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Men, Masculinities and Water Powers in Irrigation

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ABSTRACT: The aim of this article is to provide an informed plea for more explicitly identifying, naming and unravelling the linkages between water control and gender in irrigation. The fact that power, expertise and status in irrigation tend to have a strong masculine connotation is by now quite well established, and underlies calls for more women in water decision making, engineering education and professions. Yet, the questions of how and why water control, status and expertise are linked to masculinity, and of whether and how such links work to legitimize the exercise of power, are seldom asked. To date, associations between masculinity and professional water performance have largely been taken for granted and remained unexamined. The resulting perceived normalcy makes mechanisms of (gendered) power and politics in water appear self-evident, unchangeable, and indeed gender-neutral. The article reviews examples of the masculinity of irrigation in different domains to argue that exposing and challenging such hitherto hidden dimensions of (gendered) power is important for the identification of new avenues of gender progressive change, and for shedding a new and interesting light on the workings of power in water.

KEYWORDS: Irrigation, water, gender, politics, masculinities, engineers

INTRODUCTION

Gender research in irrigation has mostly been about 'making women visible' – documenting gendered patterns of water work and gendered divisions of rights and responsibilities as a first step to recognizing and establishing women's importance as water-actors, and gaining legitimacy for their demands for more water rights and powers. The feminist project in irrigation to date has largely been a project of *representation* of women – in the two meanings of the word: that of extending visibility and legitimacy to women as political subjects, and that of the normative function of language which either reveals or distorts that what is assumed to be true about the category of women (cf. Butler, 1999; Zwarteveen, 2006). The idea of representing women and of 'making women visible' was and is, of course, based on a parallel assumption that men *are* visible and well represented. This is only very partially true. The fact that the people referred to in irrigation texts and policies are *men* remains implicit, is assumed, or does not appear to matter for their irrigation behaviour (because that behaviour is derived from some universal human nature that is gender-neutral or pre-gendered). The 'manhood' or masculinity of irrigation actors is taken for granted rather than explored or questioned.

Linked to the fact that the presence of men, and the meanings of masculinities, are taken for granted in irrigation thinking and knowledge is the fact that most water managers and engineers, in most water management organisations and irrigation agencies in most countries are men. Yet, the conditions, processes and consequences of men's historical and contemporary domination of the irrigation profession have received little scrutiny. There has been a strange silence, which may reflect an embedded and taken-for-granted association, even conflation, of men with organisational power, authority, expertise and prestige (cf. Collinson and Hearn, 1996). I hypothesize that this silence, and the concomitant discursive invisibility of men and masculinity in irrigation, has important political dimensions. It can be interpreted as one of the ways in which power presents itself as self-evident and

'natural', or as one of many strategies to ideologically and discursively mask, normalize or legitimate the workings and strategies of power. The masculinity of irrigation, in other words, helps to establish a Foucauldian type of power. The source and workings of it remain hidden, in analogy with the watcher in the Panopticon prison whose controlling techniques importantly depended on his own invisibility.

This paper makes an informed plea for unravelling the linkages between masculinities, power and irrigation. How do irrigation knowledge, expertise and power get associated with masculinities? How do such associations come to be seen as natural or self-evident? In this paper, I would like to get "inside the belly of the beast" (as Faulkner calls it for feminist technology studies; see Faulkner, 2000). I am interested in exploring ways to identify, name, unravel and critically question the linkages between water control (powers and politics) and men/masculinities. As White (1997) argued, such a project goes against the strong tendency to 'study down' and reverses the research gaze to also analyze the powerful themselves, those who determine irrigation policies, plans and designs and who are responsible for water distribution or resource mobilization.

> Making an issue of masculinity, therefore, means not only focusing on men, but on the institutions, cultures and practices that sustain gender inequality along with other forms of domination such as race and class. This will involve questioning symbolic as well as material dimensions of power. It means working on, and recognizing the connections between, the personal and the professional, the politics of institutions and the global system (White, 1997).

My interest in irrigation stems from my training as an irrigation engineer, and is inspired by my own experience of having worked in an irrigation environment for about 15 years. I do not consider irrigation as a relatively homogenous reality that exists in relative isolation from the rest of the world, nor do I necessarily think that mechanisms of power and control in irrigation are fundamentally different than elsewhere. Yet, given the undeniably masculine character of professional cultures and identities in irrigation, I do think it is relevant and useful to apply feminist insights, and in particular post-structuralist feminist ideas of identity, culture and power (Butler, 1999; Nicholson, 1995), to the study of water control in irrigation.

In what follows, I first suggest some useful conceptual and theoretical notions that have informed and inspired the paper. I then present various pieces of empirical evidence I have collected over the years about the masculinity of irrigation in an attempt to show that the tapestry that links irrigation together with power is woven with masculine threads. The paper suggests that identifying and analyzing these threads is a useful exercise in better understanding the cultural, discursive and performative dimensions of gendered power in irrigation.

GENDER, MASCULINITIES AND FEMININITIES

To allow characterization of the irrigation world as a man's world, I make use of Sandra Harding's distinction of three main ways in which gendered social life is produced. Her distinction starts from the general insight that gender is both an organizing principle of social life, creating and ordering relations between people in a hierarchical manner, as well as a process of giving meaning and legitimization. According to Harding, gendered social life is produced through three distinct processes: symbolism, structure and identities. First, gendered social life is the result of assigning dualistic gender metaphors to various perceived dichotomies that rarely have anything to do with sex differences (symbolism). Second, it is the consequence of appealing to these gender dualisms to organize social activity, of dividing necessary social activities between different groups of humans (gender structure). And third, it is a form of socially constructed individual identity only imperfectly correlated with either 'the reality' or the perceptions of sex differences (individual gender or gender identities). The referents for all three meanings of masculinity and femininity differ from culture to culture, though within any culture the three forms of gender are related to each other (Harding, 1986). Harding's framework is a firm

reminder that there is more to male dominance in water than power, and that the distinct-but-related links between structure, symbolism and identity in gender and water require examining.

The three ways in which gendered social life is produced can together be seen to constitute what Rubin has called the 'sex-gender system', or what Connell (Connell, 1995; Connell and Messerschmidt, 2005) calls 'hegemonic forms' of masculinity and 'emphasized' femininity which constrain and influence the actual behavioural practices of people, but do not determine them. Instead, there are a range of possibilities between the *acceptance* of normative sanctions as the legitimate rules of behaviour, and *conforming* to them (Giddens, 1979). Gender therefore is the set of social relations through which the categories male and female, masculine and feminine, derive meaning and shape experience. These categories are situated within and grow from specific social, political and historical conditions and intersect with all other social relations, including class, race, ethnicity, nationality, religion, age and sexual preference. In some societies, the rules and practices which shape gender relations and identities are relatively flexible, leaving room for multiple interpretations; in others, they are severely and punitively enforced. Nevertheless, most societies display a proliferation of gender identities along with normative standards which exercise greater or lesser pressures for conformity.

My plea for studying men/masculinities in irrigation builds on growing concerns in wider feminist theory with gender identity and with masculinity (Connell, 1995; Collinson and Hearn, 1996; Whitehead and Barrett, 2001; Cleaver, 2002). Much of this work focuses on the experience of men in northern industrialized countries (Cleaver, 2002), and much of it is either inspired by the demands of gay or transgender men for their (specific) masculinity to be conceptually and politically recognized, or by men's movements which in different ways aim to contribute to thinking about the changing meanings of manhood in a post-feminist world (see Connell, 1995 for a useful overview). Although some of this work has produced inspiring insights, 'masculinity', in particular when used in cross-cultural contexts, remains a somewhat ambiguous, multi-purpose term (White, 2000). The study of masculinities often continues to be identified with the study of men, instead of adopting a relational approach that locates gender within broader dimensions of power and social difference, and recognizes its symbolic as well as material aspects. My own fascination is more like the work that has been done on men, masculinities and management (or on gendered organizations) (Acker, 1990; Collinson and Hearn, 1996; Wajcman, 1998) and on gender and technology or engineering (Cockburn, 1985; Wajcman, 1991, 2001, 2004; Oldenziel, 1999; Faulkner, 2000, 2001). This work can be characterized as recognizing, and aiming to identify, the linkages and associations between power (the power of technology, the power of engineers, the power of organizations and bureaucracies) and masculinity, and unravelling as well as questioning such linkages and associations out of a feminist aspiration to contribute to a more gender-equal society.

Three concepts have gained currency from the gender-technology-management literature.[1] First is the insistence that because gender is socially constructed and cuts across other differences (not least class and race), there are numerous kinds of femininity and masculinity. Second, and related, is the distinction between individually practiced gender identity and collectively held gender stereotypes or norms. A central paradox in men's studies, which is the third useful concept, is that men as a group hold and exercise power, but most do not feel powerful as individuals (Kaufman, 1994 and Brod and Kaufman, 1994 cited in Faulkner, 2000).

The linkages between gender or masculinity and power are neither straightforward nor one-dimensional. Gendered social orders are rooted in notions of male and female, masculine and feminine, which are often perceived as fixed categories distinguished by a series of putatively natural, hierarchically-ranked oppositions. Although the particular content of the pairs is culture and history specific, their oppositional hierarchical character is prevalent throughout the world, with men and masculinity, however defined, in a privileged position (Ely and Meyerson, 2000). To express this, Connell (Connell and Messerschmidt, 2005) introduced the term 'hegemonic masculinity', understood

[1] The description of men/masculinities here is inspired by the review by Faulkner (2000).

as the pattern of practice that allows men's dominance over women to continue. Hegemonic masculinity embodies the currently most honoured way of being a man, it requires all other men to position themselves in relation to it, and it ideologically legitimates the subordination of women to men (Connell and Messerschmidt, 2005). Of course, most men do not meet the standard, but in general the performance of masculinity combines outward 'homosocial enactment' (i.e. displays to other men) with inward repression of 'the feminine' (Kimmel, 1994 cited in Faulkner, 2000). The term was formulated in tandem with a concept of 'hegemonic femininity', soon renamed 'emphasized femininity' to acknowledge the asymmetrical position of masculinity and femininity in a patriarchal gender order (Connell and Messerschmidt, 2005). How hegemonic masculinity is maintained or challenged is probably best captured by a Foucauldian analysis, in which power is not necessarily possessed or exercised by agents, but 'subject-less'. It functions because of the presence and proliferation of norms (in this case about appropriate male and female behaviour), including both the dominant and subordinated in a normalizing web (cf. Boelens, 2008).

There could be a struggle for hegemony between old and new forms of masculinity (Connell and Messerschmidt, 2005). Laurie (2005) provides an example of such a struggle in the context of water, and shows how different understandings of modernity were associated with different kinds of masculinity in the Bolivian water wars. Her analysis illustrates how gender identities displayed during the Cochabamba water debates "are a tale of marginalized masculine subjectivities becoming heroic" (Laurie, 2005). An important conclusion she draws from her analysis is that although gender regimes in postcolonial contexts are greatly informed by globalized water and development discourses, such discourses and the projects they entail are seldom complete but remain greatly informed by colonial and neo-colonial power relations.

In what follows, I present and discuss some examples about the linkages between men, masculinities and irrigation powers and politics. I collected these examples here not so much to prove a general point that irrigation is masculine, but to provide different instances of how irrigation powers and identities can be gendered and associated with men or women. My hope is that this is a useful exercise to begin unravelling, understanding and questioning the 'power, water, masculinities' tapestry. I have sub-divided my examples under three different headings: water professionals; water operators; and water users or irrigators. This is an admittedly arbitrary distinction, and one without strong analytical pretensions. Yet, the categorization allows a blunt distinction between 'local' (traditional, indigenous, etc) masculinities and the more or less 'globalized' ones of the water profession that have similar disciplinary (engineering) roots, similar bureaucratic and epistemic traditions (cf. Lynch, 1991; Laurie, 2005) and similar cognitive histories (Vincent, 2004). This distinction may be relevant in view of distinguishing different sites which display specific mechanisms of irrigation control which are gendered in specific ways. The three categories are of course linked, and not just because some actors move between them. Global water institutions influence regional and local gender orders, while regional gender orders provide cultural materials adopted or reworked in global arenas and provide models of masculinity that may be important in local dynamics. It is no coincidence that I start my presentation with 'water professionals'. This allows reflection on the influence of globalized professional identities and discourses on the other two identified sites of masculinity and water control (operators and irrigators).

WATER PROFESSIONALS

The water professionals group can be roughly sub-divided into two: a more or less international group of experts who together produce knowledge of irrigation systems and irrigation realities; and those who work to plan, design, operate or manage irrigation systems. Both groups are male dominated in that there are many more men than women employed as irrigation researchers, experts, engineers, planners or managers. Indeed, the professional involvement with irrigation, be it as an engineer, manager, planner or researcher, is (or at least used to be) very much identified and perceived as a male

activity, as an activity belonging to and associated with men. Yet, there were and are multiple versions of irrigation masculinities, depending on the specific domain and country of work, and, as Laurie (2005) suggested, influenced by colonial and neo-colonial power relations. In what follows in this section, I focus attention on the masculinity of irrigation engineering identities and professional cultures.

There have been few (if any) studies that further explore why there is such a strong equation between masculinity and irrigation professionalism,[2] but one obvious association lies in the connection between modern technology and hegemonic masculinity through links of control and domination. This connection has been a recurring topic in feminist technology studies.[3] At least in most western societies, "technical competence is central to the dominant cultural ideal of masculinity and its absence a key feature of stereotyped femininity" (Wacjman, 1991). The bureaucratic organization of many so-called modern large scale irrigation systems provides another possible link between irrigation and masculinity (without providing an explanation). Feminists have long identified bureaucracy as gendered and masculine (Ferguson, 1984; Acker, 1990; Collinson and Hearn, 1996; Morgan, 1996). Thus "advantage and disadvantage, exploitation and control, action and emotion, meaning and identity are patterned through and in terms of a distinction between male and female, masculine and feminine" (Acker, 1990). Organizations are *inherently* gendered if they are defined, conceptualized and structured in terms of a distinction between masculinity and femininity, and presume to, and will thus inevitably reproduce, gendered differences. Ultimately, to the extent that gendered characteristics are differentially valued and evaluated, inequalities in status and material circumstances will result (Acker, 1990). Researchers of gender and management have also drawn attention to the recurrent associations between gender, hierarchy and organization on the one hand, and militarism and warfare on the other (see Collinson and Hearn, 1996).

Tracing the historical roots of bureaucratic irrigation organizations is likely to show that such associations between gender and bureaucracy and militarism help explain how current traits of organizational culture in irrigation bureaucracies have evolved. Many of the first colonial irrigation engineers were army men, trained in military colleges (see Gilmartin, 1994, 2003). Lynch (1993) postulated that the characteristics and culture of the "bureaucratic tradition" to which irrigation institutions and policies are tied is one that strongly associates decision-making and power with masculinity. The hegemonic strength of this tradition has long been maintained, and to some extent continues to be maintained, through the socialization of generations of engineers and bureaucrats. Through the "bureaucratic tradition", masculinity and the professional irrigation identity have come to belong to each other; they mutually constitute and define each other at symbolic and metaphorical levels. This means that the irrigation profession and the professional status of those working in the field of irrigation are partly delineated through a gender demarcation. Attributes and skills that are seen as typical characteristics of good irrigation professionals – such as technical competence, physical strength, being in command, self-confidence, and rationality – are normally seen as characteristics belonging more to men than to women.

While the norms and expectations of what an ideal irrigation engineer should be have changed with time, and also partly depend on the particular country of work and on the characteristics of the engineering training received, irrigation engineers almost invariably embodied some version of masculinity. One such version that influenced early generations of Dutch and British irrigation engineers is that of pioneering colonial heroes – British colonial engineers working in India, like Sir Arthur Cotton, William Willcocks, and Scott-Moncrieff – who courageously designed and constructed large water control and irrigation works and who were not afraid of getting their feet in the mud and rolling up their sleeves to get the work done. Biographies and autobiographies of these engineers often reveal an

[2] Such studies on the linkages between professionalism and masculinities have been done for other 'masculine' professions. The most interesting parallel is probably forestry. For examples, see Brandt and Haugen, 2000 and 2005.

[3] See for instance Faulkner, 2000, for an excellent review and a proposal for a research agenda on this issue. Also see Cockburn, 1985 and Oldenziel, 1999.

evangelical, personal and lifelong pre-occupation with military-like efficiency, ruthless practices and autocratic control. These British engineers maintain a glorious existence in the memories of today's irrigation engineers, but also in statues raised in their honour at the intakes of the irrigation systems they originally designed. The first Dutch colonial engineers were likewise remembered as heroes.

> Engineers were involved in a heroic struggle to conquer challenging tropical water streams. They did this far away from home, in a deadly climate, and in circumstances that were also extremely harsh otherwise. Especially the pioneers among the builders of monuments were true heroes in the eyes of later generations of engineers (Ravesteijn, 1997).

The account of the great marvels irrigation engineers were capable of bringing about in the former Soviet Union by Frank Westerman provides a rather similar portrait (Westerman, 2002). The continued attractiveness of such stories suggest that irrigation was not only a professional domain dominated by men, but also played an important role in shaping images of masculinity and masculine heroism in wider society.

The 'masculinity' of large public irrigation agencies and their staff was linked to the historical importance of irrigation in bringing about development. In many countries, irrigation agencies were the largest public agencies in terms of budget and numbers of staff. Their power and magnitude was largely based on, and legitimized by, the ambitious dreams of modernization that irrigation promised to realize, consisting of making deserts bloom and bringing prosperity to all through huge infrastructural works. According to Laurie (2005),

> [I]n the South the hard science of engineering has been celebrated throughout the drive towards modernization from the 1950s onwards. This (nearly always) masculine subject became a hero of national and regional development dreams, gaining respect and authority. Wielding political power with techno-fix solutions to poverty and mega-project short cuts to a more modern society, it is no coincidence that leading politicians and in some cases presidents have been drawn from the ranks of civil engineer.

Since Wittfogel (1957) the links between irrigation and state formation through centralized power have received quite some scholarly attention. Much less attention has been devoted to how these links are supported by and grounded in ideological and symbolic notions of masculinity.

Indeed, training as an irrigation engineer has long been a favoured choice for boys in countries with large irrigation systems such as India, Pakistan, and Egypt; it was bound to bring them professional success and prestige. In the analysis of Gilmartin (2003) about the rise of the irrigation administration in British India,

> [I]t was the ethos of disinterested service to science that empowered the self-image of many engineers as engaged in a moral enterprise, "content", as one engineer put it, "to let their achievements speak for themselves" even as they strongly identified with the power of the state.

Gilmartin continues as follows:

> The public commitment to scientific control over nature which was linked to service to the state worked for British and Indians alike. For Ram Das Tandon, an Indian who graduated from Roorkee in 1898 and joined the Punjab Irrigation Department, the process of becoming an engineer at the college was like passing through a transformative 'dream', defining an entirely new 'public' identity.

To become an irrigation engineer in this way also meant to become and embody a specific version of masculinity; it symbolized being in control, rational and self-confident, and implied joining the ranks of those in power.

The 'progress' and modernity that was promoted through the development of new and modern irrigation systems therefore went accompanied with the promotion of new and 'modern' versions of masculinity. Training to become an irrigation engineer at the service of the colonial state not just implied learning to speak the mathematical language of scientific engineering, but also meant learning

to assume the prestigious, and undeniably masculine, identity that came with engineering work. In fact, analyses such as the one by Gilmartin (1994, 2003) suggest how irrigation modernization involved clashes between old 'feudal' masculinities and new 'modern, professional' masculinities; clashes between 'modern' engineers who based their demands for more water powers, arguments for technocracy, and on scientific rationality, and 'traditional' leaders who based their water powers on history and local knowledge.

> [F]or many engineers the necessity of undercutting the position of these men [the traditional canal *sarpanches*] was at the very heart of 'scientific' management. Writing in 1909, E.S. Bellasis, the Superintending Engineer of the Derajat Circle, attacked the old system. (…) The root cause of 'popular' complaint at irrigation reforms, he said, lay in the power to control water that 'big men' had previously exercised all along the inundation canals of southwestern Punjab (Gilmartin, 1994).

Throughout the second half of the twentieth century, professional irrigation languages and identities became increasingly globalized and universal: irrigation engineers in Egypt, France, Australia, the United States and the rest of the world tended to view the world in the same mathematical terms, and the hydraulics of irrigation channels and the mechanics of dam construction were also the same whether applied in California or the Indus Basin (see Gilmartin, 1994). The foundation of the International Commission on Irrigation and Drainage (ICID) in 1950 is a clear mark of the internationalization of irrigation knowledge, and its congresses not only helped consolidate a particular epistemic tradition, but were also instrumental in establishing a global brotherhood of irrigation engineers, of inculcating an *esprit de corps* amongst professionals and carving out a distinct, and distinctly masculine, engineering identity. What Ruth Oldenziel described for construction engineers in the USA may well apply to irrigation engineers, too. Engineers describe and perceive their world as an affair between men only in which women and their family of blood relatives are replaced by a family of engineers who prove their manhood through their struggles with other men, including fellow engineers and male farmers (cf. Oldenziel, 1999).

Yet and although there was no question that normal professionalism (Chambers, 1992) was associated with masculinity, ideas about how a true and real irrigation professional should behave, what he should know, and how he could distinguish himself have always been subject to discussion and change. Debates for instance between those engineers favouring 'total control' and those preaching flexibility to leave room for farmers' decisions can be seen to not just be associated with different ideas about development and modernity, but also with different versions of masculinity. In the Netherlands, the first group used to be trained in Delft and were seen as (and saw themselves) as the 'true' engineers embodying some tough scientific and rational version of masculinity, whereas the second group trained in Wageningen were the 'softies' who alongside their promotion of different engineering ideas also promoted a different, more 'emotional' version of masculinity. Laurie's analysis of Bolivia's water wars provides additional examples of competing water masculinities. She identifies three versions of 'the modern' – 'technocratic neo-liberalism', social development and 'techno-fix development' – that have become associated with water since privatization first came on the agenda in the early 1990s, and shows how all three are gendered in specific ways. The institutional strengthening plans that preceded the first round of water privatization, for instance, implied a questioning of the 'old' mestizo public sector class of technocrats. Foreign consultants (usually white, Northern men) questioned their management skills and integrity, with an implied accusation of corruption. The public sector paradigm they represented lost status and became outdated, and with it their version of professional manhood (Laurie, 2005).

The extreme 'maleness' of the irrigation profession does not mean that the irrigation profession and the professionals denied the existence of women altogether. On the contrary, women, or the symbolically feminine, provided the necessary other part of a dichotomous gender order where maleness and femaleness are perceived as opposites and attributed different forms of behaviour (Gherardi and Poggio, 2001). Women and the feminine played a crucial role in lending irrigation

professionals their virility. Women exist as lovers, mothers and daughters, roles that throw them into sharp relief with male irrigation engineers. Or, women are allowed a place in the irrigation world *as women*, as *the other* against which irrigation professionals in power defined their identities and projects. In one sense, the very absence and invisibility of women in the professional irrigation domain can be seen as enhancing the status of the irrigation profession by underscoring its 'manliness'.

The recent decades have seen a reduction in the (perceived) importance of irrigation engineers in creating prosperity, and a concomitant decline in their status and prestige. As a high-ranking Egyptian irrigation engineer once told me about the situation in Egypt: "Nowadays boys no longer choose an engineering training when they're after a prestigious job, but they choose training in IT or go for an MBA". A decline in the funding available for new irrigation constructions has contributed to this, linked to the fact that ever fewer areas are available for new irrigation developments. Serious criticisms about the negative environmental effects and sustainability of large irrigation development have also lowered the popularity of engineers. In reaction to these criticisms, a process of re-defining the profession and its expertise has been going on; irrigation professionals still have to re-establish their professional credibility. At the same time, irrigation and water management are no longer seen as the exclusive domain of engineers. Economists, social, political, environmental scientists and geographers have assumed an increasingly important place in irrigation research, in policy discussions, and indeed in planning irrigation. Calls for Integrated Water Management have further opened the doors for experts from different disciplines to shed their light on irrigation questions. These developments are re-shaping and altering professional identities and the ways in which these are gendered; some have even suggested that what is needed and at stake is a 'feminization' of the profession (see Turton et al., 2000).

Anecdotal evidence suggests that in some countries (like Egypt, India, Sri Lanka and the Philippines), a decline in the importance, power and budget of irrigation bureaucracies has in recent years gone accompanied with an increase in the number of female irrigation engineers employed by the state. The rise in female employees of irrigation bureaucracies may also be the result of a gradual opening up of educational opportunities for women, and of their advancement in all professions. Yet, according to anecdotal observations and experiences, a gendered division in tasks continues to exist, with more women working in the less prestigious administrative office jobs and more men being involved in the jobs that wield more status and powers. Such experiences are consistent with studies analysing the entrance of women in other male dominated professions (Meyerson and Fletcher, 2000; Ely and Meyerson, 2000; Gherardi and Poggio, 2001; Collinson and Hearn, 2001; Yancey Martin and Collinson, 2002; Yancey Martin, 2003). The historical predominance of men in the engineering profession, and the constitution of professional identities and cultures by a strong gendered dichotomy, have coalesced into a set of firmly established notions and practices which confirm that the work of irrigation is part of a public domain in which men, and particular forms of masculinity associated with them, 'naturally' reign. Workplace social practices thus tend to favour such men without question and often in subtle and insidious ways. They preserve male dominance by coding activity and assigning meaning as either superior (male, masculine) or inferior (female, feminine) while at the same time maintaining the plausibility of gender neutrality. Identifying these social practices and documenting their effects on women's and men's experiences is the starting point for questioning gendered power in the irrigation profession (Ely and Meyerson, 2000).

WATER OPERATORS

A next important site for studying the linkages between water control, men and masculinities is the operational level. Here, I refer to the operation and maintenance of larger canal irrigation systems. This is the domain in which actual water distribution happens, and it is inhabited by ditch tenders, gatekeepers, canal operators next to the users and others with an interest in water. It is also the domain of what Mollinga et al. (2008) in their introduction to this volume have called the everyday politics of water; it is here that direct struggles over water occur, and contesting over who gets how

much water and when happens. As many scholars, starting with Robert Chambers (1998) have observed, such struggles and the actual water distribution that happens as a result of it rarely take place following bureaucratic technical-administrative recipes and rules. Especially when water is scarce, they happen through competition and conflict between local influentials and power-holders using some combination of influence, alliances, use and threat of force and bribery. Even though few authors deem it necessary to explicitly mention it, the overall impression one gets from studies of water management at this level is that all relevant actors in this domain tend to be men. When female exceptions are mentioned, it is precisely because they are exceptions.

Few studies allow a more explicit questioning of why water operation and distribution is such a masculine affair, but there are two notable exceptions: the dissertations of Joost Oorthuizen and Edwin Rap. Their descriptions and analyses are among the few which more or less explicitly show how the professional identity and performance of operators are coloured by and tied up with notions of masculinity. Although neither Oorthuizen nor Rap intended to explicitly describe, let al.one question or analyze, the linkages between professional performance and performance as a man, both their descriptions of water and politics at the levels of day-to-day operation and management of an irrigation system can be read as accounts of masculinities. In the Philippines' system that Oorthuizen studied (Oorthuizen, 2003) as well as in the Mexican system that was the research home of Rap (Rap, 2004), professional performance as a canal operator appeared to be closely and positively linked to 'being (or performing as) a real man'. Hence, not only were the operational and managerial water management tasks – which in real life involved a lot of politics – mainly or only done by men, these tasks were also seen and defined as truly masculine in that performing them simultaneously entailed performing masculinity. It is striking in this respect that Oorthuizen (in a footnote) makes mention of one female water master, who was (considered a) *macha*: also when a woman does the job, it is a performance of masculinity (Oorthuizen, 2003).

Oorthuizen: UPRIIS system in Central Luzon, the Philippines

Oorthuizen analyzes how the control and management of water is an intrinsic part of local and regional politics, and closely linked to other struggles such as those over political votes and markets. Struggles to control water, and struggles for the authority to decide on water distribution, are part and parcel of wider struggles of power and authority. Oorthuizen describes such struggles, and the networks and alliances that are formed around the control of water. These alliances and networks invariably appear as consisting of men only and a strong impression is created that water politics and masculinity intrinsically belong to each other and reinforce each other. The manliness of canal operators rubs off on the job they do, and water jobs in turn have a masculine character that rubs off on the people that do them (cf. Cockburn, 1988 cited in Britton, 2000). As Oorthuizen remarks in a footnote: "The fieldwork was a men's world. All gatekeepers and ditchtenders were males, but a few watermasters were female college graduates. They entered the NIA as a watermaster, or were transferred to the field coming from an earlier administrative position. Water management was considered to be a male job, requiring physical strength and toughness".

Oorthuizen's analysis suggests that the particular form the masculinity of water powers and politics took in the UPRIIS system was shaped by a history of armed peasant rebellion in the area, which created a political atmosphere in which physical strength and toughness were important. Oorthuizen (2003) cites Fegan (1982) on this:

> Being *matapang* (brave) is not just an element of Philippine macho culture reproduced by the American and local film industry. It is rooted in its recent history, as both during and after the war, people had very good reasons to fear for their lives and seek the protection of strong local leaders capable of protecting them.

The display and performance of such strength and the use of violence continue to be approved of as important signifiers of power and influence, and simultaneously count as evidence of 'real' masculinity. In a description of what Oorthuizen calls one of the most dramatic water conflicts in the history of the system, one of the main actors – a former village leader – relates that he needed (and got) protection from 12 soldiers to help guard the gates. This same person once was harassed by men from a rival group at the headgate. "When I learned about it, I was very angry and went to Juatco's house, carrying my M-16 machine gun and.45 pistol. I decided to go alone, because in case things would go wrong, I would be the only one killed" (Oorthuizen, 2003). At the sites of violent struggles over water, women only appeared precisely because of their vulnerability and physical weakness: "We believed that the presence of the women might stop others from attacking us" (Oorthuizen, 2003).

In describing a network of friends and allies who joined forces to protect their water interests (what Oorthuizen (2003) calls an 'irrigation alliance') he notes:

> Each of these people was seen as siga, capable of ruthless action, including killing if necessary. The father of secretary Juatco and the kapitan had become known for their bravery as Huk guerrillas in defending Victoria against the Japanese occupation army. (…) He (the kapitan) was known for killing several Huk 'bandits' that challenged the rule of the mayor (who at the time was only a barangay kapitan) during the 1950s and 1960s. Secretary Juatco was a toughguy as well. Next to irrigation, peace and order was his political business. Together with the kapitan, they would fight NPA guerillas in the remote barangays in the municipality (NPA is the New People's Army, the communist guerilla group still active today). (…) The son of this kapitan, the NIA ditchtender, was also considered to be a tough man. He operated as one of the bodyguards of the secretary. (…) Their reputation for toughness was useful during their operations. At the peak of the alliance's power nobody dared to touch the crucial headgates in the main lateral of the Zone, without the consent of Juatco or his principal allies.

The descriptions of another major player in politics and in water, Mayor Meneses, are also replete with references to his manliness. On page 126, "Mayor Meneses was the typical 'self-made man'. (…) He built his political career on his popularity as a manager of the local cock-fighting arena" (Oorthuizen, 2003). And in a footnote: "(He) was a powerful male as well. It was said that Mayor Meneses had as many as one hundred children, raised by more than ten women" (Oorthuizen, 2003).

Next to observing the work of gatekeepers and ditchtenders, Oorthuizen analyzes how watermasters, who were hired by the National Irrigation Administration (NIA), carried out their jobs. The work of a watermaster involved a difficult juggling of different interests. Watermasters found themselves pushed and pulled by different groups of water users and their representatives, local and regional politicians and their 'bosses', the engineers of the NIA. To survive in this difficult job, a minority opted for the 'bold' strategy, which is the strategy that most resembled that of the old guerrilla heroes: "These were toughguys, who were willing to live rather dangerously. By standing firm in guarding gates and patrolling canals, they were crucial actors in water management who did make a difference" (Oorthuizen, 2003). The other water masters chose strategies that were more careful or evasive.

Oorthuizen's analysis suggests that in irrigation management the aggressive type of masculinity, which associates real manhood with physical strength and prowess and with a preparedness to fight and use violence, was gradually being replaced with a more 'professional' water identity in which authority and powers were also (at least partly) derived from advanced education and some degree of technical expertise. This more professional water identity was differently and maybe less strictly gendered. Another interesting gender differentiation in operational water tasks had its source in the increased emphasis on fee collection, which made it logical to increasingly hire people with a financial-administrative background as water masters. Such people were found in the financial sections of the District level irrigation agency, and most of them were women. Interestingly, these female watermasters were always assigned the upstream, head-end sections of the irrigation system: those areas where (according to Oorthuizen's analysis) there were much less conflicts and where dirty politics were much less frequent. In those areas, it was not so much the distribution of water that caused

conflicts and struggles (water distribution happened almost by itself), but the collection of fees and the organization of irrigation associations around water distribution and maintenance contracts. In the lower and tail-end sections of the system, in which there was conflict over water, men were appointed as watermasters.

Rap: The Left Bank of the River Santiago Water User Association in Nayarit, Mexico

Rap's study is an ethnographic account of a water user association after Irrigation Management Transfer. The aim of his analysis is to bring out and show the cultural and performative dimensions of water control. Rap presents the analysis of *canaleros* and other actors at the operational level as a theatre play, and starts with presenting the main characters of the play. Significantly, all actors on stage are men. Rap's analysis suggests that the people who play important roles in water management at the operational level are all men, and that masculinity is a crucial ingredient of their professional behaviour. The description in chapter 5 of the doings and wanderings of one particular *canalero* (Diego) is replete with references to networks of male friends, symbolic and real brotherhood (*compadrazgo*), godfathers, patronage, male political groups, clientelism and *cuatismo*, a Mexican form of male friendship in which alcohol is important. An atmosphere of male conviviality is painted, in which complicity and trust affirm relations of social and political commitment (Rap, 2004). The linkages between the *canaleros* and the larger, more influential, farmers are also typified in terms of a "sphere of male complicity and friendship" (Rap, 2004).

In Rap's account, water politics appears as an exclusively male affair, the dynamics of which are linked to sympathies and antipathies between men. Informal interactions among the male members of the political water networks invariably involved jokes and humorous discussions, and manhood was a revolving subject as part of continuous plays of words and images in which masculinity was re-affirmed and contested. The *canalero* Diego for instance phrased his criticisms of his engineer-colleagues in terms of their lack of masculinity, and he accused them of homosexuality (Rap, 2004: 163). References to homosexuality were frequent and were never meant literally, but were a typical way of discrediting one's political or professional adversaries by evoking their femininity and thus questioning their masculinity. One's ability to joke and make fun of one's own and others' masculinities in itself served as a proof and display of one's own manhood. Another way in which notions of masculinity coloured and pervaded water politics was through the admiration of Diego with the large farmer-producers, who were portrayed by him as 'real men' and who figured as symbols and icons of (one version of) masculinity. They commanded respect and admiration from other men, because of their wealth, power and responsibilities (Rap, 2004).

Rap also shows how the domain of water politics is spatially a male domain in that it is set, 'played out', in spaces that are not open to women, at least if they want to maintain an image of respectability. Cantinas and restaurants are of particular importance, and male bonding typically occurs when eating and drinking together.

> [T]hese apparently marginal recreational spaces such as cantinas and restaurants are central to forging social and political bonds in this rural sphere. They are convenient places for the organization of festive encounters in which collective drinking and eating and popular music take on political importance (Rap, 2004).

Interestingly, the only women that are allowed in these domains are transvestites: men dressed and performing as women.

Rap's analysis can be read as an almost typical account of masculinities in the sense of Connell, and indeed resembles some of Connell's own studies on masculinities which provide empirical evidence of

multiple hierarchies – in gender as well as in other terms – interwoven with active projects of gender construction or performance and active struggles for dominance (Connell and Messerschmidt, 2005).[4]

Like Oorthuizen, Rap's analysis alludes to a gradual change in possible sources of respect, status and power – and indeed masculinity – from physical strength, networks and deep knowledge of the territory to education (an engineering degree) and a formal position in the irrigation department. This change marks a technocratic professionalization of irrigation management. Entry and advancement in the irrigation bureaucracy increasingly get to be (at least on paper) determined by formal qualifications and merit, and no longer by patronage or the ability to flex one's muscles or other threats of force. In the Philippines, this change opened up opportunities for women to join the ranks of irrigation professionals.

The accounts of Oorthuizen and Rap draw attention to the importance of cultural and symbolic practices, the rules and rituals, through which gender is 'done' in water management. That women remain conspicuously absent in these accounts may partly reflect methodological choices or biases, but also and importantly reflects how irrigation management in these two cases is a highly gender segregated phenomenon. The analyses enable seeing how segregating attitudes and behaviours are constructed and consolidated through various symbolic and performative means. How this strong 'gendering' links to actual water control and powers is not a question to which the answer is straightforward, although both cases suggest a strong association between 'being seen and honoured as a man' with authority and power: the more you are (seen as) a man, the more powerful you are. Yet, it is possible that the analyses leave the possible parallel existence of more 'feminine' types of water powers relatively unexposed. In the Philippines case, more 'feminine' powers may for instance reside in women's control over finances. It is quite well established that in Central Luzon, there is a clear gender division of labour. Men run farms, do the politics, and represent the household in disputes with other households, but women run the households financially and are heavily involved in trading. As a telling caricature, a woman can be likened to the minister of finance and internal affairs, and a man to the minister for exterior or foreign affairs, justice and war (see Illo, 1985).[5] Oorthuizen's own observations about female watermasters being more likely to be put to work in head-end areas where water disputes tend to be about money rather than about water per se seem to lend some support to the existence of 'feminine' sources and mechanisms of power. At the office level, all but one of the engineers in UPRISS was a male. On the other hand, women outnumbered men in administrative sections, and had taken up management positions (Oorthuizen, 2003). Likewise, in the River Santiago Water User Association in Mexico there may be forms and mechanisms of water control that have not been revealed by Rap's account, and which are more associated with or open to women. Rap's use of the metaphor of a theatre play in fact evokes questions as to who are behind the screens, and by whom and how the screens were constructed. Is masculinity itself (in terms of structures, identities, symbols) invoked to construct these screens and to (re)present irrigation as an all-male affair, an affair among men? Gendered analyses of water management in other regions of Mexico in fact suggest this, while simultaneously reconfirming the extreme masculinity of the more visible and public forms of water management (Monsalvo-Velázquez and Wester, 2002; Brunt, 1992; Vera, 1999).

WATER USERS: 'TRADITIONAL' IRRIGATION SYSTEMS

The fact that in most irrigation systems, women do not have rights to irrigation water and do not participate in formal water management bodies is quite well established (see Zwarteveen, 2006). Many

[4] Connell (1995) outlines four categories or levels of masculine privilege: hegemonic, complicitous, marginalized, and subordinated. These categories represent various abilities to cash in on what he calls the "patriarchal dividend", or the "advantage men in general gain from the overall subordination of women" (Connell, 1995). Men who receive the benefits of patriarchy without enacting a strong version of masculine dominance could be regarded as showing a complicit masculinity.

[5] I thank Brian Fegan for these observations.

analysts tend to attribute this gender gap in rights to and voice in water management to male-biased policies and institutions, and in particular to the fact that most designers of irrigation policies and systems are male engineers. Some scholars for instance reason that the origins of male control over water can be found in western systems of Cartesian thought and western systems of patriarchy and capitalism (Shiva, 1989; Strang, 2005). In this reasoning, (Western, white) men's 'mastery of nature' is seen as a powerful emblem of western progress and civilization, associated with capitalism, enlightenment and positivism. Some real or metaphorical beliefs that women in traditional cultures were closer to nature and had more control over water are the corollaries to such lines of thinking. In this section, I bring together some examples of 'traditional' or farmer-managed irrigation systems in South-East Asia, Eastern Africa, Nepal and the Andean countries which I have chosen mainly because of their relative isolation from globalized irrigation engineering traditions and modes of thinking and doing. Studies of such irrigation systems shed doubts on the attribution of male dominance in irrigation to colonial or neo-colonial power relations and knowledge systems. Also in these 'traditional' systems, water control is clearly associated with men and masculinity and women lack rights and voice. Again, the choice of examples is not based on a wish to provide generic evidence that irrigation powers are always and everywhere masculine. Instead, I chose the examples because they provide a third specific site of water control and masculinities.

A review of studies of irrigation systems in different parts of the world convey the impression that irrigation powers are bound to be concentrated in the hands of (some) men, and that irrigation cultures and identities invariably have masculine connotations. This is often linked to male landownership, but interestingly water management is also a male-only affair in those Southeast Asian societies in which women can own and inherit land. In the famous Ifugao terraces in the northern Philippines for instance, all tasks and negotiations that had to do with the operation and maintenance of the canals and intakes were done by men. Decisions about how much labour had to be contributed by whom, and about how much water everyone would get, were negotiated between male heads of households. The patrolling of canals and turnouts to prevent one's water being stolen by others was likewise a task done by men usually armed with spears, swords with work-blades and shields. Though women equally inherited land with its attached water rights, and worked in the fields in land preparation, transplanting, weeding and in the harvest, they were not involved in the construction and maintenance of the irrigation system or in the armed politics of water management (see Barton, 1922). Similarly for the *zanjera* in Luzon in the Philippines, only the male water users were obliged to send men and materials for the re-construction and maintenance of the dam and canals, and attend meetings. Fields were equally inherited by females and males but the membership of the *zanjera* was exclusively male, and women worked in the fields but not in the irrigation or its management. The armed protection of turnouts in the dry season was also the duty of men (Lewis, 1991). Also, the Balinese *subak* communal systems had associations consisting of only male water users, of which those served by a canal must be members, attend meetings and when called join the work parties and send materials to maintain the canals, drainage systems, silt traps. Each member household had to contribute foods and both male and female members participated in frequent and elaborate rituals at their *subak*'s temple. Like in the Philippine cases, women equally inherited irrigated rice land and did work in the rice fields, but only men worked in and managed the irrigation (see for instance Jha, 2004).

The ideological, spatial and symbolic demarcation of the tasks of irrigation management – understood mainly as the construction, operation and maintenance of the canals – as a masculine domain has been observed in many other irrigation systems throughout the world (Zwarteveen and Neupane, 1996; Lynch, 1991; Zwarteveen, 2006). Even though women are active as farmers in irrigated fields, their responsibilities and visibility in the formal and public parts of irrigation management are often restricted. Some researchers suggest that the definition and delimitation as irrigation as something masculine is one way of reconfirming masculine status, and vice versa: defining irrigation management as masculine lends it with prestige. In the common understanding in Nepal, for instance, 'irrigation' is conceived as the limited set of activities related to the maintenance of the head works and

primary canals, a definition that systematically excludes all work that women do in irrigation and therefore allows demarcation of irrigation as a strictly male domain (von Benda-Beckmann et al., 2000). Social norms (partly justified by fears of adultery and sexual violence) and work divisions (women's domestic and caring duties) that restrict women's mobility justify and legitimize the construction of irrigation as something that belongs to men. One explanation male farmers in the Chhattis Mauja irrigation system in Nepal gave to explain why maintenance work on the head works could not be done by women was that this would expose them to embarrassing jokes and behaviour of men, while women (especially those who lived further away from the main intake) explained that it would be difficult for them to participate in maintenance of the head works because it would require travelling and working in places far away from their homes (Zwarteveen and Neupane, 1996). Likewise, in Peru,

> Women who prepare meals for workers and bring burros as transportation between the fields and town perceive these tasks as part of an integrated whole called 'irrigation'. In fact women speak directly of being involved in irrigation when they carry out tasks that complement men's work in the fields. Men, on the other hand, more narrowly define irrigation as the work they perform in actually opening the canals with shovels so that water flows into the fields (Bourque and Warren, 1981; also see Lynch, 1991).

In the Nepal Chhattis Mauja system, a farmer managed irrigation system,

> (Water) meetings were considered typically male gatherings, associated with public political functions that were also seen as typically male. Women never attended general assembly meetings, because (according to the men and women interviewed) they would not be able to voice their concerns and needs at such meetings. This was partly attributed to the cultural rule that women are not supposed to speak up in front of male relatives. It would not be well seen for a woman to raise her voice and articulate an opinion in front of others. Women also referred to their illiteracy as a reason for not attending meetings; they were afraid that they would not be able to understand what was being said and thought they had little to contribute (Zwarteveen, 2006).

Gendered divisions of water work and gendered water identities may be justified by and couched in gendered symbolisms and languages that are linked to taboos, norms and myths. Interestingly, similar traditional rules exist in countries as diverse as Sri Lanka (Athukorala, 1995), Tanzania (Sheridan, 2002), (Adams et al., 1997; Dubel and de Kwaasteniet, 1983), Indonesia (Bali, Jha, 2004) and the Andes (Radcliffe, 1986) that stipulate that women (any woman or sometimes just menstruating women) are not to come close to irrigation intakes, or to walk on canal bunds. If they do, disasters in the form of collapsing intakes and reduced fertility of soils and humans will be the result. In northern Kenya, "women are not allowed to take part in any work connected with the irrigation furrows, the general maintenance, the control of the water level at the intake, or the diverting of water onto the crops from the furrow" (Adams et al., 1997). Among the neighbouring Pokot, women are forbidden to bathe in the furrows, and a woman who has given birth to twins, or had a breach birth, is not even allowed to touch the water in a furrow. Problems with the furrows, such as leakage or bank breakage, were blamed on women breaking the taboo (Dubel and de Kwaasteniet, 1983 cited in Adams et al., 1997). Sheridan quotes elderly Tanzanian women who relate stories about what happens when women approach furrows, or open an intake:

> The wife of Athumani helped to clean a furrow and thought that she had the right to get water from the *ndiva* without asking a man; she took water without permission and died during childbirth. (…) One of the bad effects of a woman taking water by opening a *ndiva* is that her next menstruation would not close up and she would bleed to death. Those who did not believe got various problems when they did things against the rules of the ndiva. Some gave birth late, others gave birth to deformed children, others did not have children at all. Some got sakiriji (a cursed condition), that it you give birth to children and then they run away and never come home to look after their parents or they do not remember or care at all about their parents (Sheridan, 2002).

Although not mentioned in these texts, reduced fertility of women or deformation in children are as much a concern of fathers as they are of mothers, reflecting the largely symbolic nature of these gender metaphors.

Such stories illustrate the existence of symbolic and semantic parallels between human sexuality and soil productivity, with irrigation water for instance likened to semen and the earth or soil to a womb. Some scholars interpret such parallels as proof that control over irrigation, and by extension over the fertility of soils and over agricultural productivity, are symbolically and semantically linked to the control of men over women, and by extension over their fertility and productivity (Sheridan, 2002). Whether true or not, these and other examples suggest that also at field levels and in farmer-managed or traditional irrigation systems, the use and management of irrigation water are often sites of rather strong gender segregations which are rooted in larger systems of gendered metaphors, symbolisms and norms that serve to justify and naturalize them. How such gender segregations, and the masculinity of water management, work to establish or challenge power both among men as among men and women is a question that deserves further study. Clearly, not all men equally 'benefit' from such gender segregations, and the study of different degrees of accepting or circumventing hegemonic masculinity is likely to shed a more nuanced light on the effects of gendered norms and symbolisms on day-to-day water management practices.

KNOWLEDGE, PERSPECTIVE AND SITUATEDNESS

The above presented examples of the associations between masculinities and water powers cannot be read and understood without adding an additional layer of masculinity analysis, that of the linkages between knowing (ways of ordering and representing the water world) and the knower. Representations of irrigation realities are not, of course, simply reflecting 'irrigation objects', but are mediated through and constructed by 'subjects' (Sayer, 1992). The ways in which 'water and politics' are thought about and conceptualized are bound to be, as it were, marked by masculinity or 'constructed' as masculine in at least three ways. First, because they are framed in theoretical languages and discourses that are masculine in that they tend to render the work and activities of women invisible or attribute lesser value or importance to them (see Zwarteveen, 2006, especially chapter 3). For instance, in the focus of most water studies on either 'farmers' or 'public men', many studies implicitly pre-define the gender identity of those they study while also drawing the boundaries of their research area in a gender specific way. What remains hidden is what is behind the farmer and public man; the private world to which women are consigned through omission, tradition, nature and explicit theorization. It is in this 'private' world that sexuality, domestic labour, reproduction, and child care are situated – a realm of allegedly pre-political or supposedly non-political practices, presumptions and structures, such as 'the family'. The narrative focus in many irrigation studies is perforce on the 'public' and 'professional' realm, the 'private' is merely presupposed, protected and regulated and it is within what is defined as the public and professional that all that matters to irrigation management is assumed to take place. I find it interesting in this respect that some studies that explicitly focus on gender and water powers (e.g. Vera, 1999; Brunt, 1992; Krol, 1994; Kome, 1997 to mention just a few) in irrigation provide a more nuanced picture in gender terms, and reveal important sources of water agency and powers that tend to go unnoticed in most 'mainstream' studies. This suggests that the very definitions and theorizing of irrigation power, authority, or expertise tend to have a masculine framing and colour making them less suitable for naming and recognizing irrigation actions and knowledge of women or labelled as feminine.

The second way in which irrigation knowledge and expertise are 'masculine' is through their close affiliations with the professional irrigation world, which is itself distinctly masculine. As Mollinga et al. (2008) noted in their introductory paper to this volume, most irrigation knowledge is aimed at directly serving policy-makers and planners, which is why its concepts and language are necessarily close to these professionals. In 'normal' professional irrigation languages, questions of gender are not easily

asked, because they tend to either touch on what is considered as 'natural', 'normal', or as 'instinct', delegating it to the disciplinary realms of biology, ethics or psychology that are seen as relatively far from the heart of irrigation. Alternatively, questions of gender are seen as derivative of larger technical, social or economic developments or of society at large that cannot and do not require separate attention from an irrigation perspective. In most professional interpretations of irrigation realities, gender relations or masculine and feminine identities do not belong to the domain of what needs to be explained. And at an even deeper level, questioning gender within normal irrigation thought is difficult because the traditional subject matter of irrigation engineers is non-social: soils, plants, water, and technology. Although insights from the social sciences are increasingly incorporated and used, the legacy of epistemological positivism remains visible in a general absence of a critical interpretative perspective on knowledge (cf. Harding, 1986).

There is, in addition, a possible link between the gender of water researchers and their observations and constructions of reality. Researchers themselves are also gendered, sexual beings who, like all individuals, have to exist in the social world at some level of interaction. It is conceivable that for male water researchers it is easier to empathize with men and 'masculine' ways of exercising and displaying water authority and power. Oorthuizen literally acknowledges this 'situated perspective' (Haraway, 1991) in starting his analysis of watermasters by confessing an identification with them. They are described as competent, knowledgeable, hardworking, experienced. Male farmers, irrigators, and operators may also be simply more easily accessible to male researchers than to female researchers, especially when important water deliberations tend to take place in spaces that are exclusively reserved to men, as shown in the system analyzed by Rap. The reverse, of course is also true: it may be easier for female researchers than for male researchers to empathize with women and their strategies and interests, and to unravel their specific sources of irrigation power and expertise. The above accounts of how men and women in Peru and Nepal differently define irrigation depending on their own involvement in irrigated work suggest that talking to just men or just women will result in a one-sided and incomplete picture of irrigation realities, and is likely to result in a distorted account of the working and mechanisms of water control mechanisms. Research on men, masculinities, and water powers should, in other words, include a more explicit theorizing of the theorizers, and of how their identities and 'situatedness' (Haraway, 1991) and the epistemic communities (Haas, 1992) to which they belong impact on their methods and conceptualizations.

CONCLUSIONS

The examples and research materials presented here create a strong suggestion that water powers are masculine, or that there is something about water politics that makes it stick to masculinities. This suggestion serves to support a plea for making the study of men and masculinities an explicit part of the critical feminist questioning of irrigation powers and politics. Such questioning goes beyond making women 'fit' in the already established categories of universal irrigation actors, and does not just consist of creating a separate female or feminine subject position for women alongside the already existing 'masculine' one. It makes, instead, the critical questioning of the categories of 'men' and 'women' central to its analysis to start understanding how gendered identities are socially produced and to allow exploration of how gendered divisions, codes and labels shape the allocation of resources, incomes and powers.

In all three different identified sites (that of professionals, operators and of traditional irrigation systems), irrigation identities and powers are marked as masculine, rooted in wider symbolic and normative gender orders and maintained by performative practices and narratives that celebrate masculinity. How this masculine colour of irrigation powers and expertise link to the exercise of control over water (resources, knowledge, authorities) is most probably not a straightforward one-to-one relation. The presented examples nevertheless suggest that narratives and practices in irrigation tend to appeal to a binary and oppositional gender logic that perpetuates the dominance and apparent

neutrality of masculine traits and masculine experience, while devaluing the traits and experiences more typically associated with women.

When taken together, the examples seem to provide instances, of some sort of all encompassing structure or 'hydropatriarchy', tied to and rooted in wider systems of male domination. Faithful to social constructivist conceptualizations of gender as well as of irrigation, I do not think that this should be interpreted as evidence of intrinsic links between irrigation and masculinity. I do not think that water control is necessarily masculine and tied to the control of women (as for instance the analysis of some eco-feminists suggests, see Shiva, 1989 and Strang, 2005), but am more sympathetic to a view that appeals to an understanding of the social context within which particular gender identities and structures are produced and articulated, and within which particular configurations of water control and politics appear (Faulkner, 2000). Hence, although water powers and politics are often connoted as masculine, the specific manifestations and forms which such water masculinities take are diverse and depend on culture and history. Masculinities are also not static, but open to change and are contested. Butler's treatment of gender as a 'site of permanent openness and resignifiability' (Nicholson, 1998) captures this.

The question that nevertheless poses itself through the presented evidence is whether there is some larger structure to masculinity in irrigation. With Fraser and Nicholson, I think that the meaning of the male/female distinction across cultures and times can be understood as encompassing a complex web of distinctions evidencing threads of overlap within a field of discontinuities (Fraser and Nicholson, 1990). The exercise of naming and tracing such threads, of exploring how masculinities and water powers stick together – through which symbolic associations and cultural practices, through which identifications – is a relevant and necessary part of research on irrigation and politics. Such an exercise should move beyond simplistic inclusion/exclusion or have/have-not frameworks to explain the 'absence' or 'invisibility' of women from irrigation and politics. Instead, an analysis is needed that allows questioning the ways in which power and politics are seen, identified, practiced and performed, that allows questioning the actual and symbolic bearers of water powers and that allows identifying, shifting or even crossing the boundaries of how domains of irrigation power and politics are normally defined, conceptualized and understood.

One possible direction for identifying 'threads of overlap' lies in tracing the mentioned linkages between irrigation knowledge or constructions of irrigation realities and irrigation experts as the producers of such knowledge: through texts and designs, narratives and stories, and their embodied experiences, irrigation engineers and experts are not just mirroring irrigation realities, but also partly reflecting their own ideals, norms, and dreams. The masculinity of the irrigation profession, and of irrigation experts, would then rub off on the knowledge they produce, and create 'masculinist' images of irrigation realities. Another direction in which to look for threads of masculinity is through a feminist analysis of what Lynch (1993) called 'the bureaucratic tradition' in irrigation, exploring the commonalities and discontinuities in terms of epistemic cultures, narratives, and professional identities across countries and investigating how and if these are linked to more globalized discourses and communities. Lastly, there may be threads of overlap, a pattern that has its roots in the importance of (control over) irrigation in creating and maintaining social hierarchies and in an overall tendency for men to be where the power is. Understanding the politics of irrigation, therefore, can benefit from understanding how these politics are constituted by, and help constitute, gendered social hierarchies and vice-versa.

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