Gender, Irrigation, and Environment: Arguing for Agency

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ABSTRACT

This paper is not a critique of water policies or an advocate of alternatives, themes that other papers in this collection address extensively, but rather suggests a shift of emphasis in the ways in which gender analysis is applied to water, development, and environmental issues. It briefly argues that feminist political ecology provides a generally stronger framework for understanding these issues than eco-feminism, but cautions against a reversion to materialist approaches in reaction to eco-feminism which, like eco-feminism, can be static and ignore the agency of women and men. The paper draws attention to the subjectivities of women and their embodied livelihoods as a more useful approach to understanding the ways in which women relate to water in both irrigated agriculture and domestic provisioning.

INTRODUCTION

In her paper comparing the progress made in integrating gender analysis into water sector projects and policies, Kusum Athukorala (1996) observes that domestic water supply interventions have a much better record than irrigation. She suggests many reasons for this, including the 'traditional' role of women in domestic water supply, which lessens the cultural barriers to increased participation by women, and the tensions in irrigation development, which are seldom so compatible with 'traditional' gender divisions of labor. A review of the literature on women and water certainly supports this contention.[2] Without suggesting that the other reasons, such as the differing organizational character of domestic water supply and irrigation institutions, are less important, I think this should make us pose a question about how to address the central question of understanding gender relations in this most resistant arena.

I think we also need to consider a question confronting gender analysis in general: How to deal with the tension between approaches to gender and development which emphasize the

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social structural constraints on women (which for convenience I will call here 'structural' approaches), and those which emphasize the agency of women as acting subjects, called here 'agentic' approaches as shorthand. This distinction is made not to suggest that they are always opposed and distinct—many gender analysts would see women as acting subjects living within social constraints of varying flexibility—but simply to suggest that we need to be mindful of this balance, and that, as I argue here, there are potential insights to be gained from a shift towards greater analytical emphasis on agency. By this I mean a focus on the person as a social actor with a capacity for willed and voluntary action, which is not simply determined by social structures. Such acts may be resistant—or not. Other papers at this conference argue for related attention to the cultural embeddedness of water institutions (Cleaver, this volume), and for recognition of women's agency in informal water access (Zwarteveen, this volume).

The structure of the paper is as follows; first I consider competing approaches to gender and environment and their implications for water resources, before going on to a brief exposition of gender analysis of irrigation and environmental change. Next I argue that the concepts of gender analysis are not usefully applied with a structuralist emphasis, which too readily assumes the absence of choice and the presence of overwhelming constraint, and implies therefore that women are helpless in the face of patriarchy. Gender analysis, deserves a more considered application in recognition that women are fully acting human subjects, whose lives offer choice as well as compulsion. Towards this end I suggest that we need to think about the idea of the embodied subjectivity of men and women in relation to irrigation and environment issues. The remainder of the paper explores what this might entail.

GENDER, ENVIRONMENT, WATER: COMPETING APPROACHES

Radical Environmentalism: Eco-Feminism and Gendered Political Ecology

Eco-feminist understandings of the causes, consequences, and meanings of environmental degradation are distinctive and are based on an essentialist view of women as a transcultural and transhistorical category of humanity with an inherent closeness to nature, and sharing with nature a violation by patriarchy and capitalism.[3] Environmental degradation is linked to patriarchy. Thus eco-feminists see water scarcity as caused by 'man,' both in the broader sense of anthropogenic causation and in the narrower sense of patriarchal social relations. Vandana Shiva (1989:179) writes: "The drying up of India, like that of Africa, is a man-made rather than a natural disaster." Dankelman and Davidson (1988:30) write that "more and more evidence ... suggests that these [droughts] are not entirely natural," emphasizing anthropogenic causes instead. Irrigation is attacked for the volume of water it consumes and for poor efficiency such that 70-80 percent of water drawn from rivers for irrigation never reaches the crops (WRI and IIED 1986), for the salinization and waterlogging that result from poor management, and for groundwater depletion that is seen to desiccate and impoverish thousands

[3]Eco-feminism is a diverse body of thought, necessarily treated in summary fashion. An account of some of this diversity is given by Mellor (1992).

of villages in Asia. Shiva (1989:179) claims that "the number of villages facing water famine is in direct proportion to the number of 'schemes' implemented by government agencies to 'develop' water." She argues that these water development programs are "anti-nature and anti-women" (1989:182), and urges us to think like a river, to refuse thinking about water as a resource; and to reject the damming and diversion of water and energized pumping and tube wells, in favor of human- and animal-powered water lifting devices.

For Shiva (1989:184), dams, tube wells, water-intensive cultivation, and technology-intensive solutions to the drinking water crisis are "destroying the feminine principle and sustaining power of water, and destroying women's knowledge and productivity in providing sustenance." Canal irrigation is particularly reviled as a "favorite masculinist project" (1989:192) as are dams. Shiva (1989:194) claims that the practice of female infanticide amongst Kallars of Tamil Nadu was caused by a dam and irrigation scheme; with prosperity came the devaluation of women and dowry practices, and then infanticide, such that "[T]he devaluation of the work of the river is associated with the devaluation of the work of women, and both arise from the commoditization of the economy which forces violence on nature and women."

Women are portrayed in eco-feminism as the sole water collectors and managers who, over centuries, have acquired extensive knowledge of water.[4] Their gender interests are always seen as compatible with environmental conservation, and they are identified as the primary environmental managers and carers, with instinctive understandings of nature.[5] Eco-feminist positions on water resources development are overwhelmingly negative about dams, irrigation, and domestic water development, other than very small-scale activities based on human energy and local knowledge which they see as beneficial to women and to nature.

Eco-feminist approaches have been seen as problematic for a range of reasons (Jackson 1993a; Nanda 1991; Agarwal 1992), which cannot for reasons of space be pursued here. But it is important to briefly outline how alternative approaches to water resources degradation, styled simply gender analysis (Jackson 1993b), feminist political ecology (Rochleau 1995), feminist environmentalist (Agarwal 1992), and micro-political economy of gendered resource use (Leach 1991)[6] offer a different understanding of what is agreed to be a serious environmental and human problem of the greatest urgency. These alternatives share a more historically specific and class-disaggregated view of gender in the place of eco-feminist essentialism, a more grounded materialist perspective than the culturalist emphasis in much eco-feminism, an attention to the tensions and contradictions in the ways in which women and men

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[4]Exaggerating the knowledge of women about water is potentially dangerous. A study of women's perceptions of the modes of transmission of water-related diseases in northern Ghana revealed a very uneven picture, but one in which there was very little knowledge of the role of water, and in which nature and evil spirits were frequently blamed for the diseases (Akuoko-Asibey and McPherson 1994). This is hardly surprising. Women undoubtedly have considerable environmental knowledge but unrealistic beliefs about the extent of this knowledge, and the implied redundancy of health education, are potentially harmful.

[5]Such 'instinctive' understandings often seem to revolve around menstruation, and no doubt the water project in Colombia in which women knew when to refill the pot chlorinators for water purification by using their menstrual cycles as indicators is destined to become another eco-feminist icon.

[6]What is feminist and what is gendered is of course different, but since many of these writers use the terms interchangeably I will not confuse this discussion with a further set of distinctions.

are positioned in their environmental relations, and a rejection of the idealizing impulses of eco-feminism. Critics of eco-feminism have argued that essentializing women as environmental carers sets the scene for their further exploitation. In water resources development this is evident—for example a FINNIDA-funded project in Kenya to train women hand-pump mechanics has been accompanied by a transition from paid work when pump maintenance was done by a man, to unpaid work when done by a woman. Along with all other residents, these women mechanics must even pay the monthly water tariff which is used to pay for wages to male mechanics if they are called out (Hoffman 1992).

There are more questions and fewer certainties in feminist political ecology. Since universal generalizations and givens are eschewed in favor of a locally specific analysis, a feminist political ecology offers not a set of generalizations about women and nature but a set of questions to guide such an analysis. A selection of these for water resources development might include: Does large-scale irrigation always and everywhere lead to environmental degradation? Are women always the most negatively affected? How do divisions of labor place different groups of women and men in relation to water work? How much time is devoted to water collection? Have women accumulated specialist knowledge about water? Are small-scale water technologies always preferable to women? How does the commodification of water as a common property resource affect different groups of women and men? What eco-feminism assumes, gender analysis makes problematic.

A gendered political ecology/economy of water resources degradation would emphasize a context-specific analysis of women and water rather than universal generalizations. It would be rooted in the livelihood realities of particular groups of women, differentiated by age, ethnicity, class, or other relevant social divisions. It would assume, not an unchanging character of womanhood, but dynamic and complex gender identities in which men and women experience both shared and divided interests, and it would understand environmental relations as primarily social relations.

The concepts central to such an analysis include gender divisions of labor, of rights (including property), and of responsibilities, for example in the 'conjugal contract.' These concepts have proved powerful ways to understand gender differentiation at both household and community levels. Unlike eco-feminists, who are generally favorable to, and uncritical of, community management, gender analysts have raised objections to the micro-politics of devolution and community management (for example see Meinzen-Dick and Zwarteveen, this volume), on the basis of work suggesting that women have few rights but many responsibilities in local water management institutions.

Gender analysts need to take some care in application, to avoid separation of genders rather than their integration and interdependence. We would do well to develop a stronger analysis of the significance of culture and of meaning as a response to eco-feminist challenges, rather than painting ourselves into a materialist corner. These are not entirely new themes, but the arguments made in much of the gender and water literature show little recognition of what is possibly the greatest conceptual contribution of gender analysis—that, unlike classist approaches, it seeks to elucidate not just the clear and separate social interests (similar to worker and landowner) of men and women, but also their deep interdependencies. We need to insist on a broader understanding of the 'resources' which are struggled with and for, to develop a stronger analysis of the significance of culture and of meaning, in addition to land and labor.

The application of gender analysis, with its political economy standpoint, has been very fruitful. It has offered a critique of eco-feminism, and it has also offered a methodology for policy analysis of water interventions in mainstream development discourses, or what may be categorized as technocratic environmentalism, which I briefly review next.

Technocratic Environmentalism, Water, and Gender Critique

The second main strand of contemporary environment and development thinking is the loose consensus in multilateral development agencies around a recognition that environmental resources have economic value and that future generations have rights to environmental resources. Documents such as the 1992 World Development Report (World Bank 1992) insist that development is not opposed to environment, but synergistically connected. The experience with water resources development (World Bank 1993) is used to argue that wastefulness, which Shiva (1989) puts down to reductionist, masculinist mindsets, and commoditization, is actually due to insufficient commoditization. This approach to water stresses economic efficiency as a means of conservation and reallocation of water, property rights as incentives to conservation, decentralized provision with user participation, and a special role for women in providing, managing, and conserving domestic water; issues which other contributors to this volume discuss. Whilst eco-feminists are deeply opposed to the commodification of water based on perceived ecological and feminist principles, feminist political ecologists are also skeptical about this, on the basis of decades of research into gendered rights and responsibilities.

Gender critics of this approach have observed that gender analysis reveals cracks in the development-environment synergy; that the water resources consensus is problematic because it immobilizes, rather than empowers, women in domestic roles of water providers and disregards their productive use of water; that water pricing is more likely to undermine than to expand women's access to water; that the attempts to reduce pollution through lower subsidies on agro-chemicals are likely to have perverse effects on women farmers by increasing their labor inputs and decreasing their returns; and that decentralization and community management amount too often to increased use of women's voluntary labor (Green and Baden 1995). Further, it has been argued that the emphasis on economic valuation will shift priorities towards that which can more readily be economically valued, and away from those such as health benefits which are less easily measured and valued; that the turn to the market ignores the evidence that women engage in markets on less-favorable terms than men; and that devolving 'ownership' to local communities is no guarantee of equality of access (Cleaver and Elson 1995).

Margreet Zwarteveen (1997) argues however, that the empirical evidence for the negative impact of the commodification of water is both slight and ambiguous. What is needed is not a negative or positive position on commodification, but a set of methodological tools for exploring the issue anew in specific project contexts.

A less contentious, because more consensual, area of the new water consensus, is the favorable view of small-scale technology. Eco-feminists have, as we saw above, taken a strong line on technology and rejected the use of non-renewable energy in water resources development, arguing for small-scale technologies based on human energy. Gender analysts of the water consensus have been less exercised with this aspect of the new water consensus. Women in Development (WID) traditions since the 1970s have emphasized appropriate small-scale

technology despite continuing acceptance problems (Stamp 1989:57-61), and latterly the New Poverty Agenda (Lipton and Maxwell 1992), with its primary emphasis on labor-intensive growth, has added to this consensus. However, in the approach set out below the issue of technology reemerges in a more problematic light.

ARGUING FOR AGENCY

I return to the issue of gender and technology in water development below but, first, with a slight excursion to reflect on how, within the broad and deep discourses of gender analysis, the social relations of gender may be understood in different ways.

Gender analytical tools have evolved out of discourses of political economy and socialist feminism, and the parentage shows in the key concepts outlined above: Gender divisions of labor, rights and responsibilities, gender divisions amongst women, e.g., of class, and age, and the politics of gender struggles. These concepts have been critical to establishing gender differentiation as a widely accepted expression of social power and subordination. Some of these concepts, however, can be used to suggest that gender is a set of social relations, which always and everywhere disadvantage women, that women are helpless objects of pity in the face of overwhelming male power, and that their lives are determined primarily by their gender identities. Some critics have seen this tendency as an expression of a white western feminist need for an 'Other' (Mohanty 1988), and some as an unavoidable legacy of modernist thought (Hirshman 1995). It is a serious objection that in our attempts to recover women as subjects in social change we can, perversely, deny them subjectivity by representing them as passive recipients rather than active instigators of social change. Understanding the personhood of women, and gender as lived and personal experience as much as a membership of a social category, has remained a neglected element of gender analysis, and one which, I argue here, offers insights into the encounters of women with water resources interventions. The limitations of structuralist approaches can be briefly indicated with reference first, to property rights, and second, to divisions of labor.

Property Rights

As Margreet Zwarteveen (1995:2) points out, "women often have no formally or legally arranged access to water; water rights (much like land rights) are often attributed to male individuals only." Gender advocates have seized the opportunity to argue the inconsistency of the shift to increasing community rights to water as means of improving the incentives for long-term conservation, by creating local stakeholders in water quality and quantity, whilst failing to address the exclusion of women from water rights. If clearly defined rights lead to greater responsibly in water use then women should be included in these rights, especially given their significance in water management.

Water rights like land rights are social, in that they define legitimate access on the basis of socially sanctioned principles. Such 'entitlements' may be guaranteed by the state, religious, customary, or local institutions, extend over varying durations (seasonal, lifetime, in perpetuity) of use, and offer varying levels of control and conditions of use (over sale or trans-

fer, for example). A structuralist approach to land rights might, crudely, suggest the following: Women need formal land rights, they are constrained by patriarchy from exercising the limited rights they have, they must struggle (preferably collectively) to obtain and exercise land rights, and states should ensure the formal rights of women and support their ability to exercise those rights. This is hard to disagree with, but it does leave the impression that the social institutions of 'patriarchy' serve to prevent women from having what, it is argued, is strongly in their interests to have, and that women are therefore powerless in the face of patriarchy, or deluded as to the real nature of their interests. If women are conceived of as rational actors, one has to ask further questions: Why do they appear to (mostly) go along with a deal which appears to offer them so little? Are they as powerless as this model suggests and is the deal as bad as the model suggests? How do they understand and represent equity in gender relations? What are the discourses which convince women of the legitimacy of their exclusion from land rights? In this, it is helpful to move beyond structuralist approaches to consider multiple identities, life cycle effects on gender identities, and the tension between cooperation/conflict and shared/separate interests in order to conceptualize gender relations as more than structures of constraint.

Thinking about these questions requires less argumentation on the basis of a 'what's good for men must be good for women' stance, and more consideration of how particular women experience land and water access and control as a particular part of their livelihoods and gender relationships. An example of such an approach to water rights can be found in Margreet Zwarteveen's and Nita Neupane's (1996) study of women irrigators in Nepal. They describe a situation in which women find nonparticipation in formal water management groups to offer advantages: They have greater freedom to break rules and to 'steal' water, and they, as female headed households, find discourses of vulnerability effective in securing water access. Foucauldian notions of power as fragmented and dispersed are more useful here than the dualistic opposition of the powerful and the powerless in many structuralist gender analyses.

A study of a community-managed hand-pump project in Niger hints at a similar local discourse of female vulnerability which may be quite attractive to women. In almost all the pumps surveyed, women paid less per capita than men in maintenance fees; in some, only men paid. In 1990, men contributed 77 percent of the pump funds and women 33 percent and in 1991 men contributed 60 percent and women 40 percent (Niger Ministry of Water and Environment 1992). In this scheme as in others, women may prove in the long run to be the most committed payers, and too much cannot be read into values like these, but it is possible that the label of vulnerability has some real value to women in their survival strategies if it lowers community expectations of their contribution to collective endeavors.

Last, the study by Paula Roark (1984) in Burkina Faso also shows that, although women were formally excluded from community groups that were apparently in control of water resources decision making, in practice decisions about digging new wells were made in prior women's meetings. These generated demands for new water sources, which were requested to be discussed at the elders' council meeting, which women attended but did not speak at, and "it was almost unheard of for the council not to concur with the women's petition or request" (Roark 1984:59). If the subsequent pace of work was too slow, the women would ask the elders to review the progress, but usually the implied rebuke was sufficient to speed up the work without further action. "It was the women who decided whether to use the water

source, and whether it was worth the needed expenditure of effort to maintain it" (Roark 1984:59).

The issue of visibility is complex. On the one hand, both women and men devalue and invisibilize women's work, as the following suggests:

> *A woman who spent four hours of the early morning walking a total of some eight kilometers to fetch water for domestic use was interviewed ... about her contribution in water management. She said, "Nothing really..."* (Bhatt 1995:254).

But at the same time, whilst it is desirable to make women's work visible and to make their rights to resources more formal and less conditional on relations with men, we also need to recognize that invisibility and ambiguity may have strategic advantages for women. They may arouse less male resistance and yet deliver subtle forms of influence and power, for silences speak, and invisibility can be excellent camouflage.

Understanding processes of power and exclusion that disadvantage women requires attention to struggles over meaning as much as struggles over resources, as Pauline Peters (1984) has demonstrated so convincingly, and as Judith Carney's more recent research (Carney and Watts 1990) has so thoroughly substantiated. Resources are not only material assets, they are effective arguments, symbolic constructs, labels, texts, and information; and these are as significant to gendered water rights as titles and tenure. Thus to say that "women have been omitted from both large and small scale irrigation schemes in Africa, often because of land tenure issues" (Rathgeber circa 1995:12) is to echo some of the early gender analyses, which suggested that women were omitted and must be integrated, and which was much criticized for failing to see how women are always and everywhere 'integrated,' but in distinctly specific ways. The fact that women rarely have titles to irrigated land is only the beginning of an understanding of gendered resource relations and of what might be more gender-equitable alternatives.

Gender Divisions of Labor

Divisions of labor is another example of a central concept in gender analysis which can, however, find overly structural application. The dead hand of structuralism is evident in the treatment of several questions: How does one describe gender divisions of labor? What do we assume about how they are produced? How do we identify inequity in gender divisions of labor? To take the description questions first; many accounts of gender divisions of labor in water work are content with generalizations drawn from western expectations and local norms, although ethnographic studies show considerable variation in how men's and women's work is divided and distinguished, and societal norms about gender divisions of labor are representations which not everyone contributes or subscribes to, let alone complies with, and from which everyday practice diverges considerably. It is often said that women do all the water collection for domestic use, although many studies of actual practice show considerable variation, but insights are to be had from looking at the circumstances in which they are not. Even where it is the case that women collect all the water, we need to know more about how women experience this work, as one task amongst many.

What processes give rise to a particular gender division of labor? This issue has been approached in many gender analyses from a perspective of exclusion and exploitation without very much attention to the connections between forms of work in gendered livelihoods, and the potentially contradictory implications of complete inclusion of women in all work for their well-being. Thus we find arguments from gender analysts for what amounts to more work for women, in labor markets, in income-generating activities, in community work, on committees and in public fora, alongside arguments that women are overworked and underrecognized, with the trade-off being most clearly recognized in nutrition studies (McGuire and Popkin 1988). It might be argued that it is not more work for women but more opportunity that is sought, but why then is the absence of women from labor markets, community organizations, and so on, taken as evidence of the exclusion of women? Whether particular women are excluded or over-included, and whether this is the workings of exclusionary social relations, or bears the imprint of the preferences of women, is obscured by mechanistic interpretations of gender divisions of labor in which women's voices and actions are not considered.

Last, structuralist approaches offer little basis for understanding what is inequitable in gender divisions of labor since we do not know whether the absence of women from a particular arena is exclusion or choice. Gender specialization in work is generally taken as a separation on which subordination rests, for example justifying unequal wages by differentiation of tasks, or differential valuation of domestic and nondomestic work. Yet the absence of specialization can also be problematic for women's well-being. This is a complex tension in gender analysis, which cannot be readily resolved but which would perhaps become clearer with greater attention to agency.

Clearly, the goal of gender-equitable social change means having more of some kinds of work and less of others, and it would seem preferable that distinctions about desirable and undesirable forms of work are not deduced from nutrition science or western feminist principles alone but discovered in dialogue with those involved in and affected by such work. This is not only an ethical standpoint, but also a consequence of seeing women as fully acting subjects and as actors whose preferences and actions are capable of subverting both progressive and regressive social change. Gender divisions of labor are also deeply politicized and entwined with the exercise of power and authority, and the apparently straightforward provision of a labor-saving technology for women may be perceived as a challenge to male authority. Research in several locations of the Indian subcontinent record men objecting to a reduction in water collection time and effort for women and children on the grounds that "it was feared that less work would make them idle and provide opportunities for undesirable behavior" (van Wijk-Sijbesma 1985:44). All of this suggests the importance of greater attention to the subjectivities of women and men, and to the self-conscious perspective of women as people.

It is now nearly 10 years since Moore (1988:38) argued that feminist anthropology makes a significant contribution to gender analysis through its emphasis on women as persons, "on actors' models of the way the world is, and on how they influence social action." Although ideas of persons and individuals are cross-culturally varied, and western concepts of persons

are not universal, we need to consider women as experiencing selves, with powers and preferences.[7]

Thinking about women's personhood reveals an important element of the social identity of 'woman,' which is that it is lived through and alongside other identities of class, age, nationality, occupation, race, and so on. The socialist feminist antecedents of gender analysis have ensured a detailed attention to class as integral to gender relations exemplified in the work by Bina Agarwal. Nevertheless, we have tended to a categorical approach to class-gender, for example by constrasting poor women and prosperous women, rather than one which examines processes and contradictions, for example between gender and poverty (Jackson 1996). Nor have we really taken up the analytical challenges that have emerged from recent feminist theory, of women as social actors with multiple identities, and of the need for a dynamic approach to how the lived experience of being a woman changes through a life course, and is to some extent performed and enacted in the routines of daily life.

Rather than consider embodiment and subjectivity as separate phenomena (in the characteristically dualistic manner of western thought), it is the connectedness between these which I would like to emphasize here. The next section speculates about the implications of such an approach for gender analysis of water.

EMBODIED SUBJECTIVITIES AND WATER WORK

In turning from an exclusively social approach to one which includes personal perceptions, we need to recognize that work has personal rewards as well as social rewards, and is a personal as well as a social burden. That work represents sets of social relations is fairly obvious, but there is also a personal experience of work in its physicality, as well as in its creativeness and sociability to consider. We tend to assume a 'disutility' of work, yet it has many qualities (rewarding, dangerous, boring, dirty, health-giving, or threatening) attached to the ways in which individuals experience particular kinds of work, and which remain absent from considerations of why and how men and women end up doing what they do within their livelihoods, and divisions of labor.[8]

Work[9] is therefore not just 'effort,' it is also 'reward.' Does the personal and embodied experience of work enter into the perceptions of 'effort' and 'burden' and are these linked to the positions taken by, and the interactions of, men and women within households in evolving patterns of activity which add up to a gender division of labor? I strongly suspect they do. What might this approach mean for the ways in which we analyze gender relations in

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[7]To attend to the self is not however to neglect the social, for as Moore (1994:3) argues more recently, experience is a form of embodied intersubjectivity, i.e., bodily identities are linked to social interactions, and experience "is not individual and fixed, but irredeemably social and processual."

[8]For example, a study of Bedouin women weavers in the Sultanate of Oman (Heath 1996), which investigated why women continued to weave despite the very poor financial returns, concluded that the enjoyment of the creativity of weaving was a significant feature in the continuation of weaving.

[9]It may be unhelpful to regard any activity producing value as work, since arguments can be constructed for the social value of almost any activity, but it is also problematic to see work simply as activity which requires effort, since it has its pleasures too.

irrigated agriculture and in domestic water programs, and the ways in which we approach policy and intervention alternatives in environment and development discourses?

The policy relevance of such an approach lies in the better understanding of the likely directions in which women's agency might be exercised—an issue of central importance in any attempt at policy formation or analysis. The next section illustrates this with some speculation about two issues which may be better understood with such an approach. First, to return to the question raised at the start of this essay, the relative progress of the gender agenda in domestic compared to irrigation water development, which may require much more attention to the interests and preferences of women as actors, as well as to the organizational comparisons conventionally made. Second, the evaluation of scales of technology in irrigation and domestic water interventions, which may necessitate knowledge of how technologies are experienced by women.

Participation in Water Work

Could it be that the greater 'success' in domestic water development is connected to aversion by women to irrigation work or to greater commitment to domestic water improvements? In other words, is it women's agency as much as exclusionary male-dominated social structures which 'explain' such outcomes? If so, what is it about the differences between forms of water work which make them differentially attractive to women? Would it not be wise to consider how to make irrigation work more attractive to women as a strategy for greater involvement by women? Or, possibly, to accept that the absence of women from irrigation work may be a 'success' in terms of the actors themselves, where a withdrawal from certain forms of labor might be desired?

It is quite interesting to reflect on the 'withholding' of labor and the 'withdrawal' of labor; the former used to suggest women's preferences (e.g., in Jones' classic 1986 study in Cameroons) and the latter usually (but not always) to suggest male will. There has been a certain ambivalence about the issue of the withdrawal of women from agricultural work, noted in many studies of technological change. On the whole, gender analysts have emphasized the negative connotations of labor withdrawal; the visibility of participation in public rather than private work, the effect of women's earnings on their well-being (both direct, through higher incomes and greater personal control of money, and indirect, through strengthened bargaining positions within households), and, in some cultural formations, the association of withdrawal from agriculture with seclusion practices and the limitation of women's physical mobility.

However, the significance for gender relations of withdrawal from agricultural work for gender relations cannot be read off from a set of prior assumptions in this way, and I would suggest that it only has meaning in the context of both the specific wider cultural, ideological, and material circumstances of individual women, and their personal perceptions and feelings, including their experience of bodily well-being. Thus for example, in my early work on a large-scale irrigation project in Hausaland, northern Nigeria, the comparison of secluded Muslim Hausa women and non-secluded non-Muslim Hausa women suggested that Muslim women effectively used discourses of seclusion to legitimize their interests in limiting family farming labor demands made on them, in extending their specialized and commoditized petty trading and food processing, and 'perversely' developing greater personal autonomy (Jack-

son 1985; see also Mbanyiman 1997). Women's resistance to labor intensification by withholding labor is widely reported and should raise questions about how far women's agency is involved in labor withdrawal.

Issues we need to know more about what this perspective suggests are: How onerous is intensified irrigation work perceived to be by men and women who are directly involved? How are discourses of strength/weakness and heavy/light work used in negotiating divisions of labor, and by whom? What other qualities of work (repetitiveness, riskiness, creativeness, sociability) are valued or devalued and how are they experienced in the tasks of irrigation? What is happening to women's involvement in farm work in general beyond the irrigated sector? In a study of work expectations and performance in India, work that was perceived to be heavy or risky was categorized as unsuitable for women, even though most farm operations, including the heavy and the risky, were undertaken by women (Bhople and Patki 1992). In such a cultural context it is likely that, given a choice, many women might express their agency by opting out of such work. Men commonly seek to escape from manual labor when livelihoods permit—why should not women experience the same aversion to heavy physical work?

In other words, it would be misleading to assume that women's lack of involvement in irrigated agriculture is entirely a matter of exclusion. Or similarly, that it is only on the insistence of men, seeking higher status through emulation of higher class practices such as seclusion of women, that women give up farm work when household incomes rise. Sanskritization[10] is undoubtedly a feature of changing gender relations in India, but it characterizes both men's and women's aspirations, and it is not the only explanation for changing patterns of work. The pleasure and the pain, or what Scarry (1985) calls the "controlled discomfort" of different kinds of work is part of the subjective preferences of individuals and therefore part of the stances they adopt in intra-household negotiations. And of course, the perception by other household members of how demanding a task is, will also affect the extent to which help is offered; for example, in a number of projects (in Kenya, Guatemala and Mexico) women have reported that improved domestic water technologies have not saved them time and effort because "men and children no longer assisted in collecting drinking water when trips were shorter and less taxing" (van Wijk-Sijbesma 1985:99).

Discourses of strength have a prominent place in a great many folk accounts of gender divisions of labor, but they were discarded in mainstream gender analyses during the 1970s and have since received very little attention. This deserves reexamination in the spirit of taking local discourses seriously, neither imagining that they are free of gender ideology or mystification, nor rejecting outright the significance of actual bodily strength, of social constructions of strength, and of the lived experience of tiring and health-threatening forms of labor. Irrigated agriculture involves tasks widely differentiated in their bodily demands, and the involvement of women in, say, the maintenance of irrigation structures requires an interrogation of actions and meanings rather than assertions of exclusion.

In her paper on the impact of a water program in Vietnam on women, Linda Hitchcox describes the transition from collective to largely privatized production, and from the high level of involvement of women in all farm work during the war, when men were absent, to the situation on their return when women "gladly stepped down from these tasks, handing over to men, whom they described as being stronger, more skilled and experienced" (Hitchcox

[10]Here meaning the phenomenon of low castes aspiring to coform to the behavioral patterns of high castes.

1992:30). Discourses of strength and their counterpart, endurance, are gendered. Women's tasks, "though not so heavy physically, require considerable endurance—transplanting, weeding, harvesting—leaving men to be responsible for work requiring upper-body strength—transporting manure, ploughing and helping with the harvesting." Furthermore, men's contributions to 'female' gendered tasks, such as domestic work, depended on "their strength and state of health in relation to their wives" (Hitchcox 1992:30). Discourses on strength can also declare women's greater 'natural' ability for particular heavy work too. An East African study reported men saying:

> *Firewood and water are women's responsibility. Men can and do, of course help, but it is not their job. It is a woman's job for they have stronger necks than men.* (Skonsberg 1989, cited by Bryceson and Anderson 1993:14).

Where feminism of the 1970s was content to ignore folk models, or dismiss them as mystification, contemporary gender analysis cannot be, not because, say, strength does or does not 'explain' subordination, but because local world views are ingrained in the lives of actors and set the terms of compliance or resistance.

Moving on from irrigated agriculture, and thinking about domestic water and environment as an embodied female subject, raises issues of how women and men experience water degradation, and decline in water availability. The energy demands of water-carrying are substantial. Loads can weigh up to 40 kilograms—considerably more energy-intensive than even the heaviest agricultural work done by women—and carrying water accounts for 12–17 percent of the daily energy intake in some East African research (van Wijk-Sijbesma 1985). In a context of environmental degradation (Chiduku Communal Area), which is by no means at the extreme of environmental stress, where water supplies are increasingly unreliable, the task of water collection has been estimated to require over 30 percent of average daily per capita calorie intake (Mehretu and Mutambirwa 1992).[11] The ergonomics of water carrying has also been shown to place serious strains on the bodies of carriers, leading to spine deformities, arthritic disease, and occupational injuries (Page 1996).

Women undoubtedly play a major role in domestic water provisioning, but a gender analysis, unlike eco-feminist approaches, is also interested in relations between women and other women, and here we often find that relations of power between women in households frequently gives rise to patterns of delegation of water work within households. Older women characteristically shift the more strenuous tasks to young women, daughters before marriage and young wives of sons, who are expected in many cultures to obey their mothers-in-law. Acts such as these suggest that, when possible, women seek to divest themselves of domestic water work, which may well speak of a dislike of strenuous labor. How have we understood the burden of water collection and how adequate is this? Whilst in early gender analysis the term 'domestic drudgery' was common, it came to be applied less as a description of physical arduousness and more as a description of domestic work as unpaid and undervalued, since

[11]The methodology for measuring energy use in tasks with any accuracy is remarkably intrusive and resource-intensive—this study made fairly crude estimates.

a concern with commodification loomed large in socialist feminist influenced gender analysis of the mid-1970s. It may be timely to think again about drudgery and physical effort.

A second feature of the conventional approach to understanding the burden of water collection is the emphasis on time input studies (e.g., Whittington, Mu, and Roche 1990), in which time serves as a proxy for effort. The reasons for this are several, and include the instrumentalism which has characterized many arguments for gender to be integrated into development policy and planning. In the case of water, there is a large literature which estimates the time taken for water collection by women, and argues that if this time were released, women would spend more time in 'productive' activities like farming, which would be to the advantage of their families and their nations. By contrast to argue, as Carr and Sandhu (1988) have done, on the basis of considerable evidence, that women do not use time saved on agriculture but on other work and more leisure, and that "an increase in women's free time constitutes a benefit in itself, however it is spent" (Carr and Sandhu 1988:44), has been seen as a 'welfarist' argument, both somewhat despised by gender analysts (Moser 1993; Buvinic 1986) and not expected to cut ice in arguing for gender with skeptical development policy makers.

However, as Bryceson and McCall (1997) have pointed out, there is considerable evidence to suggest that women themselves often seem to value time less than escaping arduousness and high physical effort. Thus they are willing to make long time-consuming journeys to grinding mills to avoid manual processing. Understanding the embodied experience of work is likely to involve an understanding of the characteristics of work as much as the time spent on it, which would greatly enrich time input studies. The significance of this for water policy, and development policy more broadly, is considerable. It might suggest that, rather than the high motivation of women hand-pump mechanics in Kenya and because "any additional time spent in water collection means less time for sleep at night" (Hoffman 1992), they are moved by the desire to escape peaks of heavy and damaging labor.

After an early focus on both time use and energy expenditure in water work and gender studies, there has been a discursive shift towards time use as a proxy for effort (Cairncross 1980; Leslie 1989). This is possibly connected to the interest in valuing water-collecting time as an element in attempts to treat water as an economic good (Cleaver, personal communication, 1997). But to understand the perceptions of women, I would argue that we need to renew our research into effort, burden, and the ways in which women strategize around avoiding some tasks and not others. Research findings abound on the willingness of women to reject water pumps of poor ergonomic design, to refuse to contribute heavy labor to pit digging for latrine construction (Perrett 1985:11), and to travel to distant but preferred water sources. They may suggest that time expenditure is too simple a metric for understanding how women act in relation to water resources.

Many studies also suggest that seasonal variations are significant: In the dry season when agricultural demands are lower, women are concerned more with reliability of water provision, whilst in the rainy season proximity of provision is most valued (Roark 1984). In research into the use of improved wells in Sierra Leone it was found that water collection at closer new wells took around double the time of water collection at more distant old wells, because of the queuing required, yet the preference for the new wells suggested that women possibly valued the time spent queuing more than the more energy-expending time spent walking to the older sources and carrying back heavy loads. In this location, 60 percent of water

collection was done by girls and boys, which may also suggest the popularity of the improved technology with small-bodied individuals (Bey 1988). It may be that time is of varying value to women and that saving time is not as significant as saving effort in many circumstances. The implications of this might be to prioritize effort-saving elements (ease of use for relatively small-bodied individuals) of domestic water provision, rather than time saving per se.

Embodiment and Technology

Thinking about water, environment, and irrigation technologies as an embodied female subject raises fresh interest in how women and men experience small-scale irrigation. Consider the case of treadle pumps in Bangladesh, which are operated by manual treadling, and which have been promoted as environmentally sound with pro-poor technology used originally for home gardens but now increasingly used for rice production. It has been suggested that human energy powered technologies can be damaging to women, who report exhaustion, injury, and pain after using them for some time, and pose particular problems when menstruating or pregnant. Despite the labor abundance in rural Bangladesh, which is taken to vindicate labor-intensive technologies, it has been argued that labor has to be understood as an embodied experience, rather than simply as a time allocation, in which the gender distribution of the physical burden of work and the work intensity of this technology suggest that for poor rural women this may be a very inappropriate technology (Palmer-Jones and Jackson 1997). The most damaging effects were experienced by particularly poor women who treadled pumps as hired labor for low wages, and the least damaging effects were felt by those who treadled for relatively short periods for their own vegetable production.

The physical experience of work, in this case of effort and burden, enters into intra-household bargaining over labor in complex ways. The aversion to pain and the discomfort of heavy labor, is a powerful incentive towards negotiating oneself out of such labor. On the other hand, the remarks made by women about this were revealing: One said that they "do not like to admit to tiredness and pain," another that "people do difficult things for their families" and another that "it is tiring and painful but what is to be done?" whilst a fourth exclaimed that "men try to use women like slaves for working!" (Palmer-Jones and Jackson 1997:47). These comments suggest an unwillingness to be seen as 'frail' at tasks expected of women, a sense of shared sacrifices, a lack of alternatives, and an anger at explicitly recognized inequity in gender divisions of labor. They indicate some of the individual experiences of burden, the simultaneously shared as well as separate interests of spouses, both willing acceptance and angry resistance. Whether the experience of burden translates into silent self-exploitation or articulated objections at the extremes, or forms of subtle refusal and obstruction in between, depends on many factors. This much is clear, the quality of work is experienced bodily (as well as through social valuation); these experiences have meaning and affect action; and women justify the work they do with diverse narratives which draw on gender ideologies and personal loyalties as well as socially legitimated refusals.

CONCLUSIONS

I have argued here that eco-feminist approaches to water relations are flawed by their essentialism and structuralism and that a feminist political ecology offers a more fruitful analysis, in which, however, we need to focus on agency; and I argue that rethinking the embodied experiences of women and men in water work with water technologies may be a useful entry point for such a focus. It seems to me that a focus on embodied subjectivities brings together discourses too often separated, of labor and production, on the one hand, and health and well-being, on the other. Thus I argue that physical work intensity is a characteristic of the bodily experience of work which influences well-being, both physical and perceptual, generates working experiences which pattern the subjectivities, preferences, and perceptions of individual women, and feeds into the social relations of gender in intra-household 'bargaining', producing divisions of labor, and extra-household gendered social relations of work. Moving gender analysis in this direction, it is suggested here, is part of a larger redirection of thinking more seriously about agency and dynamizing gender analytical concepts towards a better understandings of why women do what they do in relation to water.

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