking with Camargo and Cortesi's invitation to see water not as 'a chemical compound, but an ecosystem, a habitat, a mean for the connections and transportation of other elements and organisms' (2019, p. 3), we begin by looking at the material life of water itself. Particularly, we explore how farmer's knowledge and everyday practices are influenced by their interactions with waters' lively ecology and reflect on the gendered connotations of these interactions.

Starting from rainwater, throughout history, farmer's knowledge of the monsoon has problematized understandings of rainfall as an uncontaminated, colorless and odorless substance. Colonial accounts of rainfed areas of Maharashtra are punctuated with descriptions of how farmers have been valuing rainwater through its consistency (light or heavy), temperature (hot or cold) and color to infer its beneficial or harmful effect on crops (Voelcker,

1893). These knowledges have traveled to the present as unirrigated farmers in Vidarbha gave us rich descriptions of how solutes contained in rainwater influenced their farming practices. Hiralal for instance would welcome rainwater flowing into his field from the forest uphill building small channels to direct the rains into his land. "I do it because the rainwater is rich with decomposed leaves that are beneficial to my soil", he explained when we asked the reason for the structures built around his land. On the other hand, Vinita, who had been practicing chemical-free farming for many years, lamented her continued efforts to divert the '*bad rainwater*' entering her field from adjacent farms using chemical inputs. "That water is full of chemicals; it damages the softness of the soil I worked so hard to build", she told us. During the monsoon season she would therefore be busy constructing structures around her land to keep polluted water at bay while trying to harness as much rainwater coming from the sky by building obstacles to arrest its flow and let it percolate into the ground.

Similarly, in Pravah, farmers are responsive to the contaminants the Purandar water is made of, which they know is having a harmful impact on the landscape's ecology. As women increasingly take charge of irrigating the fields, they are developing rich experiential knowledges of the effects pollutants and other hazardous materials have on the quality of the soils and the differences of irrigating crops with different kinds of waters (Leonardelli et al., 2023). Busy with weeding work, Shandidi told us:

> We know that rainwater is better than the Purandar water because of the weeds. Before, there was only one type of grass but nowadays, because of the contaminants of the Purandar water we see at least three different types of grass. This means that we have much more weeding work to do.

A task predominantly (if not solely) performed by women, weeding is carried out manually with a sickle, carefully moving up and down the land crouched to the ground to uproot grasses that may harm the crops and take up nutrients and moisture from the soil. The invisible pollutants brought by the Purandar water interact with soil's ecology, triggering the growth of weeds as well as the proliferation of insects and bacteria – ultimately making this gendered work more challenging.

Other women farmers lamented how sediments carried by the Purandar water ended up clogging the drip irrigation systems they installed to increase the precision of water application to their crops. Padma, for instance, told us how she needs to closely follow the entire irrigation process, walking along the drip lines to make sure the outlets are working properly, promptly unclogging them with a safety pin so that her flowers do not get spoiled. Further adding to her labor, at the start of every cropping cycle the drip lines need to be washed with an acid lotion to remove any sediments that may have remained from the previous season. She explained this process: "There are 'so many things' in the Purandar water that block the drip lines! So every year before planting flowers we [her and her husband] need to use this acid to wash the pipes, otherwise they won't work". When, intrigued by her answer, we asked what the 'things' blocking the drips were, she explained that they were algae and other sediments suspended in the Purandar water. While men are in charge of installing the drip lines, it is women whose labor of maintenance of the technology has been made more time consuming by these suspended sediments the Purandar water is made of.

Engaging with the ways both rainwater and the Purandar water are never *only* water, these examples show how gender relations and labor dynamics are contingent upon the ecological fabric of the water itself. Zooming into the 'nonhuman universes' (Camargo & Cortesi, 2019,

p. 4) waters are made of has therefore revealed the seeming paradox whereby, in a drought-prone unirrigated region, rainwater is kept from entering one's land because of the contaminants it brings. Further, exploring water's lively ecology has also suggested that we reconsider the value of metrics like efficiency and productivity used to evaluate the performances of irrigation infrastructures (Boelens & Vos, 2012; Wanvoeke et al., 2015). As the drip irrigation case indicates, the efficiency of these technological 'solutions' is all but neutral as it legitimizes some actions – in this case the precise delivery of water to the crops – at the expense of others – the labor of women having to manually clean the outlet (see also Tozzi, 2021). Yet, rather than abandoning these metrics because they are necessarily at fault, together with other feminist scholars (Henry, 2018) we call for alternative modes of accounting that broaden which works get counted and valued in specific contexts. Crucially, as the next example will show, these unaccounted labors are also never just the prerogative of humans.

The organisms of soils

Understanding water's ecology as made of combinations of elements brings a parallel shift in the ways we engage with soils as living substances – 'dynamic ecologies' (Krzywoszynska & Marchesi, 2020, p. 194) continuously (re)made through multispecies interactions, including with human who depend on it. Moving away from seeing soils as containers for plant's nutrients (Marchesi, 2020), this relational understanding brings into focus what Puig de la Bellacasa (2014, p. 2) describes the 'working quality' of soils as 'bio-infrastructure' underneath our feet. By calling attention to all those invisibilized more-than-human labors that compose soil's ecosystems (Krzywoszynska, 2020), this definition highlights the importance of attending to this lively subterranean infrastructure and its role in sustaining livable relationalities above the ground.

In the context of rainfed farming, we found that soil's bio-infrastructural character was manifested through its hydrological function, a coordinated effort between human and soil organisms to deliver and maintain sufficient moisture to plants roots (Tozzi, 2024). When we asked Priya, a farmer in Vidarbha, how she managed to raise her cotton crop only with the monsoon rains she replied:

> It all depends on "her" she said referring to the soil. See, black soil retains much more water than red soil and the red soil is better than the 'binghi' soil, which has a lot of stones. Our land has a mix of red and binghi soils so we need to prepare it carefully. Before the start of the monsoon, I clean the surface from stones deposited during the summer, apply cow dung and turn it a little so that nutrients reach deeper into the ground. Then I build obstacles in the field so that when the rain comes it goes deeper in the soil. The trick is to make sure that the soil maintains a good amount of moisture close to the roots of the plants, so I try to help her [the soil] with that.

In an unirrigated land – according to Priya – it is the inseparability of water from soil (that is moisture), combined with the care she mobilizes to make water, soil and roots hold together as one that guides her everyday farming practices.

The hydrological labor of soils is therefore inextricable from farmer's embodied knowledges and practices of devising appropriate cropping patterns, re-ploughing residues to recycle nutrients, reducing tillage and increasing land cover to avoid evaporation and protect microbial life. Veena explained:

> In the black soil, I alternate one year of cotton and one year of soybean and in between I plant rows of tur [green gram], oilseed, or lentils. This is because I balance between what is taken by the main crop and what is provided back by other crops. In the red soil instead, I plant jowar [sorghum] together with mung and arrange them into alternate rows. The jowar is good for red soils because even when there are long dry spells it has good chances to survive since its roots reach different depths.

When asked why she coupled jowar with mung, Veena replied, "Jowar grows first and being taller helps the mung grow on it. Then I cut the jowar, leaving space for the mung to develop on its own". This configuration also creates competition for moisture closer to the surface, stimulating jowar's roots to reach deeper into the ground, thereby strengthening the plant's ability to withstand increasingly frequent dry spells. These processes of adaptation that develop through close and repeated interactions between human and soil organisms are crucial to sustain rainfed agrarian environments in increasingly uncertain climates.

At the same time, the case of Pravah reveals how the hydrological work that takes place within soils is not always desirable: its permeability allows elements that are harmful to the landscape's ecology and people's wellbeing to pass through. From the various ponds where the Purandar water is delivered the solution of water-and-contaminants percolates through the ground, reaching the aquifer, where it travels to public and private wells across the landscape. Soils not only transport contaminated water but also filter it of pollutants, delineating a complex mesh of contamination across sources. Aware of this purifying work carried out by soil organisms, a common practice adopted by farmers is that of letting the Purandar water percolate from the ponds into the soil until it recharges private wells and only then use it to irrigate their crops. "The longer Purandar water percolates through soil, the more it gets purified", Aparna told us while irrigating her onions. "This is why we avoid using Purandar water straight from the pond". Yet, this filtering effort is not seamless, as manifested in a white layer ('*shaar*' in Marathi) that forms over the land and which women recognize as a sign of contamination and a reminder of the slow but steady loss of fertility of their land.

The aliveness of soils therefore suggests that the (waste)waterscape of Pravah is not delineated by (nor does it end at) pipe's outlets dotted around the village. Rather it emerges through the ways in which the contaminated water from the city interacts with the hydrological labors of soil bio-infrastructure, alongside the labor of humans as they filter and contain contaminants, producing a gradation of polluted sources women farmers must learn to navigate (Leonardelli et al., 2023). Where does the infrastructure end and the irrigated land begin? What counts as infrastructural work and what as farming practices? These are questions with which irrigation engineers and planners must engage.

As the water moving across the landscape changes, so does the labor performed by soil organisms, and also the knowledges that farmers (especially women) develop in their everyday dealings within the land. From a coordinated set of practices to maintain sufficient moisture for the plants to grow, to its ambivalent role transporting but also filtering contaminated water, engaging with soils as a bio-infrastructure reveals the relationality of laboring practices as distributed undertakings. Better characterizing the co-constituted character of these imperceptible works may therefore allow us to understand who and what is involved in processes of rural agrarian transformation, what role they play in this transition, and how they may be better accounted for. As the next section will reveal, beyond humans and soils, animals get involved in these transformations too.

Goats

This final section speaks to scholarship on interspecies relations in the agrarian world (Galvin, 2018) to tell the story of how the relationship between the Dhangar pastoralist community of Pravah and their goats was reconfigured by the Purandar water. While not directly addressing gender relations, through this narration we hope to shine a light on the intersectional impact of water infrastructure projects beyond the farmers who are their primary targets, discussing the effect of the Purandar Lift Irrigation Scheme and its polluted water on a pastoralist community and their companion species (Haraway, 2003).

While the social and economic status of the Dhangar community varies across India,[3] they can be described as a herding caste living a traditional nomadic lifestyle. Their livelihood practices integrate pastoralism with agriculture in a combination that is closely tied to the rhythms and dynamics of the monsoon. Having acquired small patches of land one kilometer away from Pravah before the arrival of the Purandar water, the Dhangars used to spend the monsoon season cultivating traditional crops such as bajra (millet), jowar (sorghum) and spices predominantly used for household consumption. As soon as the monsoon harvest ended and the land was cleared, they would set off with their goats and return to Pravah only the following rainy season. While roaming around, they would set up camps close to communities with whom they developed relations over the years, often through sales or exchange of animals and other products. Yet, since the Purandar water arrived, a few Dhangar households decided to abandon their nomadic lifestyle and settle in Pravah. Aided by the Purandar water, those who settled are now diversifying their livelihoods, combining commercial agriculture with animal husbandry.

Chatting with Kastur – a Dhangar man – we started understanding how things have changed for people from his community. "I have just made an agreement with the farmer who owns this land" he told us while his goats grazed on a recently harvested onion plot:

> My goats can graze here for a few days eating the residues from the harvest and in return they fertilize the soil with their excrement. It is good for the next cropping season. We [the Dhangar people] are doing this with many other farmers in Pravah:

Yet, goat's fertilizing efforts have not always been welcome. Shristi, an elderly Dhangar woman, remembers how farmers used to be hostile towards their goats, scaring them away as they would graze on their cultivated plots and spoil the crops. Now as the size of the cultivated farmland has increased and farmers rotate cultivated with fallow lands, pasture and fodder are available throughout the year, resulting in new relationships of exchange between Pravah's farmers, Dhangar people and their animals.

Highlighting the work that goats do as they manure the land, the case of the Dhangar community further highlights the impossibility of defining labor as a prerogative of any single life form – human or otherwise (Battistoni, 2017; Besky & Blanchette, 2019). In fact, as the soil of Pravah loses fertility and hardens because of continued use of contaminated water and chemical inputs, it is the labor of goats alongside that of pastoralists that becomes central to sustaining Pravah's troubled ecology. Yet goats and other animals are also paying a price for this contamination, as they drink the Purandar water directly from the ponds. Kastur shared his worries with us: "Since our goats started drinking the Purandar water, they have started falling sick more and more often". The situation is

different from the time when Purandar water was not around: "Tanks would get filled by the rainwater and goats would drink that. Now all the water is contaminated, and our animals are suffering", he continued. In this regard, anthropological studies of multispecies relations in the agrarian world have questioned domestication narratives that suggest that animals are brought into the social world for purely utilitarian motivations. By contrast, these relations are multifaceted and better described as processes of co-becoming, through which humans and animals build relations of 'significant otherness' with one another (Haraway, 2003).

Further, while the relation between the Dhangar pastoralists and farmers from other castes in Pravah has improved, there are implications for the increased labor of women who are now required to both tend to the goats (though mostly alongside men) and perform most of the farming work. This is particularly true for older women, who are most likely to remain in the village with the grandchildren and are finding it difficult to grapple with the knowledge required for practicing sedentary, commercial agriculture.

Looking at goats and the Dhanghar pastoralists has therefore delineated a broader picture of the impact of the Purandar Lift Irrigation Scheme: it was because of the Purandar water that the Dhangars decided to settle in Pravah, diversifying their livelihoods by combining market-oriented agriculture with animal husbandry. As they now remain in the village, their work and that of their goats has become indispensable to sustaining Pravah's agricultural landscape amid increasingly contaminated soil. As processes of agrarian transformation reach beyond agriculture lands, approaching infrastructural planning with a more-than-human sensitivity enriches current analysis, as it directs attention towards the larger intersectional impact these projects have on communities that are not considered the direct 'beneficiaries' in the mind of planners, demanding that we account for them and their companion species in the future.

Conclusions

Examining processes of rural agrarian transformation through the lens of a transition between two forms of water, this paper focused on three more-than-human elements as analytical entry points to interrogate how gendered practices and labor relations are reconfigured through this transition. Taking seriously the relational materiality of water as a socio-bio-physical element whose character emerges at the intersection between water's lively ecology and socio-historical significance (Krzywoszynska & Marchesi, 2020) we brought feminist agrarian scholarship in conversation with post-human literature to explore the gendered connotation of water's relationality. In doing so, we contribute to feminist studies on water in two important ways.

First, by reconceptualizing labor as a more-than-human practice (Besky & Blanchette, 2019), a post-human lens has sharpened our analysis of the ways agrarian environments are reshaped by infrastructure projects aiming to 'develop' the rural countryside. The successes of government-sponsored plans like the Purandar Lift Irrigation Scheme in fact rest on the continued erasures of gendered labors and of the more-than-human world these projects enroll in. In official documents, the Government of Maharashtra advertises the Purandar Lift Irrigation Scheme as an 'efficient plan', providing farmers in drought-prone areas with the opportunity 'to change their cropping patterns to suit market demand' (Government of Maharashtra (GoM), 2018). Describing an idealized win-win situation, these narratives

focus exclusively on the productive aspects of the scheme, without addressing how the Purandar water materializes differently for farmers, pastoralists and other members of the community, as it rearticulates their relations with the monsoon, soils and animals in ways that alter their day-to-day practices and livelihood dynamics.

Inspired by a mode of analysis elsewhere referred to as 'obliqueness', we were motivated by the recognition that 'what and who to include or exclude from narratives is never innocent, but the product of distinct political choices that are part of specific enactments of the world' (Leonardelli et al., 2022, p. 4). Echoing Battistoni (2017), employing an expanded understanding of labor as a collective undertaking is therefore a deliberate choice to narrate against the grain of neoliberal fairy tales, and reflect on how barely visible more-than-human labors may be 'reciprocated, compensated or sustained in recognition of their contributions our shared worlds' (p. 23). In a monsoon-dependent landscape like Maharashtra, this requires moving away from processes of agrarian transformations as a pathway towards an irrigated model of agriculture, engaging with the rainfall as the form of water around which relations of production and reproduction are articulated (Tozzi, 2024). Similarly, as wastewater transfer schemes are increasingly adopted as 'solutions' to address a seemingly naturalized condition of scarcity, rethinking metrics of efficiency and productivity to account for the work people and their ecologies perform together is paramount.

Finally, grounding our analysis of water's relational materiality within the complexities of specific waterscapes was an attempt to move feminist post-human literature beyond a metaphorical sensitivity of our watery interrelations (Neimanis, 2017). In this respect, we reflected on how thick descriptions of water worlds and the more-than-human assemblages they bring together can inform political analyses with concrete repercussions for water governance and infrastructural planning. As the Purandar Lift Irrigation Scheme suggests, the contaminated water the infrastructure carries go beyond canals and pipelines, extending into soils, aquifers, animals and gendered bodies all of which are reshaped through its flow. Going forward, it is by attending to the specificities of these configurations, analyzing what (and to whom) opportunities and harms are brought by transforming agrarian landscapes that we may find a place to bridge feminist struggles with environmental concerns.

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Notes

1 All names of people and dwelling places are pseudonymized, names of rivers and infrastructure are not changed.

2 Scheduled Castes and Scheduled Tribes are designated groups of people recognized by the Indian Constitutions and which comprise of the most disadvantaged socio-economic groups in India (Ministry of Social Justice and Empowerment, 2022b, 2022a).

3 The story we narrate here pertains only to those whom we met in the area of Pravah, who appeared to be relatively less well-off than members of other castes in the area (e.g., the Maratha caste).

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