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Irrigation Management in the Pamirs in Tajikistan: A Man's Domain?

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Families living in Gorno-Badakhshan—situated in the Pamir Mountains in Tajikistan—depend on irrigated agriculture to meet their subsistence needs. Because men predominate, and are most visible in, the operation and

management of irrigation systems in this region, water-related activities are often labeled as masculine. Yet women historically played an important role in on-farm irrigation activities and even formed the majority of the agricultural workforce during the Soviet period. Today women are still responsible for the bulk of farming activities, including irrigation. This is partly a consequence of the difficulty of

depending on farming alone for making a living, which leads many men to migrate elsewhere in search of employment. Drawing on 6 months of fieldwork in 2 villages in different irrigation systems, this article argues that although formal water rights and power are vested in men, this does not mean that women lack agency, nor is it necessarily a reflection of wider gender inequities. Understanding the power and equity implications of formal distributions of rights and powers among men and women requires an analysis that links formal rights to actual irrigation and farming practices and places them in broader historical and livelihood contexts.

Keywords: Land rights; water rights; livelihoods; gender; power; agency; Pamir Mountains; Gorno-Badakhshan.

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Irrigated agriculture, gender, and agency

The management and use of natural resources in Gorno-Badakhshan Autonomous Oblast (also often referred to as the Pamirs), situated in the Pamir mountain range in Tajikistan, is deeply gendered. The political powers that come with having control over water are clearly concentrated in some men, suggesting that irrigation forms part of a wider male-dominated social order. The masculinity of irrigation management is something that other studies on irrigation in mountain areas also document, showing how (some) men dominate decision-making about water allocation and the mobilization of labor for maintenance (see, for example, Hewitt 1989; Lynch 1991; Delgado and Zwarteveen 2007). A shallow feminist reading of the fact that the powers to control water are vested in (some) men may interpret this as reflecting wider gender disparities and as a symptom of gender inequality. This article, however, proposes a more cautious and layered appreciation of the gendered meaning and implications of male dominance in water management, by situating irrigation in wider historical and livelihood contexts.

We draw on a growing body of scholarly work that illustrates that formal water control is just one—and not necessarily the most important—source of gendered power in irrigated areas. At the household level, a woman's bargaining powers depend on her relative

dependence on incomes from the proceeds of male-controlled irrigated farming in proportion to incomes she herself controls, or her so-called fallback position. This in turn is partly a function of the intrahousehold organization of farming and distribution of incomes, but also depends on the weight of irrigated agriculture in overall livelihoods and incomes (Jones 1983; Schrijvers 1986; Carney and Watts 1990; Dey 1990; Zwarteveen and Neupane 1996; Carney 1998; van Koppen and Hussain 2007).

The latter is particularly relevant for mountain irrigation: Different scholarly work indicates how the emergence of alternative employment and income opportunities, which are often considered easier or more modern than the harsh subsistence farming livelihoods in isolated mountain valleys, may significantly alter gendered farming and irrigation realities. Hewitt (1999), for instance, suggests for a mountain community in northern Pakistan that the increased migration of young men caused shifts in the gendered division of agricultural activities, with women taking on many tasks that used to be reserved for men, including irrigation. These changes occurred as part of a general devaluation of agriculture as a profession in comparison to more “modern” and “clean” ways of making a living. Hence, rather than increasing the appreciation of the value of women's labor, a new gendered hierarchy of work was emerging in which the agricultural tasks now carried out by women were

seen as belonging to a traditional era and considered backward and dirty by their migrating husbands (Hewitt 1999: 148).

In this article, we use a detailed gendered analysis of farming and irrigation practices in 2 villages in Gorno-Badakhshan to further reflect on the linkages between formal institutions—focusing on water rights—and women's agency. Following Cleaver, we use a straightforward definition of agency as the capability or power to be the originator of acts (Cleaver 2007: 226). Through their acts, agents can challenge power relations and existing behavioral norms. Following the suggestions of earlier gender and irrigation studies, we acknowledge that agential powers cannot just be read from formal water rights, but instead appear in and through everyday water use and distribution practices (Brunt 1992; Zwarteveen and Neupane 1996; Delgado and Zwarteveen 2007). These practices are not just guided by formal laws and rules, but may also stem from less formal norms or customs.

Insights from the anthropology of law (legal pluralism) are useful here, for their recognition of the simultaneous existence and interaction of different normative orders in the same sociopolitical space (Meinzen-Dick and Bakker 2001). Moreover, the capacity to legitimately access water, or to have a legitimate say in water decision-making, does not reside in a static right but requires continuous investment. Attending meetings, providing labor for maintenance, and paying water fees are the more visible examples of the investments that are needed to activate one's water rights (Beccar et al 2002: 4; Boelens and Zwarteveen 2006). Mountain irrigation systems often require enormous amounts of maintenance. As the survival of these systems depends on the ability of the users to mobilize this labor, it is through providing labor that irrigators confirm and strengthen the legitimacy of their claims to water (and to water rights).

Finally, the linkages between formal water institutions and gendered agency are mediated by locally and historically specific and dynamic configurations of claims, responsibilities, and rights. As earlier gender and irrigation studies also showed, these are articulated in households through what Jackson has called the conjugal contract (Jackson 2009). Our analysis shows that they also involve wider networks of interdependencies and mutual help. Hence, agential powers—for instance, for accessing or controlling water—reside in one's capacity to maintain interpersonal networks both within and beyond households. Our findings further suggest the importance of including men's and women's own perception of their powers or the value of their work in the analysis of gendered agency. This depends on their aspirations and sense of gendered selves, which in turn are colored both by prior cultural experiences and by imaginings of possible futures.

FIGURE 1 The *mirju* (water master) removes stones from the canal in Spienz. (Photo by Lisa Bossenbroek)



Methodology

The research on which this article is based was conducted by the first author in May–October 2010 over almost an entire irrigation period. After gaining a general overview of water management in Gorno-Badakhshan, we selected 2 case studies to obtain an in-depth understanding of the management and organization of irrigation systems. The selection of the case studies was based on a number of criteria. First, during the first months of fieldwork it became clear that when water was abundant there was relatively little attention to water rights: In villages where water is plentiful a water allocation schedule was often not implemented, and water was used when needed. Therefore we looked for villages with the following characteristics: limited water availability in the late summer (August and September), a water allocation schedule, and the presence of a *mirju* or water master responsible for day-to-day operations, minor maintenance of the main canals, and oversight of the water schedule (Figure 1).

Second, because of time concerns and the wish to get an in-depth understanding of actual water allocation, relatively small villages (fewer than 70 households) were selected in 2 different irrigation systems. Finally, we also

FIGURE 2 Location of the 2 case study sites in Tajikistan. (Map by Sarah-Kay Schotte)



considered the number of female-headed households and emigrants. Consequently, 2 villages were selected: Spienz (with 49 households and 276 inhabitants), situated in the Gunt valley at 2345 masl, with a latitude and longitude of $37^{\circ}31'31''\text{N}$ and $71^{\circ}37'17''\text{E}$, approximately 20 kilometers from Khorogh, the capital of Gorno-Badakhshan, and Shokhririzm (with 56 households and 339 inhabitants), situated in the Shokhdara valley at 2983 masl, with a latitude and longitude of $37^{\circ}11'49''\text{N}$ and $71^{\circ}59'14''\text{E}$, approximately 80 kilometers from Khorogh (Figure 2).

Based on a participatory wealth-ranking exercise conducted with 4 men and 4 women from each village, a purposive sample (representing different wealth categories) of 24 people was selected in each village for in-depth semistructured interviews. More than half of the interviews were conducted with women, some heads of households and others belonging to male-headed

households. The participatory wealth-ranking exercise revealed that socioeconomic differences among families and among different women were relatively small. All participants expressed that they found it difficult to categorize people according to their wealth and resources. The *rais* (male head of the village) in Spienz explained that there were only 2 really poor households (without food, shelter, and proper clothing), but that even they were relatively well off compared to poor people in more remote areas in Gorno-Badakhshan. Finally, in addition to the in-depth interviews, observations, walks along the canals, group discussions, interviews with male and female leaders and key informants, and 25 life histories with elderly men and women who had lived under Soviet rule were conducted.

Our findings are corroborated by other studies carried out in the region (Olufsen 1904; Herbers 2001; Kanji 2002; Breu and Hurni 2003; Bliss 2006). To protect the privacy

of our informants, the names of all interviewees referred to in this article have been changed.

Gorno-Badakhshan Autonomous Oblast

Gorno-Badakhshan is situated in the Pamir mountain range with peaks ranging from 5000 m to almost 7500 m. With its 64,200 km² it is the biggest province in Tajikistan, but because of its physical and climatic characteristics, agriculture is concentrated in roughly 240 km² in the western part of the province. This part of Gorno-Badakhshan is characterized by a moderate climate, with temperatures in January dropping to around –10°C and with an average temperature in July of 25°C (Hergarten 2004). Annual precipitation is around 200 mm, mostly occurring in the winter and spring (ibid.). With its 197,000 inhabitants, Gorno-Badakhshan accommodates less than 3% of the total population of the country (World Bank 2005). Most of these belong to the Ismaili faith, whereas the inhabitants of the rest of Tajikistan are predominantly Sunni. In contrast to other parts of Tajikistan, in Gorno-Badakhshan farmers are free to make their own cropping decisions. They mainly grow wheat, barley, vegetables, and fodder crops. The growing season begins in March or April, depending on altitude. Farming is only possible through irrigation: Small-scale gravity-flow irrigation systems divert water from the rivers that drain the snowmelt from higher mountains. Most of these systems are owned and managed by the communities, with little or no government influence.

After the fall of the Soviet Union in 1991, the agricultural sector returned from being a centralized commodity-oriented system to a household-based subsistence-oriented one, mainly premised on irrigated agriculture. The security problems that Gorno-Badakhshan faced and still faces further increased the importance of irrigated agriculture as a fallback livelihood option. Yet, because farm incomes are low and there are few employment opportunities, most households rely on a combination of revenues from farming, remittances from family members working abroad, and pensions. In Spienz, 34% of the total population has migrated, and in Shokhririzm 36% has (GBAO Statistical Department 2010). Migration is undertaken primarily by men between the age of 18 and 40, leading to high numbers of female-headed households. At the time of the research, the estimated proportion of female-headed households in Gorno-Badakhshan was 23% (World Bank 2000). The male and female heads of the 2 villages studied (the *rais* and *rais-e zanan*) estimated female-headed households to be around 5%. However, our own counts, which also included those households in which the husband was either disabled, sick, or temporarily absent, found that almost 18% of the households in Spienz and 30% of those in Shokhririzm were de facto female-headed. The high rates of migration

of young men further increased the already significant involvement and importance of women in agriculture.

From a commodity-oriented system to subsistence farming

When Gorno-Badakhshan was annexed by the Soviet Union in 1933, all natural resources were nationalized and managed through centralized *sovkhozes* (state-run farms) and *kolkhozes* (collective farms not subsidized by the state). According to Herbers (2001), in the *kolkhoz* the capital and the productive assets belonged to the workers, and their salaries depended on the profit made by the farm. In contrast, in the *sovkhoz*, all the capital was state property and workers were employed by the state and received fixed salaries independent from the farm's revenues. In Gorno-Badakhshan, 49 *kolkhozes* were created, which were gradually transformed into 28 *sovkhozes* (Herbers 2001: 371). The Soviet system assigned the area of Gorno-Badakhshan to animal husbandry, and thus fodder crops gradually replaced food crops. Instead of being self-sufficient in food, the region thus became more and more dependent on the Soviet Union for food. Soviet policies actively promoted gender equality, for instance, by prohibiting formal discrimination in employment and education. Yet the life histories we conducted with elderly people who used to work in *sovkhozes* revealed a clear gendered hierarchy in the operation and management of the *sovkhozes*: Whereas the majority of the workforce consisted of women, all the managers were men (see also Kanji 2002).

After the fall of the Soviet Union, in 1997–1998 the *sovkhozes* were gradually dismantled (Bliss 2006), and the economy gradually returned to a subsistence orientation. In parallel to this, and strongly influenced by international donors, the government of Tajikistan decided to implement land privatization programs as well as water reforms. Today land and water remain state owned, and farmers have inheritable land use rights for which they pay taxes. These rights cannot be sold and can be reclaimed by the government at any time. Hence, at the time of the research (2010), land was not fully privatized. In the mountain communities studied, water similarly remained relatively untouched by the government's reform agenda, with the small-scale mountain irrigation systems continuing to be managed by the community.

Land and water redistribution in Spienz and Shokhririzm

The (re)allocation of the land use rights of the former *sovkhozes* in Gorno-Badakhshan (and accordingly the redistribution of water rights) started in 1996. The process was guided by some of the more influential men, some of whom had gained authority by fulfilling

important roles in the former Soviet administration, while others were sons of traditionally important families. As some of the older people explained when narrating their life histories, the land reform process was preceded by the transformation of the former *sovkhoses* into farmers' associations called *dekhan* farms.

Respecting different land qualities—which were also used during the Soviet period (the home gardens, situated next to the houses; the fields and orchards bordering the village; and the lands located higher up in the mountains)—all of which have to be irrigated, land division in Spienz followed the official presidential decree: former *sovkhos* workers (because of their farming experience), of which the majority were women, would receive priority and be allocated bigger land shares. In Shokhririzm, the reallocation process instead followed the help and advice of the Mountain Societies Development Support Programme, which proposed to give each household member an equal land share of 6 *hessa* (0.06 ha).

Each new land use title was registered in the name of one household member. The *rais* of the 2 villages and the *rais* of the *dekhan* farms showed us the land title list, which revealed that 65% of the titles in Spienz and 75% in Shokhririzm were registered in women's names. We were told that this was mainly because women were considered the real farmers and the ones with most farming experience. Registration of new land use titles in their names also reflected their prior involvement as workers in the *sovkhos*. Moreover, female members of the *dekhan* farms and their husbands explained that registering the land in women's names was attractive as it made households eligible for certain benefits provided by the *dekhan* farm, such as maternity leave and an allowance during pregnancy.

With the redistribution of land in both villages, it also became necessary to redivide the water. Like the land redistribution, the process of (re)allocating water was overseen by some men who had formerly played an important role in the Soviet administration and by others from a small number of historically influential families. They decided to divide the water according to the landholding size of each household. In the newly established water rights system, all roles related to the control, organization, and daily maintenance of the irrigation system were assigned to men. Unlike land rights, water rights were generally registered in the name of the male head of household. The interviewed *mirjus* explained this by referring to an important obligation associated with the water right: the contribution of labor to the maintenance of the irrigation infrastructure (Figure 3A and 3B). Although both women and men did this work during the Soviet period, it is now again considered men's work. Both women and men described the work as physically hard and expressed the opinion that women are less suited or able to do it. In the case of

female-headed households, either the husband comes back for the yearly maintenance work or a male family member replaces him. In some cases, women bring food or tea to the workers; this is also accepted as fulfilling the duty to participate in maintenance, though considered by the men doing the canal work to be less important than their own work.

A water right is the right to use water at a specified time. The interval of this water turn depends on water availability. The *mirjus* in both villages explained that the water turns are usually implemented from July/August onward, with an interval of approximately 4 days between each water turn. In late August and the beginning of September, the time between water turns increases and can reach 15 to 20 days (depending on weather conditions). Every second irrigation turn is at night. A water right also encompasses the right to vote during the general assembly meetings of the water users' organization. As all rights are vested in men, these meetings tend to be male-only gatherings.

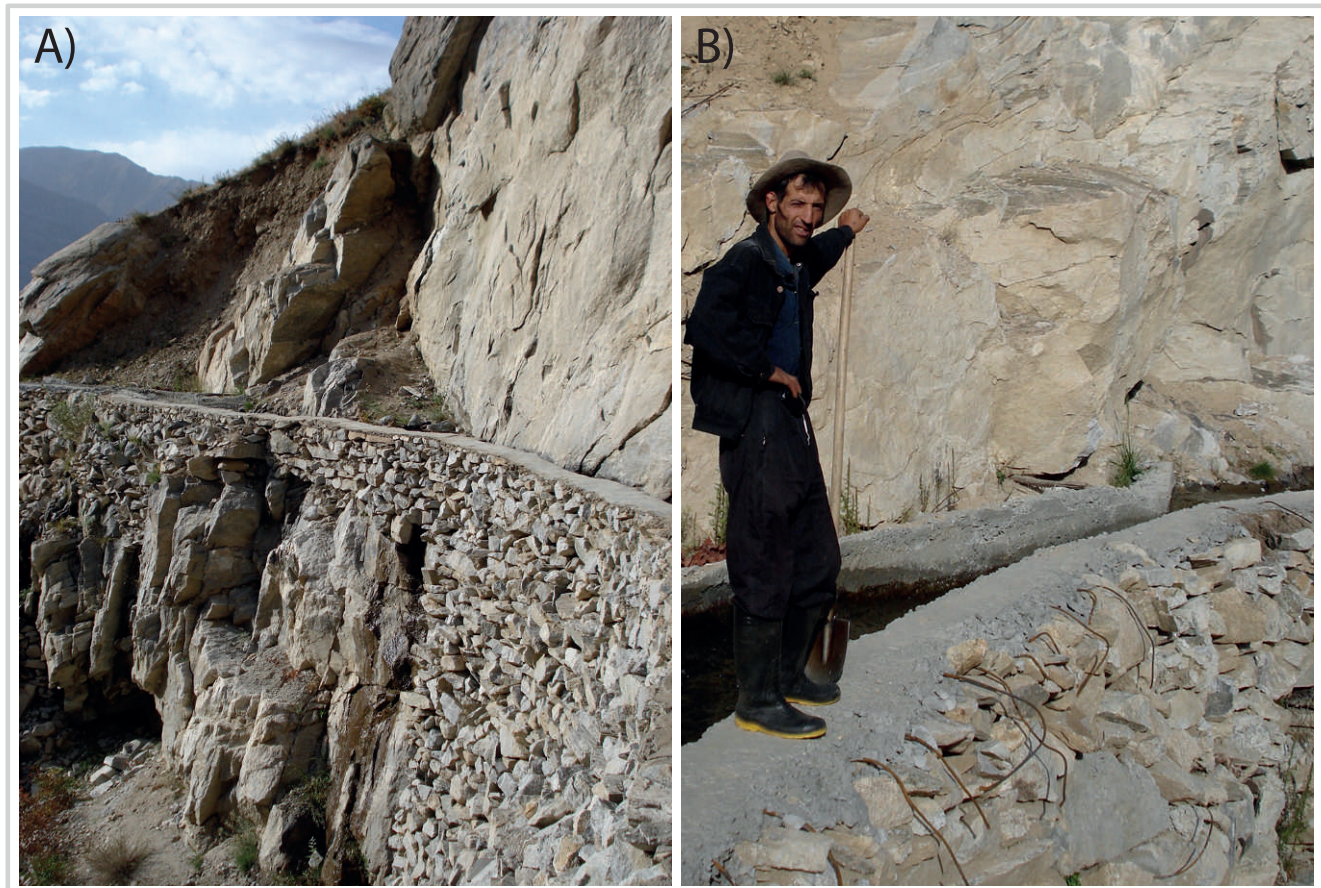
Organizing farm work and water distribution

Claims and responsibilities associated with land and water rights are embedded in, and mediated through, wider social networks and dependencies that stretch beyond households to include neighbors and kin. In both communities, farm work is done by hand, the bulk of it by women. Gendered responsibilities are further divided depending on types of plots: Women normally have full responsibility for the home gardens, whereas the fields farther away from the house are jointly managed by both spouses (when both are present and able). In both types of fields, women make the ridges, sow, and weed (Figure 4), and men carry out the work that is considered more physically demanding or difficult, such as plowing, harrowing, and irrigating. The home gardens are harvested by women.

On the farther-away fields, people (mostly women, but also some men) form labor groups to collect the harvest. These predominantly female labor groups are usually based on neighbor relations. Villagers explained the importance of neighbors, whom they sometimes considered even more important than family: "Since the family is usually living farther away, when we need help we rely on neighbors. In this harsh environment we often need help" (interview with Budana in Spienz on 7 September 2010). All interviewed women stressed the importance of the female labor groups to get the work done. In female-headed households, women assume full responsibility for all farming activities. Children, neighbors, and in-laws often help with the work. When a man migrates, he may arrange with male neighbors or family members to take his place in the fields during his absence.

An examination of water distribution and application practices sheds further light on the gendered dynamics of

FIGURE 3 (A) Canals are often situated on steep slopes; (B) they require a great deal of maintenance. (Photos by Lisa Bossenbroek)



intrahousehold cooperation and bargaining in organizing farming. Irrigation water is needed for all fields and crops. Although many women are registered landowners, they often depend on men to access water. This usually does not lead to problems: Proceeds from the plots are usually shared, and men and women thus share an interest in obtaining a good harvest. Nargez and her husband, for instance, have 3 children. Nargez is in charge of looking after the children, cooking, cleaning the house, and washing the clothes. She also works closely together with her husband on the land. She seeds, weeds, and collects the harvest. Her husband plows, irrigates, and helps her with the harvest. They agree among each other about cropping patterns and the organization of labor, mostly in relative harmony (interview with Nargez in Spienz on 13 September 2010).

Some of the other households we visited were less harmonious, with clear differences of opinion between household members about which fields and crops to irrigate first, sometimes leading to conflict. Such conflicts illustrate the relative importance of formal rights in shaping one's ability to steer decisions in one's favor. In the absence of formal rights, women resort to different strategies to justify their access to irrigation water. They

may, for instance, appeal to religious behavioral guidelines or community solidarity. Ofarid and his wife Gulbegim are an example. They have 20 *hessa* of land (0.2 hectare). On 5 *hessa*, the home garden, they grow vegetables; on 10 *hessa*, they cultivate wheat and barley; and on the remaining 5 *hessa*, they grow fruit trees. Ofarid plows and irrigates, and Gulbegim is in charge of the home garden. On the larger land plots, she sows, weeds, and makes the ridges. They jointly do the harvesting. The water right is registered in Ofarid's name, and he is also the one who participates in water users' organization meetings and water system maintenance. Ofarid explained:

When we get our water turn, everyone in our family quarrels. My mother wants the lands to be irrigated first, my wife the kitchen garden, and I want the trees to be irrigated first. We all stand with our shovel ready when the water arrives, but I usually manage to irrigate the trees first. The rest of the water is used for the land where barley and wheat are grown and for the home garden. (Interview in Shokhririzm on 9 October 2010)

Gulbegim said that she often argues with Ofarid. Especially during the late summer months, she does not

FIGURE 4 Women weeding a field. (Photo by Lisa Bossenbroek)



have sufficient water to irrigate the home garden, because he uses most of their water to irrigate the orchard. She said that when she sees her plants turning yellow, she takes water from her neighbor. Gulbegim does not qualify

this as stealing, as (according to her) religious law forbids them to deprive anyone of water. She finds support for her behavior in the words of the *khalifa*, the spiritual head of the village, who often refers to the moral responsibility

of everyone in the village: “If the plants in a garden turn yellow it is impossible to deprive your neighbor of water” (interview in Shokhririzm on 28 July 2010). Gulbegim’s neighbor, however, does not think that she has a right to take his water. Conflicts between them are therefore frequent.

In female-headed households, irrigation is carried out by the female head of the household, male neighbors, male in-laws, or with the help of the *mirju* or the *abshar* (the person in Shokhririzm who is, next to the *mirju*, responsible for daily maintenance of the main canal and operation of the secondary canals). Budana, whose husband passed away 10 years ago, said:

My father-in-law used to irrigate the land when it was our water turn. Now, my oldest son, who is married and lives next door, irrigates. But he wants the main fields to be irrigated first. When the water becomes less in August and September, I agreed with my neighbors to use their surplus water to irrigate the home garden. (Interview in Spienz on 6 September 2010)

Sometimes a female head of household is solely responsible for all irrigation activities. This may lead to problems accessing water, especially when 2 people are needed for irrigating. This is the case in some canals, where one person overlooks the canal to see that no one is stealing water, while the other person guides the water through the ridges at field level. Zumrad, for example, sends her oldest son to patrol the canal. When he has to go to school, the *mirju* sometimes helps her. However, when her water turn falls at night (which happens every other turn) she cannot send anybody to patrol the canal, because it is too dangerous: the trail next to the canal is steep, and wolves approach the village after dark. She often notices that the water flow diminishes because a water user upstream has opened an outlet. She explained that she will not argue about it, because the canal is considered to be holy and she believes that openly arguing about water will cause her even more problems. She does not participate in the general meetings of the water users’ organization, since she finds these too time consuming and does not believe that they will change her situation (interview with Zumrad in Spienz on 6 September 2010).

We also encountered some women, belonging to female-headed households, who did participate in meetings and were fully in charge of irrigation activities at the field level, sometimes very proudly so. Especially in Shokhririzm, because of its remoteness and high male migration rate, most women were responsible for irrigating, sometimes helped by the *abshar*. During an interview on this topic, the *rais-e zanan* laughed and said: “In Shokhririzm, all women irrigate because we only have 8 men left in the village, and we all have to share them!” (interview on 2 October 2010). One such an example is Shirinbek. Her husband, Khayam, used to work in Moscow and has now worked for a few years in Dushanbe, the

capital of Tajikistan. He spends most of the year in Dushanbe and only returns sporadically to the village. With pride he explained that his wife carries the full responsibility for the tasks on the land.

Only when the fields have to be plowed, a neighbor helps her. She also irrigates and participates in all the meetings in the village where irrigation topics are discussed. I usually come back at the beginning of the irrigation period to help with the maintenance of the canals. When I am not able to come, my wife cooks for the workers, and I will contribute to other communal work later in the year, for example, when the harvest is collected. (Interview with Khayam in Shokhririzm on 1 October 2010)

The different perceptions of Zumrad and Shirinbek about the importance of participating in formal irrigation decision-making reflect wider ambiguities in how women (and some men) reflected on changing gendered divisions of labor in irrigation. We often noted during our conversations with women that although they took pride in their farming abilities and responsibilities, many also expressed the desire to have more time for what they considered to be their more appropriately feminine roles as mothers, caregivers, housewives, and lovers. Without complaining, many did indicate that farming and irrigation work is physically demanding. Some women therefore said they would be pleased to find ways to assign parts of this work to men.

More generally, we found that the irrigation and farming experiences of different people in the study villages were marked by the struggle to balance labor and incomes between farming and off-farm employment. Some households increasingly depend on off-farm incomes, with many (often young male) members working abroad. Farming and irrigation work is then left to older household members and to mothers, sisters, and wives. In the absence of young men, the ability to mobilize enough labor becomes important to farming success; it is also both a reflection and a potentially important source of gendered power. One specifically female strategy for securing farm labor is not renegotiating intrahousehold responsibilities but organizing neighbors and friends into joint working groups that collaborate on farming tasks.

Conclusion

Our analysis of irrigation management in 2 mountain villages in Gorno-Badakhshan resonates with earlier gender and irrigation studies that showed that irrigation management is often marked as a distinct masculine sphere of work and power. In line with these earlier studies, we have shown that the masculinity of the formal and public domains of water management only tells part of the story about how gendered water powers and agency are divided and constructed. Although most female farmers depend on men for accessing water, observations

done while men and women were irrigating suggest that this does not normally create problems, as men and women share an interest in using the available water as effectively and productively as possible.

In particular instances, however, gender differences in water allocation priorities may become either a source of conflict or an arena in which existing intrahousehold disagreements are played out. In such cases, women use the coexistence of plural normative orders to legitimate their access and strategically mobilize their acquaintances. Gendered agency in irrigation is thus mediated and negotiated within the intimate domain of the household and the family. An assessment of the significance of formal rights and positions of authority therefore requires an understanding of how labor and incomes are distributed and bargained about within this household domain, often as a function of the type of farming system (see van Koppen 2002) or the conjugal contract (see Delgado and Zwarteveen 2007; Jackson 2009). Our study complements earlier insights in 2 important ways. First, it highlights the importance of the complex ways in which water rights and powers are linked to other sociopolitical hierarchies that

shape the room for maneuver by or agency of different people (see also Cleaver 2012), both within and beyond households. Hence, appreciating gender differences in irrigation management in terms of equity or agency requires looking beyond the boundaries of the system, placing it in a broader historical and socioeconomic livelihoods context.

Second, it points to the importance of how women and men themselves perceive their powers and labor. This depends on their aspirations and sense of gendered selves, which are shaped both by prior historical and cultural experiences and by imaginings of possible futures. It cannot, for instance, be assumed that women (just) aspire to be like men in terms of irrigation rights and powers, as the construction of irrigation as something masculine may also be celebrated by both women and men as a symbolic expression and performance of gendered difference. In the villages we studied, it may, for instance, reflect desires to symbolically reaffirm pre-Soviet gendered identities and differences, or a strategy of women to (re)allocate part of the heavy labor burden and stress of farming to men, especially in a context of high male migration.

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REFERENCES

- Beccar L, Boelens R, Hoogendam P.** 2002. Water rights and collective action in community irrigation. In: Boelens R, Hoogendam P, editors. *Water Rights and Empowerment*. Assen, the Netherlands: Van Gorcum, pp 1–21.
- Bliss F.** 2006. *Social and Economic Change in the Pamirs*. Oxon, UK, and New York, NY: Routledge.
- Boelens R, Zwarteveen M.** 2006. Rights, meaning and discourses: Gender dimension of water rights in diverging regimes of representation in the Andes. In: Lahiri-Dutt K, editor. *Fluid Bonds: Views on Gender and Water*. Kolkata, India: Stree, pp 3–28.
- Breu T, Humi H.** 2003. *The Tajik Pamirs: Challenges of Sustainable Development in an Isolated Mountain Region*. Bern, Switzerland: Centre for Development and Environment, University of Bern.
- Brunt D.** 1992. *Mastering the Struggle. Gender Actors and Agrarian Change in a Mexican Ejido*. Latin America Studies 64. Amsterdam, the Netherlands: Centre for Latin American Research and Documentation.
- Carney J.** 1998. Women's land rights in Gambian irrigated rice schemes: Constraints and opportunities. *Agriculture and Human Values* 15(4):325–336.
- Carney J, Watts M.** 1990. Manufacturing dissent: Work, gender and the politics of meaning in a peasant society. *Africa: Journal of the International African Institute* 60(2):207–241.
- Cleaver F.** 2007. Understanding agency in collective action. *Journal of Human Development* 8(2):223–244.
- Cleaver F.** 2012. Understanding gendered agency in water governance. In: Zwarteveen M, Ahmed S, Gautam SR, editors. *Diverting the Flow. Gender Equity and Water in South Asia*. New Delhi, India: Zubaan.
- Delgado JV, Zwarteveen M.** 2007. The public and private domain of the everyday politics of water: The constructions of gender and water power in the Andes of Peru. *International Feminist Journal of Politics* 9(4):503–511.
- Dey J.** 1990. *Gender Issues in Irrigation Project Design in Sub-Saharan Africa*. Contribution to the International Workshop on Design for Sustainable Farmer-Managed Irrigation Schemes in Sub-Saharan Africa, Agricultural University of Wageningen, the Netherlands.
- GBAO Statistical Department.** 2010. *GBAO in Figures*. Khorog, Tajikistan: GBAO Statistical Department.
- Herbers G.** 2001. Transformation in the Tajik Pamirs: Gornyi-Badakhshan—an example of successful restructuring? *Central Asia Survey* 20(3):367–381.
- Hergarten C.** 2004. *Investigations on Land Cover and Land Use of Gorno Badakhshan (GBAO) by Means of a Land Cover Classification Making Use of Remote Sensing GIS Techniques* [MSc thesis]. Bern, Switzerland: University of Bern.
- Hewitt F.** 1989. Woman's work. Woman's place: The gendered life-world of a high mountain community in northern Pakistan. *Mountain Research and Development* 9(4):335–352.
- Hewitt F.** 1999. Women of the high pastures and the global economy: Reflections on the impacts of modernization in the Hushe Valley of the Karakorum, Northern Pakistan. *Mountain Research and Development* 19(2): 141–151.
- Jackson C.** 2009. From conjugal contracts to environmental relations: Some thoughts on labour and technology. *IDS Bulletin* 26(1):33–39.
- Jones CW.** 1983. *The Impact of the SEMRY I Irrigated Rice Production Project on the Organization of Production and Consumption at the Intra-household Level*. Paper No. 83, prepared for the Agency for International Development, Harvard University. <http://ufdc.ufl.edu/UF00071909/00001/146j>; accessed on 24 June 2014.
- Kanji N.** 2002. Trading and trade-offs: Women's livelihoods in Gorno-Badakhshan, Tajikistan. *Development in Practice* 12(2):138–152.
- Lynch B.** 1991. Women and irrigation in highland Peru. *Society & Natural Resources* 4(1):37–52.
- Meinen-Dick R, Bakker M.** 2001. Water rights and multiple water uses: Framework and application to Kirindī Oya irrigation system Sri Lanka. *Irrigation and Drainage System* 15:129–148.
- Olufsen O.** 1904. *Through the Unknown Pamirs: The Second Danish Pamir Expedition 1898–99*. London, UK: Heinemann.

Schrijvers J. 1986. Blueprint for undernutrition. In: *Schrijvers J. Mothers for Life. Motherhood and Marginalization in the North Central Province of Sri Lanka*. Delft, the Netherlands: Eburon, pp 57–78.

van Koppen B. 2002. *A Gender Performance Indicator for Irrigation: Concepts, Tools and Applications*. Research Report 59. Colombo, Sri Lanka: International Management Institute.

van Koppen B, Hussain I. 2007. Gender and irrigation: Overview of issues and options. *Irrigation and Drainage* 56(2–3): 289–298.

World Bank. 2000. *Republic of Tajikistan Poverty Assessment*. Washington, DC: World Bank.

World Bank. 2005. *Poverty Assessment Update*. Washington, DC: World Bank.

Zwarteveen M, Neupane N. 1996. *Free-Riders or Victims: Women's Nonparticipation in Irrigation Management in Nepal's Chhattis Mauja Irrigation Scheme*. Research Report No. 7. Colombo, Sri Lanka: International Irrigation Management Institute.