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■ Broadening Access and Strengthening
Input Market Systems

THE VALUE OF WATER: POLITICAL ECOLOGY AND WATER REFORM IN SOUTHERN AFRICA

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INTRODUCTION

Water reforms in Southern Africa in general and in Zimbabwe in particular constitute a relevant site to examine the strengths and weaknesses of political ecology. Water management, policies and reform reflect a combination of historical ideas and practices grafted onto the new global strategy for converting water from a free public good to an economic one.¹ In the emergent global discourses, and particularly in the public sphere, in contrast to professional and scientific ones, equal attention is paid to the essential nature of water for all life and to water as an economic good. The complex interplay surrounding this essential “natural” resource lends itself to political ecological analyses. As this panel has been organized in part as a response to Vayda and Walters’ paper, we will briefly summarize our view of their challenge before we present the substance of our paper.

We find ourselves in agreement with Vayda and Walters’ conclusion that solid empirical work is required to assess complex intersections between power, politics and environmental change. They argue that political ecologists have privileged the political over ecology and environmental change. They suggest that one should begin by observing environmental changes and then move from there to seek causes, rather than assuming that the most important causal factors are political. We question this approach and will use the case of water reform in southern Africa to illustrate another perspective which takes into account some of their criticisms but at the same time raises issue with other aspects of their work. In particular, we don’t agree that environmental anthropologists must necessarily start from observations of ecological change. One of the strengths of political ecology is its focus on the mutual constitution of social and environmental change. In our research, we have begun by focusing on the social, political and policy dimensions of the water reform process, with the goal of examining the social and environmental consequences of such changes, if indeed any result from the reforms. This seems as legitimate a way of approaching the study of the relationship between people and their environment as starting analysis from observations of environmental change. Although the political may be fore-grounded, in this case, this is not because we as anthropologists are privileging it. Instead, it reflects the present focus of a reform process in its early stages of implementation which, to date, has had little environmental impact. If we as anthropologists waited to study the actual environmental consequences of these long-term reforms, in this case we’d probably be long gone. More importantly, such a perspective presupposes that we have little to offer in terms of policy formation or implementation and only study impacts. This approach is outdated as it does not take into account that different actors will respond continuously to their understandings of impacts thus the assumption of a single set of responses

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in a limited period of time is unwarranted. We assume that answers to water reform can only partially reside in the ecological side of political ecology. It is in the complex relationship between the social and the ecological - in this case with priority given to the political (broadly conceptualized)- that we can begin to understand why water reform is taking place now and what its implication and probable consequences are.

Another strength we see in political ecology which is not emphasized sufficiently by Vayda and Walters is scale. As has often been pointed out, ecological sciences differ in this respect as do different approaches in anthropology. In the case of water, the different water sciences work at different temporal and spatial scales. In the past an anthropological approach would have led us to the local and the village rather than to the multiple scales that are required for this kind of study. Water reform takes place at global and local levels. It is characterized by multiple discourses and contestations at these different levels. But then this is what the paper is about.

The paper proceeds as follows. In part I, we identify the different and often competing discourses concerning water and describe the elements of these discourses. We assert that, in this case it, it is not useful to simply describe a hegemonic discourse and critique it. Rather, we emphasize the indefiniteness and contestations that surround debates, sciences and shifts in potential water availability and quality. In Part II, we review perspectives on and approaches to political ecology, identifying what different authors have claimed as distinctive in a political ecological approach. Part III explores water reform in Southern Africa in relationship to these points. We consider the complex intersections between changing principles and practices of water management in response to shifting understandings of the water sciences and new global discourses. In Part IV, we reflect on why political ecology needs to remain open in response to dramatically changing environmental factors, changes in the different water sciences and in the political possibilities of reorganized management for the purposes of our exposition. In part it is because we have concluded that there are tensions in protecting different biota and their related physical and living environments and providing adequate water supplies for Southern Africans. Under such circumstance we expect to find competing discourses, competing practice and ongoing tensions in water management.

PART I. COMPETING AND OVERLAPPING DISCOURSES

In much of the political ecology literature, emphasis is given to the dominant or hegemonic discourse which is paving the way for global capitalism. We will begin slightly differently by delineating a range of perspectives or frameworks currently being used in analyzing water issues. Rather than a priori privileging a particular perspective, we suggest that what is most interesting are the complex intersections and arguments that will unfold over the next several years among advocates of these different perspectives. Thus, while it is tempting to isolate discourses, to present them as independent of one another and as ultimately doomed to be subsumed by an ascendant global capitalism, our focus instead is on interactions and engagements; in other words, the uses made of these different frameworks. Proponents and interest groups putting forward particular frameworks must grapple with many of the same concerns and issues.

For example, two dominant conceptual frameworks used in relation to water issues are scarcity and economic value. In both, pollution is viewed as a threat but strategies to address it vary

considerably.² A combination of discourses can also be found in the internationally promoted Dublin Principles for water management, including focuses on scarcity, economic fixes and the need to promote gender equity.³ For example, the water policy advisor for NORAD (the Norwegian development agency) was instructed to make sure that women were included in the final document along with water as an economic good.⁴

Peter Gleick, one of the world's leading water specialists, has now adopted a human right to water framework. He argues that water is quite different than other "commodities", and with growing global water scarcity there needs to be a right to water to protect the poor, weak and vulnerable from having an essential ingredient of life priced beyond their ability to pay. To make this argument, he adopts an approach similar to that used by those who propose a human right to food (Gleick 2000). In an earlier paper, we also proposed a human-rights framework based upon a universal right to water (Ferguson and Derman 1999). Both of these papers depend upon the pioneering work of McCaffrey (1992). A rights-based framework can also be used to provide a strong argument for the systematic inclusion of women into processes of water reform.⁵ Hellum (2000) provides a clear argument and path for planners and others to move beyond the rhetoric of saying that women are important or that they are central in water management to how to do so.

Also closely linked to political ecology are the growing number of frameworks based upon the metaphor of "security." Security issues can be soft - that is environmentally focused - or hard, with the emphasis upon conflict and war. Thus, there is an effort to expand and augment the notion of freshwater security (Falkenmark 2000) or to focus on the prevention of war (de Villiers 2000). In addition, principles for water use and conservation are set out in international policy-setting environmental documents which link water issues to the broader global agenda for the environment. The chapter on water resources in Agenda 21 is an example (see Derman and Ferguson 1999 for a review of other documents).

There are efforts to alter the conceptualization of water both by those whose job it is to provide water as well as those who use it. In particular, there are the shifts in the Rural Water and Sanitation Programs in Africa. Cleaver (1998a, b) and Ferguson (1998) have documented this shift in approach and explored its ramifications for women's control over water resources. Water is now frequently conceptualized as divided between the productive and domestic domains with importance accorded principally to its productive uses, paralleling a shift in thinking taking place in the public health domain.⁶ Likewise there are broad changes in thinking about how water

2 It is possible that the title of the new work *World Water Vision: Making Water Everybody's Business* represents the new hegemonic synthesis of coping with scarcity through the market .

3 The 1992 Dublin Principles are as follows: 1. Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment; 2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; 3. Women play a central part in the provision, management, and safeguarding of water; and 4. Water has an economic value in all its competing uses, and should be recognized as an economic good.

4 Personal Communication to Derman in Oslo, May 2000.

5 See Hellum 2000.

6 Productive water is used to produce goods for sale. Domestic water is used for household domestic needs. Cleaver has an excellent critique of trying to render water used for drinking, children's cleansing,

management ought to be carried out. South Africa is pioneering an effort to shift from a supply side to a demand side approach. The focus is on coping with growing water scarcity by first quantifying the amount of water available and then by managing it within these limits rather than supplying it without consideration of availability as was the case in the past.⁷

These various frameworks all co-exist but in varying combinations from region to region, institution to institution and among different actors within the same country. Thus in a global context multiple approaches exist to this one unique chemical compound. In Southern Africa, virtually all these different frameworks and discourses are represented. To compound the complexity, each nation-state has its own particular national water laws and water management administration. Zimbabwe, for example, utilizes the concept of primary water. All people have a right to water for drinking, cooking, washing, watering livestock and making bricks for non-commercial purposes. Left out of the equation are the range of perspectives on water quality, quantity and explanations for change at more local levels. For example, one general discourse important in Zimbabwe is the relationship between ancestral spirits, the state of society and rainfall. The mystery of water in our western sense does not include whether or not ancestors produce rain depending upon the state of civil society! We do know that struggles over meaning can be just as important as the struggles over the resources themselves (Moore 1996: 128 among many others).

All of the competing discourses described above include assumptions about the nature of water, the hydrological cycle, a changing environment, the relationship between water quality and disease, and so on.⁸ Embedded in different perspectives are assumptions about the value of water, monetarily, politically, ecologically, etc. In short, our study contains all the dilemmas, contradictions and promises of the contemporary world. To account for this complex set of competing understandings within a narrow political ecology framework which privileges environmental impacts over a more inclusive and iterative approach to human-environmental interactions, or to suggest that hegemonic capitalism will simply subsume these other discourses would fail to adequately represent the current state of affairs.

etc. as non-productive. Alan Nicol (2000) reflects this shift as he places in doubt the relationship between water supply and disease .

⁷See Ferguson 1998 for a review of the literature of the gender impacts of this shift.

⁸ The South African draft integrated catchment water plan examines how the Department of Water Affairs and Forestry will have to include water as a resource and water's part in the biotic components of a catchment or watershed. This will be a historical shift in its mission if adopted. "Against this background, it is important to recognize that a water resource includes not only the water but also the structural components (morphology, riparian and in stream habitat) and the biotic components of the aquatic ecosystem. The resource is an ecological system, the sustainability of which is to a large extent dependent on the ecological interactions between the physico-chemical attributes and the biotic attributes of the resource. Therefore, it follows that protection, utilisation and management of the resource must be based on ecological principles. This means that the Department's responsibilities with regard to protection of the resource relate to the management of the water quantity, water quality and physical and structural characteristics of the resource, so as to provide an appropriate biotic template which will ensure the integrity of the biotic component of the resource." Government of South Africa 2000.

PART II. POLITICAL ECOLOGY REVISITED

When Ferguson wrote a paper in 1997 entitled “Imagining a New Political Ecology of Health” it was easier to delineate what appeared to be a growing synthesis of views about the newly emergent perspective called political ecology. There are different efforts to conceptualize the field, and this panel is a testament to political ecology’s vibrancy and relevance to different disciplines and environmental issues. We will outline what we see as the central dimensions of political ecology, recognizing while we do so that some of these points are now more contested than they were in 1997.

1. The central concern of political ecology is understanding social and environmental change. Political ecology draws on insights from different disciplines. In theory, the goal is to develop modes of analysis that encompass and relate the central social and ecological variables.
2. The outcomes of environmental change are often felt unevenly. Why and how this unevenness is generated links political ecology to political economy. In this way, conflict and contestation over resources are central to most analyses. Contestation involves struggles at the ideological and discursive levels including (but not restricted to) definitions of science, local knowledges, environment, sustainability, biodiversity, and the like.
3. Power is the central notion in the political. There are different approaches to questions of power, some of which are conceptual while others have to do with the scale of change and analysis.
4. Ecosystems and social systems are regarded as mutually constituted. Escobar recently has pushed this approach to its limit by identifying a group of societies which he refers to as “organic nature”, thus blurring distinctions between humans, society and nature (1999: 7). While he does not deny nature, he suggests that it can only be known through culture, and thus proposes to categorize cultures by the ways in which they know nature.⁹

The degree of human control in different natural processes can be quite varied. While there is growing evidence of human perturbation in different domains, it depends on the issue, the problem, the scale of time and space. For example, there is little consideration of seismic activity, volcano formation, cosmology, etc. in any writings of political ecologies precisely because they tend to be events and processes understood through multiple sciences (and indeed cultures) but not yet susceptible to human manipulation and control. We prefer to view environment and culture as interacting over time and space. Certainly this is the case for all human systems of water management.

5. In contrast to earlier approaches which assumed that ecological systems tended towards equilibrium, political ecology recognizes that resource utilization patterns may be ecologically degrading while being socially profitable or functional, at least in the short term for some actors. What has become an important theoretical concern is the linkages between “systems” and the

⁹Hodgson’s response in CA to the article obliged Escobar to retract his idea that there are three different nature (culture) regimes each requiring their own distinct form of analysis. He has not retracted the existence of the three different regimes but only that they require three different types of analyses. Escobar’s divisions of culture appear similar to other distinctions between the primitive and the civilized, the state and stateless. Of course, organic societies in his view are better integrated with the non-existent natural world

degree to which environmental degradation can be placed solely at capitalism's door. We wonder how one reconciles chaos theory, contingency, and other non-linear processes with the value-laden and "resistance to capitalism" emphasis of contemporary political ecology. The anti-capitalist bias prevalent in most political ecological analyses may not be widely shared even among poor people who are subject to many of its negative impacts. Also, the degree of flexibility of capitalism is far greater than had ever been imagined. As scholars, we need to be more open to the capacities of capitalist economies to change, and to be quite different from one from another (Sweden, Singapore and Australia) if not to reinvent themselves.

6. Political ecology combines and relates different levels of analysis. Conceptualization of these levels requires new analyses since much of what had been local can mirror and refract the global. Nonetheless, there will be no easy substitutions for levels of social analysis from the individual to the global. Nor will there be any less difficulty in linking micro-habitats, bio-regions, etc. to global environmental change and to social factors operating on different scales.

7. Political ecologists often study the complex interactions between a changing environment and changing society within the context of local histories and ecologies. While Peet and Watts lament the absence of broader theories, political ecology has tended to yield historically and culturally contextualized conclusions.

8. Most political ecologists share a concern with policy formation, social justice and a linking of research to action.

The above points (minus our digressions) were more or less shared thinking in 1997. Since that time, a number of new directions and debates have emerged in the political ecology literature. They are represented first by Peet and Watts (1996) and by Escobar (1996, 1998 & 1999; Halkov and Escobar, 1998) in a series of articles. These were followed by a response by Blaikie first to post-modernism and its challenge for conceptualizing global environmental change (1996), and, following this, by a response to the postmodern engagement with development (2000).

Piers Blaikie (who is in the anti-postmodernist and anti-post-structuralist camp of what appears to be an ideological divide in political ecology) identifies five key elements in a political ecology framework:

1. A self-aware and critical approach to different epistemologies used in political ecology, and to the ideologies, the research process itself and environmental information which are brought to bear in discourses about environment-society relations,
2. Local socio-environmental histories, often covering long time periods,
3. A variety of levels and scales, particularly the global and the local/micro with the explicit linkages between them,
4. A concern with the state and its institutions, and
5. Conflict over natural resources in terms of the resources themselves, knowledge about them and their meaning.

Peet and Watts have critiqued this approach as being insufficiently theoretical. In particular, Blaikie and Brookfield's (1987) orientation does not, according to Peet and Watts, properly account for land degradation since their explanations tend to be both ad hoc and voluntarist (1996: 8). Peet and Watts fault Blaikie and Brookfield for not having enough political in their political ecology and for insufficiently theorizing political economy (1996: 8). They propose to

shift the focus of political ecology to different considerations which encompass environmental movements, popular resistance and what they term “the environmental imaginary” as a means to develop an integrated terrain of theory, practice and discourse called liberation ecology.

It is this vision of a transformed political ecology that Vayda and Walters seem to particularly reject. We also have reservations about this approach, although ours are of a different nature than those expressed by Vayda and Walters. While Peet and Watts seek to raise the emancipatory potential of environmental ideas, it is difficult for us to envision who decides what is emancipatory and what is not. There is the difficult issue of what constitutes an emancipatory process since even what appears to be emancipatory, like women’s formal education, can itself be a site of contestation. Similarly, under what circumstances, how and when is it sufficient to discover that there are strong parallels between the postcolonial discourse and the colonial one as Jarosz does for deforestation in Madagascar? She asserts that the deforestation discourse remains unchanged and so therefore does practice (Jarosz 2000).

Alexander and McGregor (2000) offer a more productive approach to these issues when they examine Zimbabwe’s Campfire program which until recently had a celebratory international audience who have now turned critical. In examining the difficulties of local control over wildlife in a Campfire program in the Gwampa Valley in southern Nkayi and Lupane Districts of Zimbabwe, they write:

In Nkayi and Lupane, people’s economic aspirations have been shaped by ideas about modernity, by a desire to leave behind a life of suffering in the bush with animals. People associate game with the primitive and backward, with neglect and hardship. In addition, attitudes to land were powerfully shaped by colonial evictions, and the sense that the nationalist struggle and guerrilla war were fought to right these past wrongs. The notion that land had been stolen from its rightful owners was much more strongly developed than any comparable notion of lost proprietorship over game. (2000: 612).

They point to the complexity of forced movements of black farmers from one ecological area to another. Thus, generalizing about one program even in a small-sized nation like Zimbabwe can be perilous. Not only were animals regarded as antimodern but so too were the people living there by the new settlers. In this struggle, some valley residents are pitted against their own elected District Council, the Forestry Commission, the Canadian International Development Association (CIDA), and the Campfire Association. In contrast to condemning the massive game killing project of the colonial state, the legacy of the past lead residents to oppose the return of wild animals, no matter for whose benefit.

It is in this mingling of history, memory, violence, changing discourses, population movements, donors, different agencies of government, we find strong parallels to our own work on water. And it is in this complex world of modernity, albeit refashioned by national and local circumstances, that we situate ourselves. Our work seeks to keep both the political (broadly conceptualized) and the ecological in political ecology. Views, such as that offered by Stott and Sullivan, are overly narrow when they argue that political ecology constitutes:

a concern with tracing the genealogy of narratives concerning the ‘environment’, with identifying power relationships supported by such narratives, and with asserting the consequences of hegemony over, and within, these narratives for economic and social development, and particularly for constraining possibilities for self-determination (2000: 2).

The notion that political ecology is primarily about the deconstruction of environmental narratives being used against “self-determination” may reflect particular outcomes in certain situations but does not constitute the defining feature of the field.

PART III. WATER REFORM IN ZIMBABWE

In most Southern nations the greatest consumer of water is agriculture. This is certainly true in Zimbabwe despite its industrial and mining base. (Zimbabwe is currently known as the fastest shrinking economy in Africa if not the world.) Until this year’s land invasions and “reform” process, Zimbabwe’s agriculture rested upon a large-scale commercial sector which was overwhelmingly composed of white farmers. These farmers held almost fifty percent of the land although now their hold has been reduced to between 20 and 30% . Similar inequalities in access to water also have characterized Zimbabwe as will be discussed below, although land and water reform have always proceeded independently of each other.

Water reform, a multifaceted process in Zimbabwe and southern Africa, is premised on certain key assumptions. These include:

- 1) Water scarcity and irregularity in rainfall are increasing due to the effects of El Nino and possibly to the impacts of global warming.
- 2) Faith in demand-side approaches - Given these environmental factors and other social ones associated with economic restructuring, policy makers have shifted to demand-side approaches focusing on productive uses of water, user pays and polluter pays principles. (Note that while the poor, especially women, retain access to primary water without having to pay, the very definition of their water use in this way reinforces notions of them as “subsistence producers” and marginalizes them from access to lending institutions.)
- 3) Decentralized management is regarded as resulting in better use of water as an economic and ecological resource and in greater social equity (yet see the qualification discussed above). The key assumption appears to be that demand side/productive use of water is necessary ecologically, economically and socially. This is a powerful social construction which: a) rests tenuously on scientific uncertainties about impacts of global warming in southern Africa, b) is being contested by other conceptualizations and social constructions, and c) is likely to lead to changes in water use practices and in access to water which may well have environmental consequences of uncertain outcome.
- 4) Global discourses, including notions of scarcity, economic restructuring and good governance, are more powerful than local practices and understandings thus resulting in a reworking of all water-related policies and practices. High levels of indebtedness and dependance on donors have increased receptivity (but also opposition) to these global principles.

The framework for these changes in Zimbabwe has been codified as law.

The New Water Laws:

Following extensive consultation with the World Bank and internal meetings in Zimbabwe, the Government of Zimbabwe decided upon a massive restructuring of the water sector. The changes are found in two acts: the Water Act of 1998 and the National Water Authority Act also of 1998.

The Acts and the resulting reforms rest upon several not necessarily compatible ideas.¹⁰ The historic mission of the Departments of Water Development, and Hydrology were to provide water to users. This meant working at the national level to plan and construct needed reservoirs throughout the country. They did so overwhelmingly favoring the white residents of the then colony of Southern Rhodesia who occupied the most favored portions of Zimbabwe's land base. Southern Rhodesia was viewed as a water scarce nation which needed an extensive system of dams and reservoirs to ensure water supply for cities, mines and farms when the rains periodically failed. Of course there is dramatic variation in water availability in by region and by year in Zimbabwe.¹¹ These national planning functions are to be transferred to a new parastatal, the Zimbabwe National Water Authority (ZINWA), which will become the owner of all public dams that store more than 5,000 megalitres of water.¹² ZINWA is to be funded primarily through the sale of water behind government dams, the provision of clean water to cities, and the levying of water to large-scale users. It will also be responsible for producing master plans for the development of Zimbabwe's waters and for the protection of its environment.

Users Pay and Polluters Pay Principles:

Having briefly described some dimensions of the reform we will comment on two previously mentioned principles underlying them, both of which embody elements of a free marketeer's dream (or nightmare). These are the polluters pays and the users pays principles which constitute the slogans used by various actors in attempting to garner support for water reform. The writers of the Dublin Principles might not recognize them in such bald form, but they do capture the reductionist philosophy of many who seek to make water quantity and water quality reducible to market principles. Enunciated in this way, these principles also unmask the irrationality of the economic view which underlies the official reform process.

The vast majority of Zimbabweans do not have water rights in the legal sense of the term, and are not likely to gain them as a result the reform. What they have are primary use rights which enable them to use water without payment for drinking, washing, watering livestock and small gardens, etc. The principle of user pays for productive uses of water thus applies to only a small number of consumers. Water not used for primary purposes (which constitutes the major use of water in Zimbabwe but not the majority of users) must be paid for.¹³ Although the number of "productive users" is relatively small in comparison to the total number of consumers, the

10 These have been detailed in Derman, Ferguson and Gonese (2000) where we have attempted to analyze whether or not water reform is indeed decentralized in Zimbabwe.

11 Harare, the capital city for example, is located in one of the best watered areas in the country, Bulawayo, the second largest city and the industrial hub, suffers from an inadequate supply and ongoing water shortages. The city managers and power brokers have been attempting to definitively solve their water problems by constructing a massive pipeline from the Zambezi River to Bulawayo.

12 This is still under formation since the Public Civil Servant Commission blocked the transfer of employees from government to the new parastatal.

13 The status of urban users remains the same. While the majority of urban households use water for "primary" purposes, they are increasingly being charged for water consumption. Little attention has been paid to the urban and peri-urban dimensions of the reform, although a the majority of Zimbabweans now live in these areas.

government and its new, decentralized Catchment Council stakeholder groups, do not have the capacity to monitor and enforce such a principle even among a small number of users. They are further handicapped because there is no mechanism to determine what constitutes either a sound economic price for water or a socially acceptable one. Despite this situation, ZINWA, a core institution in the reform process, together with the Councils of the seven Catchments into which Zimbabwe has been divided, are to be funded through the sale of water and the levies upon permit holders.

For the moment, ZINWA has announced new prices for water.¹⁴ Previously, farmers who owned their own dams did not pay for stored water, and farmers who used government water paid for it at subsidized rates. Water processed for urban consumption is also purchased. The purchasers of the largest quantities of water, large-scale commercial farmers, presently are refusing to pay because of the threats against their farms due to the government led land invasions.¹⁵ It is not clear how ZINWA will survive given these conditions.

Second, with regard to the polluter pays principle, it has been left to the polluters themselves to declare what kind of and how much pollution they are putting into Zimbabwe's waters. The amount of hazard will be color-coded with four different payment rates for the degree of associated hazard. The pollution branch of the Department of Water will remain intact - these functions will not be decentralized. Funding ultimately is supposed to emanate from fines paid by polluters although, for the time being, it is donor supported.

Thus of the multiple principles associated with water reform both in Zimbabwe and internationally, two economic ones have been selected as the keystones of the Zimbabwe reform. This reflects the over-emphasis given to making the new water-related administrative bodies and the sector itself become increasingly self-supporting as government funding declines. Our surveys carried out in several areas of Zimbabwe since the initiation of pilot catchment reforms schemes in the mid-1990s, indicate that there is little support for the user pays principle. With the exception of the infrastructure in irrigation schemes, Zimbabweans do not think they should pay for water.¹⁶

14 Our hesitancy is due to the fact that the impacts of the new land reform initiatives on commercial farmers' abilities or willingness to pay for water have not been taken into account.

15 The land invasions began after the defeat of a government drafted constitution in a referendum in February 2000. The subsequent elections for Parliament were held in June 2000 with many commercial farms under occupation by government funded liberation war veterans, unemployed youth and some genuine local residents. These invasions continue as President Mugabe has announced that over 3,000 of the 4,500 commercial farms will be taken in what is euphemistically called a fast track land reform program by the beginning of the 2000 rainy season. Currently government military and other vehicles are ferrying ZANU-PF supporters, war veterans and others to designated commercial farms. Every law concerning land is being violated in the current circumstances including the one formulated by the President himself under his emergency powers mandate.

16 There it's paying for the irrigation works, canals, pumps etc. not for the water itself.

PART IV. POLITICAL ECOLOGY AND WATER REFORM

In examining the political ecology of water at the beginning of the twenty-first century, two key concepts stand out - scarcity and participation. Notions of existing or impending water scarcity underlie the global rationale for water reform while stakeholder participation in management is regarded as key to improved resource management and conservation.

Scarcity:

In the global environmental discourses, the growing scarcity of fresh water is regarded as a critical universal problem. (It is ironic that Derman is writing from Oslo where it has rained all days but two during the month of October.) The meaning of scarcity, however, varies significantly by region and by actor in Zimbabwe. Further, scarcity is as much a social as it is an objectively verifiable ecological concept. Except in drought years, Zimbabwe has not suffered from an inadequate amount of water for its needs, although there is growing evidence that it will face water shortages in the future. For the planners of the water reform in Zimbabwe, the most important type of scarcity to be addressed was not simply ecological, but rather social - increased access to water for black farmers. The particular historical factors that underlie the recent changes in land and water rights in Zimbabwe are the racial imbalances between whites and blacks. Whether or not the reforms underway actually achieve these ends remains an open question.

Localized Assumptions of Water Scarcity and Distribution:

In what may well be a mistaken assumption, the Zimbabwean government believed that systematic discrimination was taking place against black farmers as a result of a water allocation system known as the priority date system (PDS).¹⁷ PDS simply meant that those who obtained legal water rights earliest had the first call upon water in a river and held those rights in perpetuity.¹⁸ On the surface, it appeared that rights in perpetuity would severely limit new entrants into the water rights system. This impression was heightened by white farmers' opposition to abolishing the PDS which added weight to the assumption that it was a central mechanism for denying water to black Zimbabweans.¹⁹ As part of the reform, a permit system granting water rights for twenty years is being substituted for the PDS. We do not have the space

17 It is most likely that this system originally was chosen due to its simplicity, its compatibility with water measurement in the early twentieth century and as the political means whereby early farmers could protect their investments and farms. It also established the legal framework to block African farmers from competing with Europeans. Over time it caused far more conflict within and between white farmers than with black farmers. Most Africans did not and do not know about this now complicated system of water rights.

18 This led to continuous disputes between upstream and downstream farmers since the logic of a system is to fill the highest reservoirs first to save water first in case the rains failed.

19 This appears to be incorrect. Government has stored massive amounts of water behind its dams (constructed before and after independence). The problem for black farmers is the capital to move the water and pay for irrigation infrastructure. There also are examples of where the PDS has served to skew water access toward those whites with the earliest rights. (Manzungu et al. 1999)

here to elaborate on how notions of water scarcity may also be used as a rationale to enroll people in the water reform process.

Central to reform is the rationale that water will no longer be denied to black Zimbabweans. However, that goal, in turn, is related to the government's provision of water through the construction of large dams as a means of increasing water supply to the black majority. Institutional and political efforts to address these racial inequities has not been adequate given an array of difficulties. For example, the government has been unable to continue financing the construction of large dams. The returns on the existing dams have not covered their actual operating expenses nor the capital outlay for their construction. Government run irrigation schemes continue to run deficits. These must be placed with in the wider context of the implosion of the government budget and the economy as a whole. As mentioned above, Zimbabwe currently has the fastest shrinking economy in Africa, if not the world. The economy is characterized by soaring inflation, the lack of external investment funds, exceptionally high internal rates of interest driven up by the government's borrowing, a brutal foreign exchange shortage and an unbudgeted war.²⁰ The real physical shortages of water pale in front of these other issues.

Why Stakeholder Participation?

The water act codifies stakeholder participation through the creation of Catchment and Subcatchment Councils. In the past, river management was carried out by large-scale white commercial farms through River Boards, whose membership was made up of water rights' holders. As part of the Water Act of 1998, River Boards are to be subsumed by Subcatchment Councils. The functions of these new decentralized management entities - Catchment and Subcatchment Councils - are set out in the Act and are further delineated in the Statutory Instruments.²¹

Catchment Council responsibilities include collaborating with ZINWA in preparing and updating catchment plans; deciding on and enforcing all water allocation and reallocation; developing and supervising programs for catchment protection; issuing and overseeing permits for water use; establishing, and maintaining a database and information system (together with ZINWA); and overseeing operations and functions of Subcatchment Councils. Subcatchment Councils are to monitor the exercise of permits, water flows and use. They also are to assist in

²⁰Given current political events and economic decline, we cannot here delve into the multiple and complex crises of contemporary Zimbabwe. However, it is instructive to observe that uncertainty if not chaos involves social, political and economic systems in response to internal and external pressures. Zimbabwe is in a period of implosion where much is in flux and with the outcomes highly uncertain. Many scenarios are proposed - Sierra Leone, Somalia, Rwanda, and now optimistically Yugoslavia and Cote D'Ivoire. Other, older black Zimbabweans say once the electoral season is past (presidential elections must be held by 2002. They can be called by the president at any time before then.) then things will go back to normal. According to them, the international media grossly exaggerates what's happening. For this paper we thus point to the complexity of water management in these multiple and uncertain environments.

²¹ These are for Water Catchment Councils SI 33 of 2000, Water Subcatchment Councils SI 47 of 2000. SI 34 sets out the boundaries for the seven river systems of Zimbabwe. These are the Manyame, Mazowe, Save, Runde, Mzingwane, Gwayi and Sanyati.

pollution control, catchment protection, data gathering, and are to collect fees which will be used for the performance of their duties.²²

These are the new participatory, stakeholder groups that will work with ZINWA, the Catchment Manager and his staff in Zimbabwe's seven catchments. The hidden feature not fully appreciated is that the former staff of the Department of Water - engineers, hydrologists, accountants, planners, secretaries, drivers, etc. - all remain employed but now by ZINWA instead of the Department of Water. They are now designated as the Catchment Manager's staff. One Catchment alone has 62 employees! The funding implications of this transfer of personnel (amounting essentially to the creation of seven mini water departments) along with emerging working relationships between "experts" and stakeholders is part of our ongoing research. The current transition period during which the new water management structures are becoming operational is being funded by donors, including the Dutch, British, German and Swedish governments..

Institutional and financial uncertainties are not the only markers of Zimbabwe's reform. Considerable uncertainty also exists in the physical domain as well which interacts with and compounds social, political, economic and other factors. Water management systems attempt to capture past patterns of rainfall which are unlikely to be useful predictors under global warming. Both environmental and social contingency and unpredictability are therefore central in understanding water availability and the reform process itself.

CONCLUSIONS

To summarize, using illustrations from Zimbabwe, we have argued against Vayda and Walters' notion that political ecology necessarily begins with observations of environmental change followed by discovery of natural or societal variables that account for that change.

Second, at the same time, similar to Vayda and Walters, we have raised issue with the notion of a liberation ecology. We can imagine the destruction of all dams, of all impediments to free flowing rivers, but that is the liberation of nature, not people. The "people" is a highly problematic category in Zimbabwe where the government and the party claim to speak for the people. We imagine that contestations will continue for the future over the best uses of Zimbabwe's waters between economic sectors, with the "environment" and aquatic ecosystems and with neighboring nations. We would like to see the power balances in those contestations altered so that the vast majority of user have greater say.

To extend this point, many blacks and whites in Zimbabwe agree that it is against their culture to include women in most spheres of public decision-making! After all, as many informants

22 Catchment and Subcatchment Councils are to be composed of representative stakeholder groups. The current list of stakeholder groups, as established under the new water law, includes: Rural District Councils, communal farmers, resettlement farmers, small-scale farmers, large-scale commercial farmers, indigenous commercial farmers, urban authorities, large-scale miners, small-scale miners, industry and any other stakeholder group the CC or SCC may wish to identify. SCC are to have fifteen members. The number of members of CCs is not fixed by legislation, nor are the procedures for how stakeholders are to be selected from within their constituent group. There are no regulations which require that there be a balance of stakeholders from different interest groups on Catchment Council except the provision that all Subcatchment Councils must be represented.

state, this is Shona culture and tradition which must be respected. Similarly, what is to be made of Zambezi Valley residents who cut down all trees that might be inhabited by certain species of birds because these birds are sent by witches - this regardless of the impacts of deforestation on soil erosion and degradation of watersheds? Finally, river systems do not have the same boundaries as social, political, economic systems. For example, much of Mozambique's water comes from Zimbabwe. How should the water needs of Mozambicans be incorporated into Zimbabwe's water management systems and legislation? Addressing these issues requires far more knowledge and science than can be captured by democracy, participation and liberation. Local norms and knowledges are not necessarily emancipatory. As political ecologists, do we pick and choose which discourses and practices to favor? If we are interested in the intersections between environmental and social change, we need to explore what is happening, why and how. If the last century is any indication, many atrocities will continue to be perpetuated in the name of the environment, in the name of the people and in the name of liberation. Indeed as we write, such atrocities are being carried out in Zimbabwe in the name of its revolution and people.

At the same that time we raise issue with a liberation ecology, we recognize that the outcomes of environmental change are frequently felt unevenly, often with the poor suffering the worst consequences. Why and how these inequities are generated links political ecology to political economy. Contestations will occur between economic interests, rights-based interests, and environmental ones. There also will be deep disagreements between different economic actors about the price and quality of water, as well as some unlikely agreements. For example, both white large-scale farmers and small-scale black farmers in Zimbabwe oppose paying for water and seek to keep its price as low as possible, in the first case because they want to keep operating costs low in a competitive global economy, and in the second case because they cannot afford to pay much for water. It is not simply that opposition to the user pays principle is an anticapitalist or pro-people response. Rather there are contradictory interests at work which a political ecology framework must take into account.

Water management necessarily entails reliance on multiple sciences and perspectives. While participatory and democratic frameworks may work in small watersheds, the large

size of Zimbabwe's Catchments poses issues of representation and voice. Thus, while one can envision a small micro-catchment by catchment process, linking this at the national level to economic, social and environmental priorities is challenging. Perhaps Arce and Long's concept of counter-development offers a way forward. In their view, counter-development is a "balancing act between introduced bureaucratic procedures and local practices" (2000: 19). Local actors and "change agents" may have less difficulty in managing and appropriating the new methods, procedures and appeals to rationality. The approach recognizes that development and modernity assume varied faces and forms as they are translated from the center outwards.²³ Political ecologists would inquire into how local understandings are used to comprehend and reshape these global processes. Can highly varied conceptions of scarcity and abundance be explained by different actors to each other?

23 Arce and Long are arguing for the idea that modernity is multiple consisting of different types of representations, practices, discourses, performances, organizational forms, etc. Our experience working with development for many years in Africa in diverse contexts leads us to share this perspective, at least in its broad outlines.

In the complex world of water reform, multilateral banks and institutions, national water departments, engineers, large-scale farmers, women irrigators, etc. finding social and environmental policies that work in the context of global climate change stretches our imaginations. Perhaps this is what Peet and Watts mean by the environmental imaginary. The large-scale experimentation in the water sector is well underway throughout Southern Africa with relatively little imagining of the possible social or environmental outcomes, and with what sometimes appears to be mindless optimism. Political ecologists with their focus on the dynamics of human environmental interactions and their linking of theory and practice, are well situated to study this process.

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