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### Learning with overflows

*Feminist engagements with water in agriculture in Maharashtra (India) and beyond*

Leonardelli, Irene

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# 4

## OVERFLOWS: FEMINIST ENGAGEMENTS WITH WATER IN AGRICULTURE<sup>18</sup>

### Abstract

This paper starts by confirming that the intensification of agriculture hinges on some combination of capitalism with patriarchy, leading to the simultaneous exploitation of women's labour and 'nature', including water. Recognizing these structural features of exploitation is important. Yet, it is not enough, as realities are always more than what can be contained in structural explanations: they overflow. Bringing together stories from Peru, Morocco and India, we identify two important sources of overflows: the huge empirical diversity of gendered farming styles and ways of doing and organizing irrigation among smallholder farmers; and the capriciousness of water. In doing so, we illustrate how cultivating attentiveness to such overflows is a potentially promising strategy for identifying avenues for feminist water action beyond those of resistance to or escape from structures.

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## 4.1 INTRODUCTION

This paper proposes a feminist understanding of water questions in agriculture. Its starting point is that efforts to intensify agriculture are importantly premised on making both water (or irrigable land) and labour (much of it from women) cheaply available to entrepreneurial forms of profit-making. Neoliberal reforms that ‘free’ land and water from prior investments and attachments help do this, as does the flexibilization (or indeed feminization) of agricultural wage labour. The effect of these reforms is the replacement of place-based relational webs of responsibility and care with externalized forms of accountability and control. The resulting depletion and pollution of aquifers, rivers and lakes happens in tandem with an increase in social differentiation, often following existing class- and gender differences.

In the countries where we work and do research – India, Peru and Morocco –, such neoliberal reforms in agriculture go accompanied with a publicly promoted and supported push to increase profits per drop of water. Triggered by the availability of ever cheaper pumping technologies, this tends to entail a shift from collectively (or publicly) owned and managed surface canal irrigation systems to individually owned tubewells and pumps (Zwarteveen et al., 2021), a shift that has the effect of making water – and irrigation – an increasingly privatized matter. In all three countries, a process of re-allocation of water, water rights and irrigable lands is happening, towards what are seen as more productive and more efficient uses and users. Critical agrarian scholarship usefully proposes understanding this process as one of accumulation by dispossession (Mehta, Veldwisch and Franco, 2012; Woodhouse, 2012; Zoomers and Kaag, 2013). It often happens in parallel with a significant downsizing of public irrigation budgets, something that significantly reduces public capacity to regulate and manage water (Molle, Mollinga and Wester, 2009), also limiting public options to strengthen women’s access to and control over water.

Feminist contributions to this debate have forcefully demonstrated that the ability of some to accumulate land- and water rights is premised on deeply gendered and racialized institutional structures and ideologies. These make the ability to perform and succeed as efficient and productive irrigators and farmers much easier for some than for others. As early ecofeminist scholars showed, becoming and being (recognized as) ‘a modern farmer (or entrepreneur)’ hinges on and reproduces the active and continuous inferiorization of ‘feminised others’ – including women and nature (Mies, 1986, 1998; Shiva, 1988). Their insights form one important dimension of theoretical explanations of how patterns of accessing, controlling and knowing land and water have historically been shaped by – and in turn helped consolidate – intersecting hierarchies of gender, class, caste and other axes of differentiation (Zwarteveen, 1997; Harris, 2006; Sultana, 2009; Ahmed and Zwarteveen, 2012).

Our feminist understanding of water questions in agriculture uses these early insights about the connections between the exploitation of women and that of water as its starting point. However, we do not want to stop at merely confirming the existence of the structuring forces that help explain processes of gendered exploitation and marginalization in irrigated agriculture (e.g. capitalism, neoliberalism, patriarchy), nor do we want to just provide further examples of how profits in agriculture are made possible by systematically under-valuing (female) labour and water. This is because doing so risks strengthening the overwhelming power of such structures, while also reconfirming the oppressions and marginalizations that they produce. By focusing on what is similar across places (or times), structuralist analyses risk dismissing differences and diversity. They may fail to notice those things (phenomena, events, relations) that do not fully fit structural categorisations, thereby also risking to disregard important opportunities for positive feminist change (see among others Ahlers and Zwartveen, 2009; Domínguez Guzmán, 2021; Gibson-Graham, 2006; Hart, 2006).

In this paper, we therefore argue and show that there is merit in ‘loosening up’ (nuance, relax and expand) more structuralist and generalizing analyses of watery agrarian transformations. We propose a feminist mode to analyse waterscapes – which elsewhere we have called *obliqueness* – for doing so (Leonardelli, Kemerink-Seyoum and Zwartveen, 2022). Taking inspiration from different bodies of feminist scholarship as well as from science and technology studies, obliqueness entails cultivating analytical attentiveness to those ‘things’ that do not fit, add up or easily commensurate with structural or quasi-coherent narratives about how agrarian transformations unfold, or how water is governed (Leonardelli, Kemerink-Seyoum and Zwartveen, 2022). We borrow the aptly watery term ‘overflows’ from Callon (1998) to denote such ‘things’.

Drawing on our empirical work in the state of Maharashtra in India, the Motupe Valley of Peru, and the Draa Valley of Morocco, we identify and discuss two sources of overflows. The first relates to continued existence of family farms, representing an enormous diversity of gendered farming styles and ways of doing and organizing irrigation across smallholders in different places. This diversity disappears in theorizations that narrowly insist on explaining how farmers are connected to or integrated in market economies, for instance by opposing capitalist entrepreneurial modes of farm production to peasant modes of production. Close attention to the gendered specificities of how agriculture and irrigation are organized and gendered also proliferates possible ways of combining being (or performing as) a woman (or man) with being (or performing as) a farmer or an irrigator. Cultivating attentiveness to the always specific ways in which gender informs and shapes farming and irrigation identities and relations usefully queers the often-binary oppositions (between woman-man, production-reproduction, home-farm) that inform more structuralist analyses, while also producing critical awareness of how similar terms (women, farmer) may refer to very different experiences.

A second important source of overflows is related to the capriciousness of water. Water flows, seeps and evaporates in ways that often defy prediction, management or control, thereby interfering in sometimes unexpected ways with structural explanations and predictions. Hence, the behaviour of water itself is a source of overflows. Acknowledging that this is so helps appreciate that irrigated agriculture and water management often have a somewhat improvisational, ad-hoc, contingent and experimental character, offering sometimes surprising possibilities for feminist action.

The rest of the paper is structured as follows: we first outline the different theorizations that have inspired our attempt to develop an oblique feminist understanding of water questions in agriculture. Our initial interweaving of feminist studies of the environment (specifically focusing on water) with critical agrarian-water studies produces a useful starting point for tracing linkages between feminist questions and water questions across places, helping recognize structural patterns and mechanisms of exclusion, exploitation and marginalization. Our empirical accounts of gendered water realities, however, reveal that there is much more than what fits these structural explanations. We discuss, in the next section, how different bodies of feminist literature help productively appreciate this ‘more’, using the idea of overflows.

Before moving on, it is important to say something about how this paper came into being. It represents the condensed results of more than 10 years of collaboration, conversation and debate we had among ourselves – the authors of this paper – and with different theoretical bodies of literature. The paper is fuelled by insights generated through different research projects we are or have been working in. Seema and Sneha work with a research NGO in Pune, Maharashtra. They have long track-record in action-research, studying and helping implement feminist reform programs many of which revolve around water. Margreet has worked as a researcher and activist on watery feminisms or feminist waters for around 30 years, mostly as an academic scholar. Lisa studies the watery changes that accompany agricultural intensification in Morocco, from a feminist perspective and taking inspiration from rural sociology and critical water studies. Carolina has been and is engaged in investigating different ways of knowing and engaging with water in Peru, a project that is theoretically inspired by anthropology and feminist science and technology studies. Irene and Jeltsje joined the conversation from 2018 onwards, through their involvement in the feminist political ecology network WEGO-ITN and through Irene’s study of smallholder farmers’ irrigated farming practices in Maharashtra. They bring in fresh new feminist ideas bridging feminist political ecology with feminist post-human studies (Irene), as well as a deep understanding of technology-society-water interactions (Jeltsje). In 2018, all of us started working together by the project ‘Transformations to Groundwater Sustainability’ (T2GS), aiming to mobilize feminist insights to study promising grass-roots initiative around groundwater in places where pressures on groundwater are particularly acute.

## **4.2 WATER RE-ALLOCATIONS IN INDIA, PERU AND MOROCCO**

### **4.2.1 Trends in water uses in agriculture**

Since the 1990s, the consumption of fresh water throughout the world has been rapidly increasing (Postel, Daily and Ehrlich, 1996; Shiklomanov, 2000). Much of the growth in water used in agriculture can be attributed to a shift from lower-value food crops to supposedly higher-value uses: those of which marginal economic returns are higher (calculated in market terms). This is also the case in the areas where we work and do research. In the Indian arid state of Maharashtra in India, most irrigation used to be dedicated to cultivate food crops such as jowar (sorghum), bajra (pearl millet), and pulses. Now, more and more water is used for irrigating commercial crops – sugarcane, but also horticultural crops such as pomegranates, grapes, mangoes and flowers – for national and international markets (Joy et al., 2014; Kulkarni, 2018). Likewise in Peru, the government also helped multinational and national companies acquire the land and water rights they needed to start large-scale production of fruits and vegetables for export (Vera Delgado and Zwartveen, 2008; Rendon, 2009). Water uses in Morocco seem to be following parallel trends, away from rainfed crops (cereals, beans, olive trees) to higher value and irrigated crops like orchards (olives, plums, peaches, watermelons), and horticulture (onions, potatoes) (Akesbi, 2011; Bossenbroek, 2016).

These shifts in uses of water are predicated upon re-allocations of land and water rights, often from smallholder peasant producers (sometimes organised in cooperatives) to more commercial farmers and agro-business companies. The state plays an active role in facilitating and promoting such re-allocations of rights towards what are seen as better, more productive and efficient uses and users. Neoliberal water and land reforms, premised on ‘freeing’ water and land by fixing entitlements to ease their transferability (see Ahlers, 2010) are crucial here and have been implemented in all the three countries (Joy et al. 2014; Errahj and Ploeg, 2017; Urteaga, 2010). In all three countries, the state also engaged in (co-)funding arrangements (public-private partnerships) to construct new water infrastructures as a way to physically re-allocate water through dams and canal networks to those with the ability to invest in ‘modern’ farms and irrigation technologies (Kulkarni, 2018).

### **4.2.2 Water transfers as accumulation by dispossession**

As several authors have suggested (e.g. Swyngedouw, 2005; Bakker, 2003; Ahlers, 2010), water re-allocations from lower to higher value uses can be considered an intrinsic part of the processes of capitalist transformation that characterise the neoliberal turn of the past 30 years, with changing modes of water access and control reflecting how money and capital are organized and appropriated (Swyngedouw, 2007). Following Marx and

Rosa Luxemburg, water transfers can be understood as a form of ‘primitive accumulation’ or ‘accumulation by dispossession’ that happen by integrating water into a capitalist market system (Harvey, 2003) to make it trade-able and allow it to generate benefits to the ones who own it (or accumulate and speculate with it) (Ahlers, 2010; Ahlers and Zwarteveen, 2009; O’Connor, 1994). More specifically, the creation of uniform and enforceable water rights, at least that is the theory, makes it possible for water to be transferred and traded so that it can be used where marginal returns are highest (Ahlers and Zwarteveen, 2009; Boelens and Zwarteveen, 2005). As Ahlers (2010), based on Marx’ Grundrisse, argues, the possibility to transfer, exchange or trade water rights ‘de-socializes’ its ownership, and disconnects its access and use from historic labour investments, such as those needed for constructing and maintaining canals. The introduction of new market-based values of water also erodes the meanings, knowledges and subjectivities embodied in histories of living together with water, stripping it off its specific symbolic, communal and environmental values (Ahlers, 2010; Martinez-Allier, 2003; Boelens, 2006; Urteaga, 2010).

In Peru, Morocco and India, new investors indeed acquire(d) the land- and water (rights) they need for profitable production through a process of dispossession. While most studies and analyses of this process focus on land (especially the phenomenon referred to as land grabbing is receiving much attention), some scholars have shown that land transfers are often importantly about water, as the land purchased is worth little (at least in arid and semi-arid areas) if not accompanied with access to water. In most cases, therefore, so-called land grabs are, in fact or also, water grabs, which work to displace and literally dry out existing users and producers (Arroyo and Boelens, 2013; Boelens and Zwarteveen, 2015; Mehta, Veldwisch and Franco, 2012; Sosa and Zwarteveen, 2011; Woodhouse, 2012; Zoomers and Kaag, 2013). Water grabs are often facilitated by, or partly happen through, a shift from surface irrigation (which is often – at least partly – managed under public or common property regimes) to groundwater, which most often is – at least de facto – privately owned and individually managed (see Zwarteveen et al., 2021). Access to groundwater importantly depends (next to access to land, which is why ownership of land is important for accessing water) on one’s ability to make the often considerable investments needed to drill wells and purchase pumping equipment (Kulkarni and Shankar, 2014; Srinivasan and Kulkarni, 2014).

Tellingly, global extraction of groundwater grew from approximately 100 km<sup>3</sup> in 1950 to nearly 1,000 km<sup>3</sup> in 2017 (UN WWDR, 2022; see also Wada et al., 2010). Most of this growth (about 70%) is concentrated in agriculture (UN WWDR, 2022; see also FAO, 2022; Shah et al., 2007). Today, land irrigated by groundwater produces about 40% of the world’s food (Siebert et al., 2010; Katz et al., 2016; CGIAR WLE, 2017). Groundwater extraction is notably difficult to regulate and control, which is problematic as it can lead and indeed is leading (when the sources of water are not renewable) to its ‘mining’, effectively causing the need to drill ever deeper (and more expensive) wells to

access it. This is causing an irrevocable depletion of the resource, and deprives those dependent upon ‘locally available’ water for their livelihoods (Molle and Closas, 2020; Hoogesteger and Wester, 2015; Zwarteveen et al., 2021). In the dry Ica Valley, an area with fertile soils that is strategically located close to Lima, rainfall is close to zero. Groundwater, therefore, is and has been the main resource for thousands of smallholder farmers, allowing the valley to be the ‘food basket’ for the megacity and its surroundings. Since a decade, however, the aquifer is dramatically over-extracted, with the water table dropping nearly one meter per year (Cárdenas, 2012). With the backing of enormous public funds, a favourable tax regime and permissive policies, new agro-export companies have been able to purchase most land in the valley to produce water-intensive crops - such as asparagus and other vegetables and grapes – mostly for export. For small and medium-scale farmers it is difficult to compete with these large owners also in terms of water, as they cannot afford the same water pumping, storage and irrigation technologies (Cárdenas, 2012; see also Oré, 2011). Maharashtra and Morocco are witnessing comparable forms of gradual (ground)water dispossession, with smaller and subsistence farmers losing water to industries and cities, but also to an emerging group of commercial farmers who produce high-value products (Aiyer, 2007; Joy et al., 2014; Kulkarni and Shankar, 2014; Srinivasan and Kulkarni, 2014; Bossenbroek, Kuper and Zwarteveen, 2016). The progressive shift from surface water to groundwater is thus facilitating the concentration of land and water in the hands of those who are (considered) ‘productive’. Criteria for (being considered as) ‘productive’ are deeply gendered, in that it is much easier for some men to become and be recognized and supported as modern farmers than for most women as well as many other men (see Hartsock, 2006; Zwarteveen, 1997; Razavi, 2009).

### **4.2.3 Gendered water transfers**

That it is more difficult for women to be (seen, recognized and supported as) modern farmers is not just caused by stereotypical images of farmers as (a particular version of) men. It is also directly related to how, in irrigated agriculture, access and rights to land and water are – and always have been – very clearly gendered, almost everywhere (Zwarteveen, 1997; Jackson, 1998; Van Koppen and Hussain, 2007). Although women often contribute considerable amounts of labour to irrigated farming, to the operation and maintenance of canals and pumps, and to the management of irrigation, rights to irrigated land and water as well as rights to participate in water users’ organizations have long been and often continue to be predominantly vested in men (see among others Zwarteveen, 1997; Van Koppen and Hussain, 2007; Kulkarni and Joy, 2012). The political importance of controlling water; the association of irrigation with the masculine domains of engineering and technical expertise; and the fact that rights to water are often linked to rights to land which tend to be vested in men are just some of the explanations and



justifications for this gender divide (Zwarteveen and Neupane, 1995; Vera Delgado and Zwarteveen, 2007; Bossenbroek and Zwarteveen, 2018).

Also in the three countries that form the focus of this paper, patriarchal social structures permeate how water and land are governed and agriculture is organized (Mehta, 2016; Mitra and Rao, 2019; Bossenbroek, 2016; Vera Delgado Zwarteveen, 2008). These indeed sustain a public imaginary of the farmer (whether a large farmer or a smallholder farmer) as an individual landowner of the male gender, and make it much more difficult for women to own land or be formally recognized as farmers or irrigators. The effect of this is that in Maharashtra, Peru as well as in Morocco, the considerable work that women do in irrigated agriculture does not automatically earn them a professional farmer identity, also making it more difficult for them to receive public support or loans. Formal policies, but also most analyses, continue considering their farm work as an extension of their domestic duties and therefore as less important and valuable (Bossenbroek, van der Ploeg and Zwarteveen, 2015; Ftouhi et al., 2015; Agarwal, 1992, 2003; Chakravarti, 1998; Chen, 1998).

This is all the more troublesome as the success (read: the profitability) of new forms of water-intensive irrigated farming not just depends on easy access to cheap land and water, but also heavily relies on access to cheap labour. Much of this labour comes from women. It is precisely the refusal to recognize women's work as 'real' farm work that creates possibilities for making profits, even if only nominally: it allows to not count women's 'family' contributions to farming as 'costs', and to pay them lower wages. In this way, new social structures of accumulation (Vicol, 2019) make use of existing gendered institutions to justify exploiting women's labour (Levien, 2017; Hajjar et al., 2020; Pattnaik and Lahiri-Dutt, 2021). In addition to old and new agricultural and irrigation tasks, in many smallholder farm households women also remain responsible for most of the day-to-day uncommodified and so-called reproductive work, "the washing, cleaning, cooking, feeding and caring of young, old, infirm and able-bodied alike", or the work needed to sustain the strength and health of all family members, including the often better valued and paid male farmers and labourers (Razavi, 2011, p.50; see also Mies, 1998).

This analysis – which takes inspiration from feminist political ecology and agrarian studies scholarship – produces an understanding of watery agrarian transformations as shaped by a combination of distinct capitalist and neoliberalism-driven processes of development with patriarchy. It predicts that by externalizing the costs of women's labour and that of water, the expansion of more water-intensive commercial forms of agriculture causes not just the depletion of rivers, lakes and aquifers, but also the further marginalization and oppression of women – a process that intersects with class-based social differentiation.

Our own attempt to produce a feminist understanding of water in agriculture starts with and takes inspiration from how this analysis provides evidence of enduring forms of

oppression, marginalization and exploitation. At the same time, our grounded ethnographic studies in India, Peru and Morocco reveal a wealth of ‘things’ – processes, relations, events – that are difficult to fit in, or even appear to be in contradiction or friction with, the categorisations used by and the conclusions of this structuralist analysis. The myriad ways in which people engage with water in farming, and relate to each other through and around water, cannot be fully described or explained by referring to larger structures; as for instance representing either integration in, escape from or resistance to capitalist logics of agrarian development. What it means to be a woman in irrigated farming can likewise not be predicted by just referring to universalistic definitions of patriarchy. Rather than dismissing deviances or ‘misfits’ as less- or non-important, or using them to adjust structural theorizations, we suggest that there is merit in taking them seriously on their own terms. To do this, we take inspiration from different bodies of feminist scholarship, as well as from science and technology studies.

## **4.3 LEARNING WITH OVERFLOWS**

### **4.3.1 Loosening up structuralist analysis of agrarian transformation**

We are not the first to propose relaxing and expanding more structuralist theorizations of processes of gender- and social differentiation. Many feminist scholars before us have argued that it is important to notice who or what does not fit or falls beyond pre-defined social-economic-political frameworks. Theorizing about the global capitalist economy, the feminist scholars Gibson-Graham (2006, 2014) famously propose (re-)considering the ‘large issues’ that ‘small facts’ are made to speak to (Gibson-Graham, 2006, 2014). Rather than using small facts to continuously reiterate how capitalism is made up of dynamics of competition, self-interest, exploitation and gains, they suggest that analyses should allow for a much wider range of social relations to bear on economic practices, including trust, care, sharing, reciprocity and cooperation (Gibson-Graham, 2014). With their proposal, they intend to acknowledge that there may be more than capitalism to explain experiences, events and processes of change. They suggest that interesting potential for transformation may in fact reside in this ‘more’.

Although her analysis has a different objective, Tsing (2005)’s assertion that globalization theories tend to generalize and homogenize differences, particularities and exceptions resonates with Gibson-Graham’s proposal. Tsing warns against simply treating local and mundane practices and experiences as ‘the details’ that support ‘the plan’ (Tsing, 2005), instead inviting scholars to focus on ‘frictions’, or the “grip of worldly encounters”: collisions between the global and the local, where the former does not necessarily impose itself on the latter but interacts with it in a dialectic and potentially transformative way (Tsing, 2005, p.1). Frictions rest on the assumption that situated practices and relations

are shaped by but also may escape larger (social, political, economic) categories, hierarchies and structures.

Gibson-Graham and Tsing's ideas stem from suspicion of theories that attempt to frame everything and everyone in one coherent and overarching structure. Science and technology as well as post-human feminist scholars nurture a similar suspicion. Instead of big generalizations that homogenize differences or freeze people and relations in generic and often dichotomic categories (such as exploiters-exploited, male-female, production-reproduction, etc.), these bodies of scholarship propose to invest in multiple and more modest efforts to acknowledge specificity and diversity – of modes of being and relating as well as of modes of analysing (or recognizing patterns) (Haraway, 1991; Callon, 1998; Domínguez Guzmán, 2019, 2021; Strathern, 2005; also see Mol, 2002; De la Cadena and Blaser, 2018). Their proposal is to see the world as the product of relational and partly contingent interactions between human and more-than-human actors that constitute one another in both discursive and material ways (Barad, 2007; Haraway, 1989; Latour, 1993; Law and Mol, 2002, 2008). Realities are treated as always-in-the-making: the product of the ongoing work of many actors in-relation, including farmers, the water itself, but also researchers. Patterns and structures, then, do not pre-exist the analysis but emerge as different actors perform the same repetitive work to identify and enact them. Indeed, also power structures (gender, class and caste relations) need to be continuously re-made to exist and obtain stability and legitimacy (Butler, 1990).

The work that goes into enacting structures need not always be, and indeed often may not be, of the conscious, intentional and purposive kind. Critical water scholars have used concepts like tinkering and bricolage to refer to the often improvised and making-do character of the day-to-day work involved in keeping-up the water infrastructures, institutions and relations needed to make water flow (see Anand, 2011; Benouniche, Zwarteveen and Kuper, 2014; Kemerink-Seyoum et al., 2019; Chitata et al., 2021; Silva-Nova Sanchez et al., 2019). Perhaps the metaphor of tinkering is also better than that of 'masterful knowing' for denoting the work that researchers do to discover and understand structures and relations of power. After all, weaving empirical specificities into larger (theoretical) patterns often has a rather tentative, speculative and craft-like character in which grounded – and always partial – narratives evolve in conversation with already existing theoretical understandings (see also Bonelli, 2016; Domínguez Guzmán, 2019).

Such a more modest and tinkering mode of analysis hinges on the realization that the meaning of concepts – of a waterscape, or a woman farmer – can never be fully determined before the analysis, but evolves in conversation with the empirical material (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). Elsewhere we have proposed the term obliqueness to outline a feminist mode of analysis that sets out to generate empirical findings not just to confirm, but also to interfere with or perhaps even disrupt structuralist assumptions (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022).

Obliqueness entails an invitation to also take seriously those things (events, relations, processes) that appear to be only tangentially related (or marginal) to structural categories. Hence, obliquely analysing means learning to pay attention to what Callon (1998) calls ‘overflows’: those ways of relating and being that do not fit – or exceed – structural or overarching narratives about how agrarian transformations unfold, or about how water is governed (Domínguez Guzmán, 2019, 2021; Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). Noticing overflows entails acknowledging that the relation between a specific empirical reality to social-economic-political frameworks, structures or patterns is always only ‘partial’ (Strathern, 2005); it is a relation of refraction rather than one of reflection (Haraway, 1991; Barad, 2007).

In the rest of this paper, we bring together water stories of smallholder farmers from Peru, Morocco and India to show what an oblique analysis of waterscapes may look like. We do this by foregrounding two important sources of overflows. The first relates to the enormous diversity of gendered farming styles and ways of doing and organizing irrigation across places, something that proliferates the ways in which ‘being a woman’ can be performed and combined with ‘being a farmer’ (or an irrigator). The second relates to the capriciousness of water. In how it flows, seeps, evaporates, water itself may interfere with structural explanations and predictions.

#### **4.3.2 Source of overflow 1: diverse farming styles and modes of organizing irrigation**

A first important source of overflows is related to the continued existence of family farms, representing an enormous diversity of farming styles and modes of organizing irrigation across places. There are scholars who invest much effort in making this enormous empirical diversity fit with theoretical explanations. Bernstein (2009) for instance takes issue with van der Ploeg (2008)’s treatment of all farming populations everywhere as a single social category, accusing van der Ploeg of subordinating questions of class and other forms of social differentiation “to what all farmers (family farmers) have in common: first exploitation by capital (food empires); and second, a special relation with and respect for nature” (Bernstein, 2009, p.75; see also Razavi, 2011). Our suggestion to take overflows seriously instead proposes cherishing empirical diversity, importantly by relaxing desires for theoretical precision and ‘fit’. We argue that it is important to always situate analytical terms and expressions in the practices from which they emerge. Hence, while acknowledging that dominant modes of capitalist ordering tend to marginalize those smallholder farmers who engage in family or peasant farming, we think there is analytical as well as political (and feminist) merit in explicitly appreciating that these farms and farmers display a vitality and diversity that overflows totalizing tales about the hegemony and inescapability of capitalism (see van der Ploeg, 2008). Modes of doing and organizing farming only ‘partially connect’ (Strathern, 2005) to larger social-

political-economic frameworks (e.g. capitalism, neoliberalism, patriarchy). Smallholder or peasant farmers may for instance enthusiastically engage in, or expand, the production of crops for the market using modern irrigation systems, without fully adopting ‘modern’ or ‘entrepreneurial’ (market) logics (see Domínguez Guzmán, 2019, 2021; Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022; Bossenbroek, 2016).

Smallholder, family-based, farms form a particularly rich source of overflows for feminist theorizing and action because of how their very existence troubles the binary categories that are often used to denominate and explain gender differences. For instance, the ability to trace patterns of ‘housewifization’ (Mies, 1982), or of the ‘feminization’ of agricultural labour (Ramamurthy, 2010; Pattnaik et al., 2017; Pattnaik and Lahiri-Dutt, 2021) – relies on the mapping of the female-male divide onto rather generic binary categorisation, such as house-work; production-reproduction; public-private; etc. For smallholder family farms, such categorisations always only partially and often rather awkwardly connect to empirical realities and experiences. After all, smallholder farms often combine family and farm functions, thereby making the possibility to clearly distinguish between (among others) home and work; between production for the market and production for subsistence; or between productive and domestic labour difficult and always somewhat arbitrary. This emerges clearly by obliquely looking at Pravah<sup>19</sup>, a drought-prone rural village in the Pune district (Maharashtra, India). Here, since around 2009, the farmers who can afford it (mostly those belonging to upper castes) buy wastewater provided through a government-sponsored irrigation system called Purandar Lift Irrigation Scheme. This allows them to irrigate throughout the year. Many of them have started cultivating commercial crops such as flowers, onions and other vegetables, using part of the profits to pay for the investments they made in irrigation equipment (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). Most of the actual farming and irrigation work is done by women, as their husbands often continue also earning some income by working as wage labourers in nearby towns (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). While what happens on their farms and with their waters is now partly shaped by outside markets and government regulations, women farmers’ choices – about what to grow or how to use water – continue to be also importantly motivated by subsistence needs. The ways in which women organize their farms is emblematic of how ‘production’ and ‘reproduction’ (or ‘farm’ and ‘family’) are deeply intertwined: many women make sure to plant subsistence crops – beans or chickpeas, for instance – in between the neat rows of chrysanthemums grown for the market, allowing the new drip irrigation systems (often purchased by their husbands to grow commercial crops) to water both (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). In Maharashtra as well as in the Saïss in Morocco, women farmers also make use irrigation waters to do their laundry, sometimes

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<sup>19</sup> The name of this village is pseudonymised.

bringing their dirty clothes to the farm or washing carpets in the irrigation canals (Bossenbroek, van der Ploeg and Zwarteveen, 2015). The mixing of subsistence with commercial crops, just as the use of ‘productive’ water for ‘domestic’ purposes illustrates how practices that smallholder farmers engage in blur and trouble familiar binaries used to make sense of irrigated farming: their practices indeed overflow such categorizations.

That prevailing categorizations are difficult to fit with actual smallholder practices also clearly shows in the difficulty to find a proper name for women who farm. Are they (to be considered as) female farmers, different from male farmers only in terms of how their gender marks them as other than the norm? Doing this would hinge on and reproduce a definitional construction of farmers as individuals.<sup>20</sup> Or are women who farm instead (to be seen as) farm wives, helpers of the main, male, farmers? Both terms – female farmers or farm wives – are only partially connected to how women identify themselves. The same terms also mean slightly different things depending on who uses them, or whose experiences they refer to. Hence, while in Morocco many women – especially the younger ones – seem reluctant to straightforwardly refer to the work that they do as ‘farming’, women in Maharashtra often proudly call themselves farmers, or women farmers. This has something to do with the difference between the two countries in the public appreciation that the professional identity of farming or farming work yields for women. In the Saïss in Morocco, the commercialisation of agriculture – premised on the privatisation of land, the arrival of new investors, the use of deep tubewells and new ways of organizing agriculture (absentee landlords, larger monocropped field etc.) – has reduced the ‘family’ character of farms, making it more difficult for women to organize and label farm work as an extension of their domestic duties (which would help make it acceptable).

In Pravah (Maharashtra), the commercialization of agriculture – premised on the availability of wastewater provided through the Purandar Lift Irrigation Scheme and the consequent introduction of new cropping patterns – also spatially and symbolically re-organises the home-work divide, but in another way and direction: women – at least among themselves and when talking to Irene – take pride in their new farming identities (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022; Leonardelli et al., 2023). They happily draw attention to their farm and irrigation activities, showing how they collaborate with their husbands in making farming-related decisions, including which crops to sow each season, how to organize the spatial layout of the farm and how to use the available water and irrigation system (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). Furthermore, although farming is a lot of hard work, women also

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<sup>20</sup> In how it makes farmers resemble entrepreneurs, this is a definition that fits well with some dominant visions of irrigated farming futures as consisting of an ongoing process of technical rationalization and optimization aimed at increasing productivities and profits.

carve out the farm space as one to which they can retreat from domestic affairs and scrutiny from family members – to be with and talk to other women, play with their children (who often go with them to the farm), or to steal some time to rest.

We use these vignettes to make a plea for always situating terms in the practices from which they emerge, and for comparing with care. Similar terms may indicate resemblances across places but these seldom can be treated as exact similarities. The practices of women in smallholder farms evidently blur the divide between the farm as a ‘public’ space of production and the homes as a ‘private’ location of family and reproduction. Yet, it is this very divide that is invoked to trace gendered patterns of farming across places. There are multiple ways in which gender maps onto divisions of labour or marks the definition of spaces (and vice versa) – with variations occurring through time and place or because of how gender intersects with class, caste and generation. Actual experiences and practices also often trouble, or overflow, the neat gendering of roles and spheres of life – e.g. men are breadwinners and those responsible for farm production and women are carers, mothers and cleaners (Zwarteveen, 2018) – with women and men themselves often performatively re-creating the meaning of both – for instance as part of attempts to earn (more) respect for what they do.

### **4.3.3 Source of overflow 2: the capriciousness of water**

A second source of overflows, effectively a watery metaphor, relates to role that water itself plays in shaping how farming happens and irrigation is done, sometimes interfering in contingent or surprising ways with structural explanations. Pleas for decentering humans theoretically underpin attention to the ‘agency’ of water, stemming from a relational understanding of agency that includes more-than-human actors too (Law and Mol, 2008; Barad, 2007; Pickering, 2009; Strang, 2014). In how it flows, percolates, carries sediments and algae, dissolves pollutants, destabilizes soil, corrodes pipelines, water often behaves in ways that are specific and difficult to fully predict and plan. In this way water itself – at least partly – exceeds or overflows, human control and intentionality (Kemerink-Seyoum et al., 2019). This is how water may itself interfere with regulations and material arrangements as well as with social relations of power, thus loosening up the ‘strong’ narratives that craft them (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022).

In the desertic Motupe Valley in Northern Peru (Domínguez Guzmán, 2019, 2021) a particular and special group of farmers came into being because of how water availabilities in the irrigation canal may exceed formal entitlements. This for instance happens when there has been a lot of rain. The operators and managers of the scheme (who are also themselves farming), allow those who do not have formal water rights to use this excess water. This is why they are called *excedentes*, which can be translated as ‘excess water users’. They are smallholder farmers who do not own private land titles,

relying on communal lands for farming. As water rights are linked to land rights, the *excedentes* do not have official water rights. Legally, they are only allowed to grow traditional crops in times of water abundance. They can use only ‘the left over’ water, or indeed the water that overflows official entitlements (Domínguez Guzmán, 2021). To get this water, they have to continuously engage in negotiations and discussions with different actors, including the water rights holders, the president of the local Water Users Association and people working at the Irrigation Commission (Domínguez Guzmán, 2021). The *excedentes* were clearly not the target beneficiaries of neoliberal reforms implemented by the state since the 1990s to encourage the cultivation of agro-export crops and the development of modern agriculture (Vera Delgado and Zwarteveen, 2008). In spite of this, these farmers have gradually been able to cultivate not only traditional crops such as beans and maize, but also to – illegally – cultivate mangoes for export. The *excedentes* chose to try cultivating mangoes because in comparison to other fruits, they are more drought resistant, can tolerate waterlogging and require less investment (Domínguez Guzmán, 2021). In a not-fully planned way, the planting of mango trees has also strengthened their claims to water, as irrigation managers agree that these trees cannot be left thirsty or be allowed to die. Significantly, it is because of how they engage with water and its flows that the *excedentes* can craft situations of abundance and can keep engaging in a variety of farming practices that go against the official regulations. This way, they themselves overflow the idea that access to water corresponds only to those who hold official water rights, mostly agro-industrial and transnational companies.

In Pravah as well we find instances of how water sometimes overflows material arrangements and regulations as well as power structures (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). In order to be able to use the wastewater provided through the Purandar Lift Irrigation Scheme for irrigating their farms, farmers in Pravah had (and still have to) significantly invest in farming and irrigation technologies. For instance, in order to have the wastewater delivered close to their wells, they had to attach secondary pipelines to the main pipelines constructed by the government; they had to dig ponds to store the wastewater after it is delivered; they have to maintain the wells and invest in pumps, pipelines and drip irrigation technologies to transport the water to their farms and properly irrigate the crops (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). Furthermore, they have to pay for the wastewater they use for irrigation: the price of one hour of water supply is established by government officers, adapted to the in-situ water pressure at different outlet points throughout the village (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). Hence, only the most well-off farmers (those who belong to upper castes), can afford to pay for the delivery of this wastewater and invest in cultivating commercial crops such as flowers (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). However, the water that is delivered to the village does not just flow to those who have paid for it. In how it seeps through the aquifer, it partly benefits also those farmers who cannot afford to pay for it. In fact, wastewater is stored by the farmers



who have bought it, in private earthen ponds. From here, it percolates into their nearby wells, but part of it also percolates further downhill, recharging the wells of other farmers, including those who could not afford to buy it (Leonardelli et al., 2023). This has allowed – at least some – less privileged farmers in Pravah (belonging to scheduled and less privileged castes, as well as single women) to take advantage of the water provided through this scheme and to start cultivating commercial crops to sell at the market (Leonardelli et al., 2023). This vignette illustrates how water itself is a source of overflows. Its behaviour interferes with plans and designs, and troubles more structuralist narratives about how water is accessed, used and by whom (Leonardelli, Kemerink-Seyoum and Zwarteveen, 2022). An oblique analysis, then, entails cultivating attentiveness to the role that water plays in co-shaping diverse ways of accessing water for irrigation.

## 4.4 CONCLUSIONS

Watery dynamics in agriculture have always provided compelling manifestations of the linkages between feminist, agrarian and environmental questions, underscoring the importance of research- and political collaborations between feminism, agrarian studies' and critical water scholars. Recent decades have made the need for such collaborations only more urgent and necessary. This is so, because in many places, the intensification of agriculture and the expansion of agricultural frontiers goes accompanied with worrisome and often unsustainable levels of groundwater extraction (Zwarteveen et al., 2021). Yet, the progressive shift from surface water to groundwater as a source of irrigation not only makes water (and its distribution) more invisible and therefore more difficult to manage or care for, but also risks making women (and their labour) even more invisible, or marginalized. As for the first, the shift to groundwater entails intertwined process of individualization – with irrigators accessing water through individually owned wells and pumps – and privatization – with formerly public tasks of design, operation and management of water infrastructures increasingly being delegated to private companies or users (Zwarteveen et al., 2021). The effect is that water increasingly escapes forms of public control. As for the second, even though much of the actual farm and irrigation work is done by women, it continues to be much more difficult for women than for men to formally own (irrigated) land and water, to be recognized as farmers and irrigators, or to be fairly rewarded for their labour. This is how the intensification of agriculture risks exacerbating gendered injustices and the marginalization and invisibilisation of women (and their work). Our proposal for a feminist understanding of water questions in agriculture therefore starts with reiterating the importance of identifying and tracing enduring forms of exploitation – explicitly focusing on how these continue to depend on systematically undervaluing water as well as the labour of women.

At the same time, we posit, feminist analysis and action should not stop at that. This is because the exercise of tracing patterns and similarities unavoidably draws the attention away from empirical specificities. We argue that these specificities matter, even when they do not fit or fall beyond structural categorizations. In our own ethnographic work in India, Peru and Morocco, we encountered a wide range of modalities of accessing water, irrigating and farming which were all differently gendered. It is impossible to make these diverse empirical realities and experiences fit in larger narratives or structural explanations without sacrificing some of their particularities and peculiarities. Rather than using this as a reason to either dismiss them as less relevant or instead try to adjust theoretical framings to make them fit, we used the paper to make a plea for keeping specificities alive for the sake to expand and enrich more structural feminist analyses of agrarian and watery change. This hinges on adopting a more symmetrical relation between the theoretical and the empirical, treating the latter not to confirm (or refute) but instead to interfere and sometimes perhaps disrupt the former.

To do this, we mobilize insights developed by science and technology studies as well as feminist scholars to ‘loosen’ the structuralist ambition to frame everything and everyone in one coherent and overarching structure, to instead replace it with more modest and tinkering efforts to trace overlaps and connections between always specific modes of being and relating, in ways that remain conscious of the situatedness of the researcher(s). This, then, creates the analytical and political space to recognize and appreciate ways of relating and being that exceed already known structures, allowing for the possibility that these overflows may contain interesting inspirations for feminist understanding and transformations (Leonardelli, Kemerink-Seyoum and Zwartveen, 2022; see also Callon, 1998; Domínguez Guzmán, 2019, 2021).

Focusing on water used in smallholder agriculture, we identified two important sources of overflows. This first lies in the continued existence of smallholder, or family forms of farming. Family farms blur and trouble oft-used binary categories – farm-family; production-reproduction; private-public; etc. – often invoked to denote and make sense of gendered farming and irrigation realities. It is because of this, as well as the fact that the precise empirical meaning of these categorical terms is always specific to places and people, that they should be used with caution. Indeed, the similarities across places in how the intensification of farming and the modernization of irrigation re-configure gender relations that structuralist theorizations generate based on these categorizations are best treated as tentative approximations. They are loose threads of overlap that should serve as starting points for rather than as conclusions of the analysis, stirring curiosity to learn what else there is. The second source of overflows relates to the capriciousness of water, with water itself interfering both with official plans and regulations as well as with predictions based on structural analyses. We have for instance shown that water may (also) flow towards less privileged and marginalized actors, or disrupt and challenge attempts to accumulate it.

Crucially, then, our plea for attention to overflows emphasizes the importance complementing more structural analyses with attention to the specificities of gendered farming and irrigation experiences. This allows to attune to the multiple watery and agrarian worlds that may coexist within as well as across waterscapes. Beyond more familiar and known ways of patterning and structuring, the oblique mode of feminist analysis that we propose may yield new possibilities for tentatively comparing across places, informing strategies for feminist action beyond those of accommodation, escape and resistance. Overflows, or so we hope, may also help re-imagine feminist analysis and transformational action as consisting of modest forms of experimentation and tinkering, based on engagements and solidarities that are anchored in relations and people.