Gendered Incentives and Informal Institutions: Women, Men, and the Management of Water

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ABSTRACT

I briefly outline theoretical approaches to institutions as solutions to collective-action problems and indicate the linkages with policies regarding participation in water resource management. I then go on to suggest that, whilst offering considerable insights, such approaches are limited and may result in policy prescriptions which do little to involve or empower women. In particular, I suggest that the modeling of incentives is impoverished in its 'economism' and in its abstraction of the individual from a life world. I suggest that the conceptualization of institutions is primarily an organizational one, which, whilst alluding to the role of norms, practices, and conventions, focuses primarily on formal manifestations of collective action; contracts, committees, and meetings. Where women's participation is concerned, I illustrate that incentives to cooperate may be devised from reproductive concerns and the minor exigencies of daily life (as well as from productive concerns) and that alternative models of institutions may better reflect the way in which decisions are made and implemented within a social context.

INTRODUCTION

In this paper I consider the contribution which theories about common property resource management and policies relating to participation can make to our understanding of communal water resources management. Common to theoretical and policy approaches are the ideas that incentives are important in defining the problem of collective action, and that institutions apparently offer a solution to it.

There is a growing literature about the place of institutions, formal and informal in development. Great claims are made in theory and in practice for the empowering nature of increased participation of women in the institutions of local decision making and management of natural resources, including water (UNDP 1990; UNCED 1992). However, there is little work on how such empowerment is effected, or on the perception that women and men

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have of the decision-making process at local level and their role within it. The models of institutional development that are commonly offered tend towards formalization and bureaucratization and are gender neutral (Ostrom 1990; Uphoff 1992). As has recently been pointed out, there is little gendered analysis (Folbre 1996) of the differing ways in which men and women may approach and contribute to such institutions.

COMMON PROPERTY RESOURCE MANAGEMENT AND NEW INSTITUTIONAL ECONOMICS

The theorists of common property resource management discussed here can be characterized as those adopting an 'institutionalist' approach. Deriving their model of human behavior from theorists who suggest the 'boundedness' of individual rationality (Simon 1976; March and Simon 1958) they devote much energy to determining how to establish effective management regimes for collective resources. Such an approach has been characterized as an 'institutional rational choice' as epitomized by Ostrom (1990), taking account of the role of institutions in shaping individual and collective behavior. Modeling of incentives combines rational choice clarity with more socially informed complexity. Although it is generally assumed that people's prime motivation is to secure an income, attempts are made to place people within a social context that shapes this motivation. Faced with imperfect information and the associated risks and uncertainty, the individual is considered likely to adopt 'satisfying' rather than profit-maximizing strategies.[2]

Institutions, it is claimed, help to formalize mutual expectations of cooperative behavior, and allow the exercise of sanctions for noncooperation and thereby reduce the costs to the individual of transactions. Social institutions are perceived as clever solutions to problems of trust and malfeasance in economic life as they can make cheating and free riding too costly an activity to engage in (Granovetter 1992: 59).

Institutional approaches are often evolutionist in the assumption that there is a possible and desirable progression from weak and inefficient forms of collective action towards stronger more sustainable forms (Ostrom 1990). There is a strong tendency to assume there are certain abstract qualities and forms of collective organization and decision making that are transferable across contexts and that will promote desirable outcomes (Nelson 1995: 70).

Such writings on common property resource management fall within the paradigm of the 'new institutional economics' (NIE) which considers the institutional context of individual decision making. There is no consensus about the definition of institutions. Nabli and Nugent

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[2]Ciriacy-Wantrup and Bishop (1975) offered an early institutional critique of the rational choice theory of the 'tragedy of the commons' in which they emphasized the difference between unregulated open access to communal land, and common property where resource use is regulated by institutional arrangements. There have followed a number of explorations of the nature of such arrangements, of the formal and informal institutions shaping the motives and actions of the bounded rational individual (e.g., Berkes 1989; Bromley, ed. 1992). These are not confined to considerations of property rights alone, although a great deal of attention has been devoted to this. The also refer to other social and organizational practices which might determine behavior and regulate resource use. People are seen to 'behave or choose in an institutional context' (Bromley ed. 1992:6).

(1989:1335) suggest a working definition of an institution as 'a set of constraints which concerns the behavioral relations among individuals or groups.' This definition could be challenged for its emphasis on 'constraint;' others emphasize institutions as a form of social coordination (Folbre 1996) and as enabling rather than constraining individual action. While NIE is rarely gendered there have recently been suggestions that it could be extended to models of household resource distribution and decision making (Folbre 1996) and to the analysis of policies to involve women in the water sector (Wakeman et al. 1996; Davis 1996). In this paper I consider how some of the concepts derived from 'institutional' approaches (encompassing common property theorists and new institutional economists) might be applied to local-level decision making about the management of collective water resources and how this might impact upon development policy. The limitations of such analyses are considered, particularly in respect of the lack of a gendered focus.

In the next section I consider the policy background for the collective management of water resources and indicate how institutions are seen to play an important part in this. In the subsequent sections, drawing on data from research in Zimbabwe, I demonstrate how the common 'institutional' approaches are too narrow in their conception of incentives and institutions.

Policy Background

There are strong links between the institutional theories of collective action and policies promoting local participation.

> *Since common property systems provide, in effect, long term and "grassroots" institutions, these systems are the most important candidates for popular participation in development decision making ... there is now abundant evidence from detailed case studies that these institutions play a crucial role in economic development* (Berkes and Taghi Favvar 1989:13).

During the past decade there has been a trend for water resources management policies to emphasize the participation of women in the planning and management of projects in the interests of efficiency and empowerment (UNDP 1990; UNCED 1992; UNICEF 1995). Such involvement is held to improve the likely effectiveness of projects, for example through enhanced operation and maintenance, and to be beneficial to women in terms of building on their skills and increasing their access to decision making (Narayan 1995).

Policy statements of agencies involved in the sector are increasingly emphasizing the need for a more complex gendered approach, which takes into account the complexities of livelihoods, the social relationships between men and women, and the potential costs to women of participation (DAC 1994). There is now a suggestion that the NIE may offer useful insights for analyzing the role of women in the water sector, and for deriving policy prescriptions (Wakeman et al. 1996; Davis 1996). Some prominent ideas in new institutional economics include the prime role of incentives and institutions in motivating and regulating individuals' contributions to collective action.

In terms of communal water resources, incentives are defined as those mechanisms that motivate individuals' water use and their participation in collective arrangements for its management. Institutions are the structures of rules, roles, and authority through which individual participation is translated into collective action.

There is a danger, however, that the application of such an analysis may be oversimplified. A concern with incentives fits neatly with the 'demand driven' approach to planning in which users are seen to express their needs and preferences for improved water supplies through their willingness to pay (Najlis and Edwards 1991; World Bank 1993; Klumper 1995). The incentives that shape such willingness are claimed to be the potential for time savings, lower-cost water, or the increased opportunity for productive activity through improved water supply.

Institutions, or more usually organizations, are increasingly considered important as the structures through which participation is mediated. User organizations for water resources management are seen as the forum for decision making, and the location of the generation of rules and regulations, punishments, and rewards for collective action in water. They are therefore considered important in channeling the contribution of individuals and in regulating the way in which the resources are managed. Substantial attention has been paid both in policy and practice for increasing the number of women represented in institutions concerned with water resources management, particularly on committees (Davis 1996).

This twin approach to incentives and institutions has previously been characterized as one which prioritizes markets and meetings as the primary mechanisms through which women's participation is mediated in water resources management (Cleaver and Elson 1995). I suggest that whilst institutional approaches to collective action for water resources management offer a useful framework for analysis, they are too often translated into 'design principles' and policy interventions which oversimplify the approach, and substitute formal organizations for institutions as manifestations of collective action. This type of approach can be criticized for a focus on individual actors divorced from social context, its narrow conception of transaction costs, and a reductionist and functionalist view of institutions. It is over-economistic and under-socialized, and does not recognize the complexity of livelihoods and the social context in which decisions about participation and resource management occur (Cleaver and Lomas 1996).

Incentives

Institutional theories suggest that incentives encourage people to cooperate. Incentives are defined by Seabright (1993:117) as mechanisms, formal or informal, which may induce users of a common property resource to undertake collectively beneficial but individually costly actions. Two themes predominate: it is the individual upon whom the incentives act and the strongest incentives are likely to arise from concerns about the maximization or defence of production (Wade 1986). Where insufficient incentives exist to secure collective action, institutions in the form of property rights, rules and regulations, norms and expectations, committees and contracts can supplement or substitute for these.

Incentives may arise from the pressures of scarcity (Wade 1988) and the desire to maximize the use of a resource (Ostrom and Gardner 1993). They may also be related to transaction costs; cooperation in an institutional context may be less costly to the individual in terms

of time and energy invested than in individual negotiation and possibly conflict with resources use (Nabli and Nugent 1989).

Such a view of incentives can be criticized for being over-economistic in its concentration on production and focus on efficiency. It isolates individual acts of purposive choice, and models direct causal relationships between identified incentives and such acts. Social factors relating to incentives are admitted but rarely analyzed, and the household is not deconstructed to show differing incentives operating on its members. Moreover, little attention is given to noneconomic incentives or to the place of commitment, altruism, or 'self-actualization' in motivating collective action (Douglas 1987; Giddens 1984).

In considering incentives further, here I will limit my analysis to illustrating how, in the case of water resources management, a focus on productive incentives is too narrow and does little to reflect complex livelihood concerns.

There is a commonly held view that women are predominantly motivated to improve their 'domestic' water supplies in order to save time which can then be used for income-generating activities. Women are thought to be willing to pay either in cash or labor to secure a water source closer to their home (Wakeman et al. 1996) and there has been substantial emphasis in the water sector on securing this. This view claims to recognize the multiple roles of women in reproductive, productive, and community management activities (Moser 1989; Wakeman et al. 1996) and identifies the constraints on women's lives primarily in terms of time available for productive tasks. It implicitly deals with poverty concerns through the suggestion that, with release of time, poor women will be more able to secure an income (World Bank 1993). There are a number of implicit assumptions, such as that women primarily use a single water source and that they are strongly motivated to take action to bring this source closer to their home. It is assumed that those collecting water are also the managers of water supplies and will be the women who participate in water projects.

There is a contradiction in these approaches in that women are recognized as being important due to their domestic roles as the prime fetchers and carriers of water. However, incentives to improve such water supplies are modeled primarily in terms of enhanced economic productivity. Such an approach is inadequate for a number of reasons as will be illustrated below.

Institutions

There is a tendency in the institutional literature to recognize the importance of social and informal institutions, but nevertheless to concentrate on the analysis of formal organizations (see for example Uphoff 1992). Here there is a concentration on contracts, committees, and property rights as mechanisms for reducing transaction costs and institutionalizing cooperative interactions (Brett 1966; Folbre 1996). Such a focus is often prescriptive, formalized institutional arrangements being considered more likely to be robust and enduring than informal ones. Features that are thought to enhance the success and sustainability of institutions for resources management include, for example, a clearly bounded user group, a system of graduated sanctions imposed on those who offend the rules, and public conflict resolution mechanisms (Ostrom 1990). Such a formalization of collective action, it is suggested, will clarify and make transparent such arrangements.

In the water sector, a concern with institutions has been manifested through much work on water committees, water user groups and associations, that is, with the organizations for water resources management. Gendered approaches to these have largely concentrated on increasing the number of women represented in such organizations. The justification is that involvement in decision making and management will ensure that resources management more accurately takes into account women's priorities, is more efficient (women are there more of the time), and is empowering to those who take part (Narayan 1995; UNDP 1990; UNCED 1992; SDC 1994; Danida 1992.)

However there are several difficulties with this approach. There are, as discussed below, a number of constraints on women's involvement, in particular in terms of time and money. Second, the model of institutions proposed is a formal one based on organizations with an emphasis on explicit forms of decision making, rules, and contracts. I will suggest below that the very culture of committees may be a barrier to women's involvement and also overlook the informal systems for managing resources in which women play a major role (Mayoux 1995; Cleaver and Elson 1995).

NKAYI DISTRICT, ZIMBABWE[3]

Nkayi District is located in the province of Matabeleland North in the western part of Zimbabwe. It is entirely situated in Natural Region 4, characterized under the national land classification system as having low rainfall (450-600 mm per year), a mean temperature of 20–25 °C and seasonal droughts. Such areas are considered suitable only for the growing of drought-resistant crops and semi-extensive livestock production. Due to the huge amount of forest land unsuitable for cropping, severe land and water pressure is felt in the district. Water is scarce, the main rivers running dry for much of the year and a large proportion of the population (informal estimates suggest up to 90 percent) depending on boreholes and hand-dug wells. Not all of these produce water throughout the year and many of the small dams dry up and are subject to silting. The district has had a troubled history this century. A substantial proportion of the population was forcibly settled there in the implementation of racial land division policies in the 1940s and 1950s. It was a hotbed of political and guerrilla activity during the 1960s and 1970s and the site of conflict between the Zimbabwean army and 'dissidents' in the 1980s. As a result, development activities have been minimal. Due to outmigration in the war years and male labor migrancy, many Nkayi families have an urban as well as a rural base and it is estimated that up to 75 percent of families are receiving re-

[3]Research in Nkayi was undertaken in three periods between 1992 and 1994. The research was qualitative in nature, involving the investigation of local-level institutions for water resources management in three areas. A case study approach was adopted using a variety of techniques including structured and participant observation, semi-structured interviews, resources mapping and seasonal diagramming, and the keeping of field notes and diaries. The aim was, through an initial focus on the construction of detailed cases for individual waterpoints, to build up more extended cases of water management in the three areas. In doing this I hoped to reflect the minutiae of water management, the variety, richness, and diversity of the ways in which people relate to their water sources. By doing this in the more general context of village life and resources management across the three areas, through the collection of supplementary data, I intended to identify continuities and regulations that might exist.

mittances. The strong emphasis on cattle production has shifted slightly in recent years with the opening of a commercial market for grain in 1986.

Incentives and Complex Water Preferences

Whilst the policy literature emphasizes the priority which women place on securing an adequate supply of water for domestic purposes within as little time as possible, there are a number of qualifications to this principle in practice. In Nkayi, women have strong preferences for particular types of water for different purposes. The soft water of the sandy river beds is favored for washing best white clothes and for drinking because of its taste. Borehole water, often described as "sticky," "salty," or "oily" is generally disliked for its taste and for washing because of its hardness (it "finishes the soap!") but is considered convenient for watering gardens and livestock. In addition, certain water points or sources are known to be highly energy-consuming and there is a balance between the time and effort taken in traveling there and pumping water with the actual quality of water obtained. Traveling longer distances to a borehole may be considered worthwhile if the pump is easy to use and the water flows out fast, but not if heavy pumping, team pumping, or queuing is required. Walking several kilometers to the river with a load of laundry is considered energy-consuming, but there is no need to pump water when you get there and the effort may be worthwhile if other tasks can be carried out at the river, such as bathing and garden watering (the vegetable gardens being sited on the river banks). The reliability of waterpoints affects women's perceptions of them; they may prefer traveling further to a well-maintained borehole where a supply is assured than risk queuing at the nearby hand-dug well notorious for breakdowns and intermittent water supply.

As a precaution against drought, women rarely rely on one source of water but maintain access to a number of different supplies, often through reciprocal social networks. Incentives to cooperate may therefore be indirect and relate to the need to maintain good relations with neighbors and kin in a more general sense. Perceptions and priorities in relation to different sources change seasonally, according to the demands placed on users by agricultural activities and environmental conditions. These complexities, the changeability of preferences over time and the use of multiple sources would make it difficult to construct a simple hierarchy of preferences. An example of such complexity is provided by the profile of one household's water use and preferences as shown in box 1. The principle of the prime importance of time saving as an incentive for women can then be qualified by the importance of other considerations arising from domestic concerns.

Household Structure and Gendered Priorities

The model of incentives and water that is commonly proposed does little to recognize the complexity of water use and decision making within the household. Institutional literature is often gender-neutral in terminology (Cleaver and Elson 1995) and seems not to recognize the intricacies of water use and decision making within and between households. Policies suggesting time saving as the major incentive operating on women do not consider potential complementarities and conflicts among the priorities of household members. Significantly,

Box 1. Household of Mrs. T. Nyoni, Eguqeni: Water use preferences.

First preferences	For domestic water: Mtswirini well, 5 minutes' walk across the road. Reasons for preferring this are convenience and assured access, this household being a regular user. Acknowledged disadvantages are the 'oily' quality of the water and the slightly metallic taste. For livestock, the river or the dams are used according to the restriction imposed by seasonal grazing rules. Mtshayebhuma is a perennial livestock watering source, while Mpakabili and Mpofu are seasonal.
Primary backup supplies	Habahaba (Maboleni) well at the pre-school, 5 minutes' walk and Patrick 2 well, over 10 minutes' walk away. There is no assured access to Habahaba as the small amounts of water available are often reserved for the pre-school and the one or two adjacent households. The Nyoni household will therefore more commonly use Patrick 2 as a backup, which although further away, is managed by members of the Nyoni extended family and therefore access is assured. If labor is available, Patrick 2 may be used to avoid the closed hours and queuing at Mtswirini.
Secondary backup supply	Manyabe borehole, 20 minutes' walk from the household, is considered the serious backup supply in times of drought or pump failure as it has never dried up. Before the wells were dug in the 1980s this was the regular source of water for all purposes. Now it is only used if a donkey cart can be sent with drums so as to collect more than one day's water at a time.
Intermittent supplies	The Shangani river, at 40 minutes walking distance, is occasionally used for the washing of best white clothes. During the rainy season water is collected from the tin roof of the main house and this water is strongly preferred to well water because of its sweet taste and softness. Also due to the long hours worked in the fields in the rainy season, there is little time to go to the wells for water.

the literature offers us no model for the resolution of competing priorities over resources use at household level. In suggesting time saving as the major incentive operating on women, it does not consider the likely priorities of men, differences within and between households, changes over time, and the working out of compromises to meet differing priorities amongst members of households.

In Nkayi, men and women were found to have some similar and some differing priorities regarding water use, and these are changing over time as the livelihood system changes. The gender division of labor is not static, but shifting and negotiable as new income-generating opportunities, through the sale of crops, open up and old ones, through employment, decline.

In this research, it was found that men are primarily concerned with securing access to a variety of water sources for cattle watering. Due to the limitations on moving cattle they

are concerned with distance to the water source and the quantity of water available from it. By way of contrast, women are primarily concerned with securing water for a variety of domestic purposes. For them, major concerns were the time and effort taken to collect the water balanced against the appropriateness of the water obtained and its quality for various purposes.

However, a focus on men's and women's priorities separately fails to recognize the need to balance water use priorities within a household. This is reflected in the practices we found at many water points where there are informal sharing conventions to balance the need for watering livestock and obtaining domestic water. Differing incentives in terms of time saving between men and women enable women collecting water for domestic purposes to obtain priority over cattle watering in queues at busy boreholes. Conversely, when vital cattle-related tasks such as dipping are taking place, domestic water collectors are delayed by the requirement to pump some water into the cattle dip before they take some for their own domestic purposes.

The model of incentives and women's involvement we have, then, fails to account for the impact of wider household concerns on women's perceptions and offers no model of household negotiation or compromise over resources use and decision making. It also oversimplifies the division between 'domestic' and 'productive' activities at the household level. For example, women are likely to collect 'domestic water' for purposes such as vegetable growing, beer brewing (for sale), watering of sick animals, and for brick molding. All these activities could also be classed as 'productive.'

It is therefore not very helpful to see women's interests as entirely different from men's, or to see the household as having uncontested unitary interests. Rather, differing priorities of men and women are balanced and negotiated in an attempt to ensure that the main needs of households in terms of water use are met. In Nkayi district we came across numerous examples of negotiation between men and women, often at waterpoints, over usage priorities. At community meetings, agreements to balance competing needs for water use at particular waterpoints were forged.

Institutional approaches generally focus on non-household institutions such as local organizations and markets and analyze incentives in relation to these. As individual participation in the activities of collective action may be mediated by household dynamics, more analysis of this would be welcome.

The model of women's concerns prevalent in policy, whilst claiming to recognize both domestic and productive concerns, is oversimplified abstracting women both from the household decision-making context, and, as we shall see later, from wider social concerns.

Labor Delegation, Poverty, and Participation

Let us pursue this point by returning to the issue of time saving as an incentive for women's participation and illustrating how the social location of women, both within the household and in wider community terms may crucially affect this.

Despite the qualifications to the time-saving principle, we cannot disregard it as an incentive in women's water use and participation. Time was an explicitly stated factor in many women's definition of water problems as expressed by this woman:

> *Water is a real problem. If I want more water I will have to wake up at 5 a.m. To collect four buckets will take me about 11 hours (from 5 a.m. to 4 p.m.). We queue, especially on Fridays if the livestock is being watered because then I must fill my bucket and empty it into the cattle trough before I can collect one for myself. We also queue when the dip cattle are queuing. I do my laundry after every 2 weeks* (Mrs. M. Nkubini Dip).

Women's explanations for their lack of time are primarily labor shortage and the labor required to use a particular water point. However, not all women are short of labor. Women are not a homogeneous group and wealthier women may not be the direct fetchers of water supplies themselves but may delegate it to others such as teenage girls, younger wives, poorer relatives, or paid helpers. In this study, households which had an advantageous position in respect of water use were those with a large number of children or young adults or hired labor. One woman respondent, when asked to characterize wealthy households in her village described them as those with a donkey cart specifically for water collection. Women from households with a labor surplus may well have few incentives for contributing to improved supplies as they are well able to secure their needs anyway.

Poor households are often those with large numbers of small children and relatively few able-bodied adults. This places huge pressures on labor availability and time of the adult women of the households. It affects their ability to fetch water, to contribute to community decision making, and to engage in productive activity.

> *I don't attend any meetings, my husband only goes as I have all these small children. They all go to the fields with me and the larger girls can carry some gallons from the dam* (Mrs. C.N. Eguqeni).

As we will explore further below, those women with the heaviest time constraints are least likely to be able to contribute to the collective decision-making process that might secure water supplies closer to their homes. In addition, the concept that mere time saving may significantly improve their position is debatable; poverty is multicausal and epitomized by a complex lack of resources. This same woman explained how 2 years of plentiful rain and adequate water availability made little difference to her livelihood status compared to a previous drought year:

> *I am still suffering the same problems now as in the drought year—that is I can't grow enough to feed the family.....we have enough land but we can't use it. We have no cattle, no plows, nothing.*

Labor constraints affect men and women differently. The division of labor is such that rural resident men mostly have fewer demands on their time, with possible seasonal exceptions, than do many women. Men's concerns about water relate primarily to cattle but cattle owners themselves are least likely to be watering the cattle in person. This task is commonly delegated to boys, poor relatives, or hired herders. Such herders may have little interest in

saving time in watering cattle and also little influence or authority in shaping community-level institutions.

A further qualification is required of the time-saving principle for women. Much domestic water is collected by children and teenage girls who may no longer be at school. The motivation to save time may not be as strong amongst these water collectors as it is amongst adult women. Moreover, they have no way of contributing to the collective decision-making process. The much-vaunted link between incentives, participation, and effective management is questionable if we recognize the delegated nature of much water collection and the substantial involvement of children who are rarely included in decision-making processes about water either at the household or the community level.

In summary, the policy and literature on incentives for water resources management make little attempt to discriminate between individual water users and to identify the differing strengths of incentives operating on individuals according to their place in the social structure: their age, gender, wealth and kinship status, personal history, or other social characteristics.

The Opportunity Costs of Participation

As indicated in the section on incentives above, some women may find it difficult to participate in collective decision making. Mrs. Nyoni's constraint is echoed elsewhere; the examples from Lesotho in box 2 illustrate that poor women with small children are unlikely to participate in village decision-making activities (Cleaver 1994).

Poor women are also less likely to be elected to positions on water point committees or village development committees. When asked the criteria they use in electing people to positions of responsibility in the village, interviewees repeatedly mentioned two qualifications: someone they could respect (for position, influence, hard work, or their ability to forge a consensus over difficult issues), and someone with resources of his own such as a bicycle or cash so that they could represent the village at district headquarters when required.

Mayoux (1995) suggests that membership criteria and the requirements of participatory projects are often based on the ownership or pooling of resources, so excluding very poor women. Amongst my interviewees, most stated that they would like to belong to a savings or income-generating club (often sewing) but that they had neither the entry fee required nor the time to qualify for this. Similar constraints are likely to apply to other collective activities.

As we will see below, the village model of decision making in Nkayi is lengthy and time-consuming, depending on everyone having his say and on the achievement of consensus. In addition, the water-related tasks that are promoted for women, as caretakers of pumps, as managers of funds, and as monitors of distribution and use, are all intensely time-consuming. Yacoob and Walker (1991) found in a community-managed water and sanitation project in Rwanda that women carried a disproportionate share of the work involved and spent more time in collecting water fees than in collecting water. In Tanzania, a water project that aimed to relieve women's labor burden actually resulted in their taking on most of the digging and maintaining of wells (Davis 1996).

We have seen that poorer women generally have less access to water supplies and greater constraints on their time and labor resources than other women. They are likely to be in poorer

Box 2. The marginalization of the poorest households in a water and sanitation program in Lesotho.

Household One

The household is headed by a young woman recently widowed who has three small children. She has one very small field and no animals and was previously dependent on the remittances her husband sent from his work in the South African mines. The woman is unable to participate in community labor on the water project as she has the small children to look after and spends all her time trying to do casual labor such as laundry and weeding in order to get cash for food. She does not attend village meetings for the same reason. The children are unable to go to school because she cannot pay the fees and she does not attend the local clinic when they are sick for the same reason. The family is therefore excluded by its poverty not only from participating in the community water project (and possibly in its benefits) but also from participating in decision making and from receiving health and education.

Household Two

The adult members of the household are a woman and her teenage son who support a number of smaller children. Neither the mother nor the son attends community meetings as they are usually out laboring and the son has therefore missed the opportunity to be chosen for training as a latrine builder under the water and sanitation program.

Source: Cleaver 1994.

health and their children at greater risk of water-related diseases. They, therefore, could benefit most from improvements that bring water supplies closer to their homes. However, as the examples quoted above illustrate, they are least likely to participate in the collective decision making that will bring this about. Such women depend more on casual labor and also on the support of kin in securing their livelihoods. They, therefore, spend a considerable amount of time either working on other people's fields or investing in their social and kinship networks to secure inputs such as cattle for plowing and assistance with school fees.

Mayoux (1995) has noted the mixed record of women's involvement in participatory projects and criticizes their implicit assumptions that there can be a consensus among participants about priorities and that the benefits of participation are self-evident and outweigh any costs to participants. She raises the concern that such projects may merely result in shifting the costs of development to women and cites evidence from Nicaragua to suggest that some women would prefer employment to the added responsibility and insecurity of involvement in a participatory organization. Folbre (1996) has suggested that participating in social institutions requires resources and it is only when they have these that women are able to challenge oppressive norms and customs.

Projects that emphasize women's participation through involvement on committees and in the decision-making process do not necessarily benefit those women most in need, nor do they always reflect the priorities of such women.

Committees Versus Consensus Decision Making

One of the implicit assumptions underlying policy about institutional development for water resources management is that such management should be formalized. Two aspects of this are significant here: the emphasis on committees and contracts (and women's involvement in these) and the concern with formal structures of authority, rules, and ownership arrangements as manifestations of successful community management. Such a model of participation is believed to be linked to higher levels of efficiency and effectiveness of water projects (World Bank 1993).

There is a common assumption also amongst implementing agencies that failures of participation can be attributed to the lack of clarity and formalization in institutional arrangements, as this example from a UNICEF evaluation suggests:

> *a formal model of procedures needs to be followed in engaging community participation in well projects ... a more vigorous set of implementation procedures for community participation would undoubtedly secure a more uniform response ... the collective roles of well committees, VIDCOs (Village Development Committees) and other local committees such as school committees, need to be formally established and related to project structures* (UNICEF 1986).

The assumption that formalized management is necessary is unquestioned in the water sector in Zimbabwe (and elsewhere) where it is government policy to have a 'water-point committee' for each well or borehole, comprising representatives of the users, preferably in the combination of three women (as the main drawers of water) and a man (as chair and representing 'authority'). The committee is supposedly a manifestation of the democratic process (the members must be elected) and is seen as representing the community, with 'ownership and responsibility' replacing a perceived traditional lack of such qualities in relation to new water supplies. Such an approach is ahistoric and socially ill-informed.

Whilst the empowering effect of successful collective action on women is asserted (Mayoux 1995), there is little evidence that participation on committees is either empowering to women or necessarily efficient in terms of water resources management. Single purpose committees may not be particularly important or influential and there is a danger that in promoting women's involvement on these they are spending time participating in institutions with little power or real decision-making capacity. If effective local decision making is actually performed at larger meetings, then it is important to facilitate women's involvement in them and the skills that are necessary to participate effectively. These points are elaborated below.

Appointing women to committees may just be reinforcing their role as 'housekeepers' of the water sources rather than enhancing their decision-making capacities. Previous research in the same region indicated that women's names were being put forward for committees to meet donor and government requirements but that such women actually perform few managerial tasks (Cleaver 1991). Woronuik (1994) suggests that the establishment of maintenance committees as part of a policy of community management can restrict participants to being operators rather than managers.

In my study villages, the exclusionary nature of committees was not easily compatible with the inclusive nature of decision making. Decision making is not commonly confined to single purpose committees but is a rather more integrated and overlapping process involving larger numbers of people. In two of the villages studied in-depth, records of all village meetings were kept in the same book whether they were meetings of the Food For Work Committee, the Parent Teacher Association or the Village Development Committee. Meetings were often attended by a large proportion of community residents, not just committee members, and there was considerable flexibility about the subjects discussed at any one meeting. The terminology used in relation to community-based activities is not structured according to single purposes and committees. For example, instead of speaking of the need to establish a water point committee maintenance fund, local leaders mentioned the need to discuss with villagers the establishment of a 'community purse.' In interviews and conversations, meetings were always referred to as 'calling the people together' regardless of the particular committee under whose name the meeting was held. Meetings were only held when there was something to discuss.

In Nkayi, most water matters are decided at meetings of the Village Development Committee, which are all-inclusive and multipurpose. The meetings are not actually restricted to committee members but include all adults in the community. Attendance at them is vital as decisions are taken on the basis of consensus, to ensure commitment and compliance. Tasks such as planning, reviewing and monitoring progress, imposing sanctions, and constitutional matters are all therefore subject to a decision-making process in which any adult member of the community can participate. Our evidence suggests that critical decisions about the rationing of water from particular sources are only successfully enforced in those communities where the decision has been taken at a meeting of the whole community rather than that of a committee alone.[4]

Despite little formal representation of women in authority positions, they do, through inclusive decision making, have a significant influence on the shaping of water resources management institutions. In Nkayi, women participate prominently at the community meetings, being the majority of resident adults in the village, and issues discussed at such meetings reflect their many livelihood priorities: food for work, pre-school facilities, and collective vegetable growing arrangements being at least as prominent in discussions as 'male' concerns about cattle and grazing land.

The most obvious implication of the consensus decision-making model is that it is very important to be able to attend village meetings which may be lengthy and time-consuming. We have already noted the constraints operating on poor women which prevent them from doing this. However, people's general willingness to participate in such meetings offers another qualification to the idea that they are primarily motivated by time saving. People are willing to spend more time if the result is a social consensus about resources use and management. Although lengthy and initially high on transaction costs, this model of decision making by establishing social consensus may be a more efficient way of managing a resource

[4]Committee members played an additional role in carrying out some actions decided upon by the meeting: lobbying the ward councillor or district administration, collecting funds, drawing up lists and rotas for Food for Work schemes, and so on.

than the committee model. Consensus may enhance collective management as it reduces the need for compulsion, monitoring, and sanction.[5]

We have, then, a qualification to the idea that collective action may reduce transaction costs. There is a rather vague assumption in the institutional literature that (unspecified) social norms and customs may facilitate cooperation. This research suggests that the generation and maintenance of such norms and of social consensus is not cost-free and indeed that people may invest a considerable amount of time and effort in this.

Informal Management

If the focus on committees tends to over-formalize institutional decision making, it also ignores the type of management of water resources that already takes place through custom and practice. The committee approach is justified by the idea that hierarchical structures are efficient in reducing transaction costs (Brett 1996) and that management through explicit authority structures and rules is most likely to lead to efficient resources management (Ostrom 1990; Ostrom, Schroeder, and Wynne 1993). Integral to this approach are the ideas that exclusive group ownership of certain water points leads to a greater sense of responsibility by users and that there is a prime need for regulation of the distribution of water where this is scarce. However, this model overlooks the very real role of women in informal water resources management and in doing so ignores some of the strong principles of water resources use and management derived from their livelihood priorities.

If we look beyond the committees and contracts proposed by many government and donor agencies for the management of water, an alternative model can be detected. This is based on the importance of informal structures and networks, on discussion and agreement, and on management through custom and practice and through 'rules in use.' It is in these areas that we can clearly see women's contributions to water resources management. Whereas conventional management principles put emphasis on ownership of water sources, which is deemed to foster and generate a sense of responsibility and likely compliance with rules and regulations, these were found to be inimical to the principles on which access to water sources was organized in Nkayi.

Custom and Practice

Much water resources management takes place through custom and convention, continuously adapted through negotiation and action to meet changing circumstances. These often remain

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[5]One problem was apparent in the collective decision-making process. People who were not present at meetings where collective decisions were made often grumbled about the decisions and felt less committed to abide by them. The logistical problem that this posed was pointed out by Mrs. Nyoni, who being a school teacher often missed meetings. She said that meetings were often held on Wednesdays (the rest day when people are prohibited from working in the fields) when anyone with other work to do cannot attend them. If they try to hold meetings on Saturdays the Seventh Day Adventists complain because it is their sabbath and if they hold them on Sundays those who go to other churches cannot attend them. Those who cannot attend such meetings may therefore feel less committed to the decisions taken at them.

invisible because they do not exclusively involve productive sources of water and because management is largely through rules-in-use and compliance is almost universal. Three examples of culturally sanctioned conventions from Nkayi can be cited.

Whereas the advocates of formalized management principles such as committee structures emphasize restrictions on access and the importance of distributional rules, the informal management principles that we actually found fit far more neatly with local women's livelihood priorities for assured access to good quality water. Distributional problems are largely avoided in normal years by the common culture of minimal water use, a culture which women play the greater part in perpetuating.

There is a strong and deeply embedded culture of minimal water use inculcated into children at an early age. Children are taught never to waste water, to collect it in wide brimmed containers so as to minimize spillage, to use the smallest possible amounts for domestic purposes and to recycle wherever possible, for example washing water being used to water vegetables. In normal non-drought years, rather than rules about quantities of water to be taken from a particular water point, conventions exist about the appropriate uses for particular water points, avoiding the need for regulation or rationing. 'Everyone knows' that sources with limited supplies are not used for livestock and watering, and that water for building should only be taken during the rainy season. Deeply embedded in people's perception of the right way of doing things, and monitored by women users who chastise children for deviance from these norms, such conventions normally bypass the need for explicit distributional rules.

A second convention is the ideal of open access to water sources for all to enable them to secure at least minimal water supplies. It is considered undesirable, indeed socially unacceptable to exclude anyone from a water source; a sensible survival strategy in very dry lands. In normal years, such access is restricted only by norms relating to the appropriate use of the water; as drought progresses however, such access rights become more restricted. Restrictions on access are also introduced in compliance with government or donor agency policies on water point ownership. Where such restrictions are introduced they adversely affect poor women who have struggled to gain entry rights. Their households are often spatially peripheral to the main water sources and often they have not contributed to implementation, an activity which 'buys' the right to use the water source according to the policy of implementing agencies. They often therefore depend on kinship relations to gain some sort of access to water.

Despite their occurrence, restrictions on access to water are considered deeply undesirable by both users and local government officials and are deemed likely to result in increased conflict and inequitable outcomes.

Third, by far the greatest number of unofficial rules we found relate to the preservation of good condition of the water and the water point. These rules are mostly significant to women who are securing water for domestic use, where we have seen that water quality plays an important part in their perception of water sources. At water points used almost exclusively by men for watering cattle few such good condition rules exist. Examples of good condition rules are those relating to preventing contamination of the water (restrictions on bringing animals or dirty pots and pans to the site), those maintaining the good condition of the pump and surroundings (no banging of the pump, no pumping when the well is dry), and those relating to keeping the surroundings clean (exclusion of animals, sweeping and cleaning).

Principles of Decision Making

The institutional literature stresses certain principles of collective decision making, namely the need for decision-making fora, clear resources and user boundaries, rules and authority structures to enforce compliance, and graduated systems of sanctions, rigorously applied and enforced (Oakerson 1992; Ostrom 1990).

However in Nkayi, there are a number of socially embedded principles of decision-making which may sometimes contradict these. The most prominent of these are the strong desire for conflict avoidance, the acceptability of approximate compliance with collective rules, and the desirability of minimal management and intervention.

There are a number of implications of such principles for poor women in relation to their access to water and their other livelihood priorities. Both men and women are critically concerned with conflict avoidance both in the general activities of daily life and in resource management in particular. Men are particularly concerned with avoiding conflicts arising over the watering and grazing of cattle and tell stories of a local leader dying as a result of the pressures of disputes over cattle. Women are equally concerned with avoiding conflict and present many of the rules and conventions at water points as conflict avoidance (rather than distributional) mechanisms; "we queue to avoid quarrels."

Evidence abounds from interviews that people regard conflict as extremely distressing and its avoidance as desirable. Conflicts are perceived as being deeply threatening to communities and disputes between people and a failure to live together peacefully are considered likely to incur the wrath of the ancestors and result in punishments through lack of rain, disease, and crop failure. The legacy of years of guerrilla war reinforces people's awareness of the dire consequences of disputes within a community.

There is also an instrumental element to conflict avoidance. Berry (1989) sees institutions in rural areas as mechanisms in which people participate to mediate access to other resources. Livelihoods in rural areas are still intensely bound up in relations of reciprocity. Because of their reproductive concerns, women may have more dense reciprocal networks than men (Slocum et al. 1995). In Nkayi, noncash forms of exchange are particularly important to poorer women who often provided labor (of themselves or their children) to wealthier households in exchange for assistance with plowing and harvesting, with agricultural inputs such as seeds and with food in hard times. The poorest women rely on access to richer women's fields to pick wild okra in the dry season. Women are strongly concerned with avoiding conflicts that might adversely affect such reciprocal relationships, and this manifests itself in the kind of rules and decision making they adopt in water resources management.

The relevance of conflict avoidance to water resources management, as we shall see below, is that people are unwilling to impose rules and regulations that are likely to give rise to confrontation, that consensus is sought at all times, and that compliance with rules is interpreted generously. None of these are necessarily compatible with a formalized committee and contract model of management.

Habitual conflict avoidance reduces the need for monitoring compliance with rules and regulations and it is highly likely that most people comply as the path of least resistance and greatest peace. Thus symbolic locking of wells (by removing a simple bolt) is sufficient to indicate the need for compliance with 'closed hours' rules despite the ease with which these can be broken.

Associated with this is the acceptability of approximate compliance. Minor breaches of the rules or even persistent breaches within certain boundaries are unlikely to be perceived as deserving of sanction as this would increase both the requirement for monitoring and the necessity of unpleasant and probably conflictful relations in accusation, trying the offenders, and exacting punishment. An alternative to a strict system of active monitoring and frequently utilized sanction is one where a broad socially based interpretation of compliance reduces the need for such mechanisms.

Moreover, the informal management system tends to allow poorer women with less labor to break or bend the rules to secure their minimum water supplies. The recognition of approximate compliance both allows poorer women to secure their needs and reduces the need for monitoring of rules. Poor women are seen to benefit from generosity in interpretation of compliance with water use rules. For example, one woman, living far from the water point and with several children too small to collect water for her, used the well at times when it was supposed to be 'closed.' She did this by replacing the disconnected bolt on the pump mechanism with a stick. She attracted no criticism or punishment for this; other women commented that this was the only way she could meet her basic needs within her labor constraints.

A principle of water resources management clearly related to the previous two is that of minimal intervention. Rules are only imposed when absolutely necessary and meetings are held only when there is something to discuss. Enforcement is largely left to socially constructed compliance and punishment to supernatural sanction. Regulation and rationing are imposed only when absolutely necessary. Such minimal management does not fit with official policies regarding water point committees that frequently stress monthly meetings, minute taking, and regular activities. Nor does it conform to the model of institutions proposed in institutional economics that emphasizes the regularization of decision making, the need for clearly graded sanctions for breaches of the rules, and the careful monitoring and application of these (Ostrom 1990; Ostrom, Schroeder, and Wynne 1993)

The informal management system, then, appears to well reflect women's concerns in water resources management, to be compatible with their livelihood priorities in terms of use of time and labor, and to optimize access to the resource, even of the poor. This raises the question as to whether we should be looking more closely at existing forms of management before imposing water resources management through committees that may do little to empower women or ensure efficient water resources management.

CONCLUSIONS

In this paper I have suggested that we need to take a broader and more complex approach to looking at the incentives and institutions that shape water resources management. The model commonly offered in literature and policy oversimplifies incentives and motivations, giving primacy to economic and productive considerations and assuming direct causal linkages between such incentives, individual behavior, and collective action. In terms of institutions, such a model emphasizes the desirability for formal organizations and the management of resources through committee and contract.

This view does little to illuminate the multiple interactions that shape water resources management, or to account for the positions of men and women within it. Evidence from Zimbabwe and elsewhere suggests that men and women may be subject to different but overlapping incentives to participate. The effect of incentives is also shaped by the socioeconomic status and spatial location of a household, by changing livelihood priorities over time, and by seasonality. An individual woman with strong incentives to participate in collective decision making to improve water supplies does not necessarily have the resources that enable her to do this.

A focus on the formal institutions for water resources management may overlook informal institutional arrangements in which women play a major role. Moreover, the proposed desirable features of efficient and effective formal organizations may be contradictory to the principles by which local people prefer to interact and take decisions. Such principles, deeply embedded in relationships of reciprocity and the social structure, may be better adapted to the resources constraints facing many women than those of formal institutions.

To better understand gender issues in the collective management of resources such as water, there are a number of areas which require further investigation and analysis.

a. Gendered Analysis of Water Use and Management

Recognizing that men and women may have differing priorities and perceptions regarding water use and management, we need to be able to contextualize this generalization. Rocheleau (1995) suggests that techniques such as gendered resources mapping may assist in identifying gendered differences in resources use at different levels of analysis. She suggests that such resources mapping can help to raise questions in relation to a particular resource about who uses it, whose labor is employed, who is responsible for it, and who controls it.

b. Gendered Analysis of Institutions

There is a need to recognize both formal and informal institutions at the local level and to identify commonalities and differences between them. Looking at informal institutions involves identifying social networks, local forms of decision making, and conflict resolution. Kabeer (1994) suggests analyzing the rules, resources, and activities relevant to institutions as well as the different people involved and the command that they have over such factors. Institutional diagramming and analysis (Slocum et al. 1995) may help identify the roles of local institutions and the perceptions that men and women have of them.

The household should not be neglected as an institutional unit of analysis. We need to be able to recognize both intra-household dynamics and the relation of household members to wider forms of collective action in resources management. Folbre (1996) suggests the need to investigate the distribution of resources within the family if we are to understand the constant process of realignment between production and reproduction. Rather than seeing the household either as a single unit, or as the site of inevitable gender confrontation, we might recognize the overlapping elements of conflict and cooperation that inevitably form household resources management strategies.

c. Complex Incentives

A static view of gender interests, household priorities, and local-level institutional capacity is of little use when planning interventions. Rather, we need to recognize the shifting and changing priorities of individuals and households over time, that individual men and women have complex social identities, and that both individual and collective action are likely to be shaped by both economically 'rational' incentives and socially embedded motivations.

In modeling the incentives operating on individuals, a greater emphasis on noneconomic motivations for resources use and collective action would be appropriate (Uphoff 1996). The influence of psycho-social motivations for example, may be significant (Papanek 1990) in explaining apparently noneconomical rational actions.

Finally, in understanding water resources management at the local level, we need to be aware of the different but overlapping interests of men, women, and children and the ways in which these interests might change with time and circumstances. An awareness of the accepted principles of local decision making, and the part that men and women play in such arrangements, could also assist in the design of sustainable and effective institutional interventions.

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