

Frances Cleaver  
Development and Project Planning Centre  
University of Bradford  
Bradford BD 7 1DP, UK

Fax: 44 (0) 1274 235280  
E-mail: f.d.cleaver@bradford.ac.uk

Stream: Theory  
Discipline: Sociology/Anthropology

## **‘Moral Ecological Rationality, Institutions and the Management of Communal Resources.’**

### **1. Introduction**

This paper considers theories of collective action in relation to the management of communal water resources in Nkayi District, Zimbabwe. Taking a critical view of institutional explanations of common property resource management, it illustrates how the addition of social theory can enrich such approaches. The prevalence of rational choice premises in defining the problem of collective action and the persuasiveness of institutionalism in apparently offering solutions to it is questioned. The paper rejects simple evolutionary theorising about institutions in favour of an embedded approach that allows for complexity, for the social and historical location of collective action and for an examination of the interface between agent and structure. It is argued here that collective management of water supplies does exist in a variety of forms but that it is more partial, changeable and evolving and less attributable to single factors than suggested in much of the literature.

Drawing on ideas of the interaction of agent and structure (Long 1992, Giddens 1984, 1989) of the embeddedness of economic transactions in social life (Granovetter 1992) and of the role of institutions in shaping individual perception and action (Douglas 1987) I explain how, in the case of Nkayi, a form of moral ecological rationality links individual and collective action to environmental well being and provides a framework within which communal resource management can be explained. This model of decision making and action is deeply enmeshed in culture, history and agro-ecological conditions but nevertheless susceptible to modification and change. Incentives to cooperate are based on the exigencies of daily life, on the primacy of reproductive concerns and on complex and diffuse reciprocity occurring over lifetimes. Although subject to structural constraints individuals adopt varying strategies in relation to resource management and reciprocity; gender, age, kinship relations and wealth being key factors in shaping such strategies.

Use of water resources is shaped by a number of principles derived from the historical convergence of environmental and political conditions, such principles being general access associated with appropriate use, multiple use and conflict avoidance, the importance of preserving good condition and minimal management. Decision making about resource use is similarly based on a number of key principles which are sometimes contrary to those suggested in the literature. These are the desirability of lowest level incorporative consensus based decision making, minimal management associated with approximate compliance and conflict avoidance and sanctions based on social and supernatural relationships. The boundaries of resource management systems in Nkayi are permeable, based on fluctuating networks, the authority supporting it derived from strong notions of the 'right way of doing things' and the perceived links between human, natural and supernatural worlds.

## **2. Background to Nkayi District**

Nkayi District is located in Matabeleland Province in the western part of Zimbabwe. It is a district characterised by low rainfall, poor soil and seasonal drought. Severe land and water pressure are felt in the district and a large proportion of the population depend on boreholes, small dams and hand-dug wells. The district has had a troubled history this century; originally sparsely populated it was the site of forced in-migration which peaked in the 1940's and 1950's, of guerrilla war in the 1960's and 1970's and continued conflict between the Zimbabwean army and 'dissidents' in the 1980's. As a result development activities there have been minimal and the operation of government agencies severely restricted (Cleaver 1995a).

In terms of water supply there has been a long history of minimal provision starting in the 1920's and many boreholes in use today were sunk during the 1930's. After independence agencies such as the Lutheran World Federation and UNICEF implemented water supply projects, mostly based on the provision of hand - dug wells fitted with handpumps and on the digging of small dams. Since 1988 there has been an integrated water and sanitation project funded through Dutch aid and implemented through government structures. At the time of this research (1992-7) this project was the major development activity in the district. Nkayi has two main rivers, the Shangani and the Gweru, and a number of minor ones, but none of them flows all the year round. During the dry season people may dig wells for water in the sand of the river beds.

The formal system of water supply management in the District consists of elected waterpoint committees for pump or dam. In the case of wells and boreholes these usually comprise four local users; it is recommended during mobilisation and training activities that a man may be chosen as Chair representing 'authority' and that the other members, including two caretakers, should be women. Waterpoint committees are seen as sub-committees of the Village Development Committee; the lowest level of official decision making structures.

Water resource management in Nkayi is characterised by a range of 'rules in use', such conventions being the primary form of regulation. These commonly relate to the definitions of access, appropriate use and maintaining good condition. However, when the need arises formal regulations may be introduced, in particular to regulate queuing and the times and type of usage. Whilst these regulations have an impact of distribution, explicit rationing rules are rare.

In common with much of the literature on the importance of institutions in common property resource management (Berkes 1989, Bromley 1992, Ostrom 1990) this research supports the importance of practice in shaping use. However, I suggest the need to look carefully

at the generation of social, institutional and cultural norms; how do these shape the rules of water use, and how do they evolve and change? Common to much of the 'institutional' literature on resource management are both over and under socialised concepts of human action (Granovetter 1992). Social relations often appear in theory and literature as either secondary to depersonalised institutional arrangements largely dictated by economic /productive concerns or as a generalised unspecified resource bank from which institutional materials can be drawn. Social relations are alluded to but rarely examined in detail; people are frequently considered simply in terms of their relationship to the resource as 'users', 'farmers', 'appropriators'. Such models, whilst aspiring to complexity, all too often revert to rational choice premises in explaining human behaviour; ascribing to a generalised category of 'social' anything that cannot be explained as a purposive (albeit boundedly) rational approach to resource use.

Let us proceed with a short critique of such models and then illustrate with the data from Nkayi how, in Granovetter's words, by following and analysing concrete patterns of social relations, we can enhance our understanding of resource management.

### **3. Individuals and human action**

Incentives are considered important in resource management as the mechanisms which shape human and collective action. Despite the recognition amongst many of the writers of the seriously bounded nature of individual rationality and the interdependent and embedded nature of people's lives, the theoretical emphasis in common property resource management literature is still broadly based on methodological individualism. There is often little attempt to place this individual within a life world, 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 characteristics. The modelling of incentives in the literature is therefore incomplete and unconvincing as adherence to the analytical individual fails to invest actors with contextual identity. The work of Giddens, Long and Douglas however can assist here with the placing of individuals with the power of agency within life worlds and engaging in a recursive relationship to structure.

Long suggests we are commonly presented with either an abstract individual, divorced from family and other social relations, or with the attribution of agency to an equally abstract homogeneous group (such as cattle owners) who may have no discernible means of exercising agency as a group (Long 1992). Douglas (1987) also points out this dichotomy when she discusses common ideas that within small groups the premises of rational choice do not apply as people are bound by close mutual relations of kinship and reciprocity; 'the moral economy' and it is these which mediate their access to resources.

Much of the modelling of incentives for individual action in resource management is informed by a 'pervasive functionalism' (Granovetter 1992) which seeks direct causal explanations between motivation, behaviour and management of a particular resource. This is reinforced by the prevailing economism of much literature; in particular that which attributes to rural dwellers a common and specific peasant rationality based on the logic of subsistence (Cousins 1989:337). Social norms are seen to occupy a secondary place to economic rationality (Wade 1988) and social relations are explained as instrumental in securing access to particular resources; apparently unproductive irrational relationships can then be explained as ultimately serving economic concerns (Scoones and Wilson 1989, Bernstein quoted in Cousins 1989). Such

positions can be criticised on a number of grounds. Granovetter suggests that we could see economic life as a sub sector of social life, rather than vice versa, whilst Douglas dismisses such functional approaches for their apparently determined efforts to admit no motivation unless it can be explained in terms of rationally economic goals; heroism, altruism, community mindedness can thus only be explained as 'aberrations'. Long adds to this critique by suggesting that we could, rather than seeing actors solely in relation to the resource or activity in which we are interested, perceive them as complex individuals, partly enrolled in the projects of others, partly involved in their own. People may also be motivated by the desire to create social space, 'room for manoeuvre' in their own lives (Long 1992).

The complexity of human action is emphasised by Giddens who has argued that in explaining motivation it is important to recognise that a person is positioned in **multiple** ways, with social relations conferred by **specific** social identities (Giddens 1984:xxiv). Similarly Long writes that we should be able to recognise multiple realities and diverse social practices of actors - their ongoing life experience accounting for differing applications of knowledge, power and agency. The individual actor is thus credited with the capacity to process social experience and devise ways of coping with life (Long 1992: 22).

Common to Long, Giddens and Douglas are ideas of individual action enabled and constrained by social structure. Long explains his actor oriented approach as an attempt to place individual choices and social relations within larger frameworks of meaning and action (Long 1992). The recursive relationship between the individual and institutions forming the social structure is often alluded to in common property resource management literature, rarely illustrated. Here I will try to illustrate how we can model individual incentives more widely by considering individual motivation and the variable actions of individuals as influenced by the interaction of historical circumstance and social structure with the exercise of social agency.

#### **4. Institutions and resource management**

Institutions are thought to shape human behaviour in relation to resource use, robust institutions may help to regularise irrational or unpredictable behaviour on the part of the individual. The predominant model of institutions in common property resource management literature is essentially bureaucratic; ascribing value to formal manifestations of association and to unilineal progressions from 'weak' to 'robust' forms (Ostrom 1990, Nelson 1995). Although rules in use are recognised as a major part of resource use there is nevertheless an emphasis on clearly structured arrangements for decision making often involving representation, regularisation and formalisation (Clever 1998b). 'Traditional', and 'informal' institutions are often considered inherently weak and there is a common assumption that modern arrangements can make good the deficiencies of the traditional (Seabright 1993).

A functionalist and normative approach to institutional development is implied in the literature which emphasises design principles. Commonly advocated principles include the desirability of clarity in boundaries of the resource using group and of authority structures, the importance of a rigorous application of graduated sanctions against the inevitable free riders, transparent decision making codified in written records. Underlying such models is the primacy of productive and distributional concerns in determining the incentives to cooperate with institutional arrangements.

Key to both theoretical and policy approaches for natural resource management is the evolutionist notion that better institutions can be 'crafted' by resource users and policy makers (Ostrom 1992:60). Ostrom sees crafting as a continuous evolutionary process of developing the optimal institution for the job in hand. Culture and social structure then become the raw material to be built upon and improved, the institutional resource bank from which arrangements can be drawn which reduce the 'social overhead costs' of cooperation in resource management. Increasingly such resources are referred to as 'social capital' but as Ostrom herself admits there is generally a lack of understanding about to 'create, maintain and use social capital (Ostrom 1992:23).

Instrumental views of social capital assume individual actors are political and social entrepreneurs who knowingly and rationally utilise social capital to craft institutions in pursuit of optimal resource management. It is often claimed that, in order to properly utilise social capital; institutions must be appropriately 'embedded' in the social and cultural milieu from which the norms to support purposive decision making can be drawn. Such concepts of embeddedness tend to the functional and are often static in their conceptualisation of culture and tradition.

More useful views of embeddedness can be found within common property resource management literature; for example Peters has suggested the need for a 'complex- embeddedness' approach in which 'The definitions of rights, of relative claims, of appropriate uses and users are not only embedded in specific historical sets of political and economic structures but also in cultural systems of meanings, symbols and values' (in McKay and Acheson 1987:78). Granovetter emphasises a flexible conceptualisation of embeddedness involving the recognition of networks of personal relations (Granovetter 1992:92). Rather than adhering to the more static ideas of institutional embeddedness as a state of social solidity we could argue for a definition that allows us to see institutions as embodiments of social process. This brings us close to Douglas' ideas of the interpenetration of meaning in social life (Douglas 1973) and the need to understand institutions as manifestations of such linkages. Both Douglas and Giddens emphasise the recursive relationship between structure and action and the need to see institutions in term of their constituent located practices. In Giddens words 'The actions of all of us are influenced by the very structural characteristics of the societies in which we are brought up and live, at the same time, we recreate (and also to some extent alter) those structural characteristics in our actions' (Giddens 1989:18).

A complex-embedded and recursive approach to human action and institutional formation may lead us to question simple evolutionist ideas which suggest that whilst primitive or traditional forms of interaction are. deeply entangled with social relations, they become more autonomous and economically rational in modern forms (Granovetter 1992:53). The evolution of collective decision making institutions may not be the process of conscious selection of mechanisms fit for the collective action task (as in Ostroms model) but rather the outcome of individuals acting within the bounds of circumstantial constraint. Institutions so derived may survive partly due to the legitimacy bestowed by 'tradition', the moral command of what went before over the present (Giddens 1984). Examples from Nkayi suggest that institutions are partial, intermittent and indeed often invisible: being located in the daily interactions of ordinary lives. I question the possibility of consciously and rationally crafting institutions for collective action and support instead ideas about multiple processes of institutional formation combining both conscious and unconscious acts, unintended consequences and a large amount of borrowing of accepted patterns of interaction from sanctioned social relationships. I suggest that we need to look in more detail

at the evolution of social norms and relationships in order to construct a truly embedded approach. In this paper I illustrate such an approach to individual and collective action and institutional development by concentrating particularly on the issues of the exercise of authority in resource management regimes.

## 5. The River Model

A useful entry point for this consideration is by way of a critique of bureaucratic models of institutions. The example of the use of the Shangani River bed not only illustrates the importance of rules in use but indicates some of the deeply embedded social principles by which co-operation over water resource management and collective action in Nkayi is organised. (Unless otherwise indicated all the data quoted in this paper is from Cleaver 1996.)

Consider the Shangani River, the original source of water for many of the early residents of the district settling along its banks; to a visitor it appears unremarkable, a dry sandy river bed strewn with rocks, perhaps fifty metres across. Here and there close to the river banks, there may be pools of still water and the bed is dotted with shallow 'wells' dug in the sand. Women and girls may be seen washing clothes and carrying buckets of water away, cattle crossing to and fro. Although access is open to all and users of the river bed come from different districts (the river marking the district boundary) there is a comprehensive system of rules governing resource use there.

Drinking wells are dug in the middle of the river bed where the sand is cleanest and where the water underneath is flowing fastest. The drinking wells are always communal, shared between families partly to minimise the dangers of witchcraft and poisoning between neighbours. Drinking wells commonly have a tin with holes punched in the bottom sunk into them to prevent them from collapsing and are covered to protect them from animals. Water for gardens, washing clothes and brick making is taken from wells dug at the dirty margins of the river. They may be dug by individuals but anyone can use such a well if they come across them. No-one washes clothes near any well, soap always being used at some distance away and the water carried for the well to that spot. There are designated perennial pools for cattle watering and specified sites for men's and women's bathing. There is also a special place in the river reserved for the rain making ceremonies of spirit mediums, or church services to pray for rains. No one individual is responsible for enforcing this system of management and there is very little non-compliance, the most serious cases reported being children leaving the lids off drinking wells.

People using the river as their main water source strongly preferred it to protected sources of water provided inland; even those who lived at considerable distance from the river and ordinarily used wells or boreholes would walk to the river bed to collect sweet water for drinking or to wash best white clothes.

The river case illustrates some of the principles of water use and management in Nkayi., these being:

1/ **General but conditional access** - all should have access to water sources in order to meet their basic livelihood needs but such access is conditional upon appropriate use.

2/ **Multiple use** of water sources with a balance between 'domestic' and 'productive' uses, strongly linked with the importance of conflict avoidance.

3/ The priority given to maintaining **good condition** of water, particularly for drinking, shapes many of the rules in use.

4/ **Minimal management.** Compliance was general, breaches minor, conflict over river use minimal. Explicit management was ad hoc, occurring only when a problem arose; most management occurred through the ordinary social interactions of daily life, conducted according to flexible perceptions of the 'right way of doing things'.

Such principles were apparent, in varying degrees, in the ways in which other water sources, particularly boreholes and wells, were used and managed. I contend that for reasons of location, history, culture and livelihood, these are the 'natural principles' underlying informal water resource management in Nkayi, principles that have evolved from the conjunction of agroecology and history, and which are deeply embedded in people's livelihood strategies. The partial transfer of river principles to protected inland waterpoints may be explained by a concept of 'institutional bricolage' rather than clear crafting, and through the influence of a moral ecological code that provides the framework of interaction between people and with the environment.

Let us consider in more detail some aspects of the principles of resource management and decision making in Nkayi. I will concentrate here on issues of multiple use and access (which relate to individuals and incentives) and on the model of decision making (which relates to ideas about institutions). I will then proceed in more detail with a consideration of structures of authority to illustrate how the moral ecological framework for resource management in Nkayi is a flexible, intermittently evolving management regime, subject to recursive relationship between individual and collective action, natural conditions and social structure.

## **6. Access, Multiple uses and Ownership**

My data illustrates both the strength of social norms (Douglas 1987) and the possibility for their negotiation (Giddens 1984, Scott 1985). Two examples illustrate this point; that of open access and ownership and that of balancing domestic with productive uses.

Douglas highlights the strength of forces of inertia, the entropy inducing characteristics of institutions, resulting in them maintaining the shape and character determined by past events and circumstances, even though these might have changed (Douglas 1987:69). Thus universal access to water in Nkayi is still seen by most as a 'natural' indeed desirable principle, despite that fact that the majority of the population no longer live adjacent to the main river beds and the practicality of maintaining such access to protected waterpoints is increasingly challenged. In practice a spectrum of access rights exists. In times of drought access to water sources becomes more restricted through the application of 'closed hours' rules and queuing. Whilst not explicitly exclusionary, the effect of such measures is to reduce access to those who are not regular users, to peripheral members of the immediate community. A hierarchy of users then emerges ranging from those with undisputed rights of use to those whose usage is considered conditional. Such users then have to negotiate access; on the basis of claiming rights through participation in implementation or maintenance, through kinship or appeals to the 'right way of doing things'.

Access rights are further complicated by development initiatives which emphasise the concept of 'ownership' of water sources, specifying that only those who have participated in implementation (through providing labour and materials) have earned the right to be considered

owners (UNDP 1990). This has the effect of defining rightful users only as those households in the immediate vicinity of the water source. Irregular and distant users rarely contribute to implementation. Variable access is illustrated by the following example from Mtswirini well:

‘There are conflicting views of the rights of the non-regular users to access. Many of the regular users said that they allowed anyone whose own water supply had failed to collect here. However, some users explicitly said ‘there is not enough water for all comers. They (the committee) should be restricting it only to those whom it is supposed to serve’ and ‘People must stick to their own waterpoints’. We observed users from another place being refused access by the Committee Chairman who then called them back and allowed them to take water when everyone else had finished. These users were distantly related by marriage to the Chairman.’

So whilst recognising the strength of Douglas’ concepts of path dependence we can see this in dynamic relation to Giddens’ assertion that the actors are quite capable of manipulating social norms and Scott’s assertion of the plasticity of normative discourse. Use of waterpoints illustrates how whilst there are deeply held ideas about appropriate uses of different sources, these are nonetheless subject to a certain amount of flexibility and negotiation.

Literature on common property resource management commonly asserts that socio-economic homogeneity is an advantage, that similarity of resource use promotes cooperation (Bromley and Cernea 1989). This overlooks basic divisions of gender, age and class in the social organisation of everyday life. Such categories may imply difference but not necessarily conflict; commonality of interest can exist with differences in priority and resources. For example, we can see how users’ perceptions of and uses of water are partly dictated by social structure, in particular by gendered identities; but how this does not always imply conflict but rather a model of negotiated co-operation in which domestic (reproductive) uses of water often take priority (Cleaver 1995 b). Whilst men and women expressed clear priorities regarding water (men water for cattle, women water for people), their differing gendered positions in terms of divisions of labour, and their common interest in securing household livelihood concerns enabled them to negotiate water use. Broadly speaking, the greater imperative on women to save time, a factor not of great importance to male cattle waterers, enabled women to gain priority for domestic water collection at boreholes. Some examples illustrate the negotiated gendered nature of water use:

‘At Zenka borehole the women collecting water for household purposes took their water early in the morning or late in the afternoon before the cattle waterers arrived. If they did collect during cattle watering, the boys would usually allow them to take a tin before continuing pumping to fill the cattle trough’.

‘At a pump being heavily used by women and children collecting domestic water we observed a man trying to negotiate access for his cattle to the spilled water in the trough, to save him from driving them to the dam. He was unsuccessful.’

‘At waterpoints set aside for domestic use only exceptions are made for sick cattle and small livestock such as goats and donkeys; such animals were often cared for by children or women.’

I have illustrated elsewhere how, in respect to the use and management of water, gender was crosscut with age, class and kinship identities (Cleaver 1998a). Children of both sexes play a major role in water collection and management through use but none in formal decision making; poor women having severe time and labour constraints finding it more difficult to secure water without drawing on kinship relations or 'cheating'; poor men, despite having no cattle of their own nevertheless participate in securing the well-being of cattle of wealthier kin, and often play a major role in grazing management. We can usefully then see people situated in multiple ways in relation to a resource; and having specific but multidimensional social identities (Giddens 1984), thus increasing the scope for variation, negotiation and accommodation (as well as conflict) in resource management.

## **7. Minimal management and consensus incorporative decision making.**

Many of the principles underlying the preferred model of decision making in Nkayi are contrary to those design principles commonly suggested for robust and long enduring institutions for common property resource management (Ostrom 1990, Wade 1988, Bromley and Cernea 1989). In particular ideas about the need for clear and explicitly enforced graduated systems of sanctions, and for clear boundaries of a resource using group can be queried. Following Granovetter we can also query the idea that decision making is either purposive and functional or unconsciously dictated by social norms. In Nkayi we find the categories of social discourse, notions of authority, respect and appropriate action subject to constraint, negotiation and change.

In demonstrating this let us briefly consider the common forms of public decision making in Nkayi. The form of incorporative consensus decision making was multi purpose, shaped by negotiated principles of 'the right ways of doing things', and strongly based on the maintenance of a generalised community solidarity. Constitutional and collective choice rules (Ostrom 1990, Oakerson 1992) shaped by historical circumstance were nevertheless subject to challenge and alteration.

Villagers in Nkayi clearly preferred to take decisions through a process conducted through whole community meetings rather than through more exclusive committee structures. Although various village level committees were established as a result of development interventions, few decisions are taken or enforced through committees alone. Membership of different committees are often overlapping and a common record book kept at village level. The common and more effective means of decision making is through 'meetings of the people' nominally held under the auspices of the multipurpose village development committee (Vidco). Minutes of meetings often do not identify particular committees but merely say 'we had a meeting to discuss the following'. Common subjects discussed in meetings in my host village in one year included; dispute over sale of a house, warnings to grazing scheme offenders to pay up or incur additional fines, preservation of grazing lands, organisation of Food for Work projects and distribution of food, registration of old people for social welfare, discussion about the effectiveness of their councillor, possibility of contributing money for waterpoints, the community's objections to the district ban on beer brewing, and registration of pre school children for supplementary feeding.

Such meetings of the people are only considered legitimate if all members of the community are present. Great lengths are gone to ensure that this is the case. Some of the

difficulties of ensuring inclusiveness in decision making was illustrated by Mrs Nyoni, who being a schoolteacher was often unable to attend daytime community meetings.

'She said that meetings are often held on Wednesday (the 'izilo' days when people are prohibited from working in the fields) when anyone with non-agricultural jobs cannot attend. 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.' (Diary 14/11/92)

There is a common assertion in the literature that within cohesive communities, custom and the habit of living together can substantially reduce transaction costs; cooperation and compliance being built into traditional norms (Ford Runge 1992). Ostrom suggests that appropriators can reduce the costs of assurance dramatically if they are willing to develop relationships of trust and reciprocity amongst themselves (Ostrom 1992:7). The Nkayi model of decision making was high on transaction costs; meetings were lengthy, decisions only taken on the achievement of consensus, after hearing out all who wished to speak. Such a process could take place over several meetings, months even. One single village meeting I attended lasted for twelve hours, with little being concluded, but a good airing of contentious issues achieved. Such a laborious decision making process is part of the conscious forging of a common base of understanding, of a consensus which not only contributes to a generalised community solidarity but also lessens the subsequent need for monitoring and sanctions. Thus, high on initial transaction costs, such a model may be considered highly efficient in ensuring compliance with decisions made.

Two provisos exist to this rather rosy picture of communal decision making. I have illustrated elsewhere how poor women with large numbers of small children often found it difficult to attend meetings (Cleaver 1998a), so losing a chance to shape decisions in their favour. Non-attendance was partly conditioned by their socio-economic positions, partly by the individual strategies they chose to adopt. A contrast for example could be found between two poor women in one village. One attended no meetings and relied on kin to inform her of the outcome of decision making and to represent her interests, the other became a representative of a local non-governmental organisation partly because she could then call meetings when she chose to.

Secondly, I have used 'community' in its loosest sense above. Whilst community level decision making was commonly based on meetings of the people resident in one village; boundaries were not rigid and there was a partial recognition of the rights of others to be included in decisions which affected them. Peters' (1994) concept of the permeability of boundaries is very relevant here but I add to that a consideration of complex and fluctuating livelihood networks; implying webs of interrelationships of varying degrees of intensity. Indeed we may see such networks recursively interacting with administrative and resource boundaries.

Sometimes attempts were made to formally include representatives from outside the administrative community in decision making, for example over the use of dam to which cattle waterers came from across district boundaries. Where cross community interaction was involved, committees often played a part in negotiating the basis of co-operation. If people had not been included in decision making over resource management which affected them, they asserted their right to be involved. Thus at Sando where the borehole was almost dry, residents had to travel ten kilometres to Ngwaladi clinic borehole to fetch water;

‘The next nearest source of clean water for the Sando community was at Ngwaladi clinic and many people mentioned this as the source they relied on. However, they were now experiencing problems of restrictions at the clinic and this gave rise to some hardship and inconvenience and a large amount of discussion in the community. At the time we visited the committee from Sando was about to visit the Ngwaladi clinic committee to discuss the problems.’

Despite extreme shortages and action taken to restrict access at this borehole we nevertheless see the caretaker at Ngwaladi uphold the rights of access by the wider community to their borehole, and even conceding the right of distant users to break the prohibition on collecting water by cart. However, we also see at the same time a renegotiation of the ‘norm’ of general access; one of the waterpoint committee members at Ngwaladi told us;

‘the borehole is being used by people from Sando, Kana and Gokwe. We have been asking people to bring sand, stones, droppers for headworks and fencing (for maintenance )but people are refusing. Now we have started to remove bolts (from the pump arm - this would have the effect of restricting water collection to certain times of the day when it could be monitored)to discourage them....We do not mind if people from Sando come with scotchcarts because it is far and they need water....The committee are telling these people if they use the borehole they must try to bring sand and stones.....We don’t want to stop people from using the borehole but we want them to contribute....’ (Mrs Sibanda, Ngwaladi Clinic 8/10/92)

Basic rights of access are nonetheless subject to conditionality; in this case the contribution of materials to improvement and maintenance, and collection of water only at certain time of the day, conditions which were open to negotiation across community boundaries. We see then resource use and decision making based on deeply embedded social norms, on the conscious and explicit modification of these and the negotiation of rights, on collective decision making supported by representative negotiation based on networks of area wide interactions.

Let us pursue the questioning of the design principles thought necessary for robust institutions through a consideration of authority structures and sanctions.

## **8. Sanctions and authority**

Much literature suggests that a robust system for common property resource management requires clear lines of authority able to rigorously impose a series of graduated sanctions against those who cheat or free ride (Ostrom 1992:71). Conversely, there is a common assumption that the dictates of social norms will be so strongly internalised by each individual as to mostly ensure unquestioning compliance (Wade 1988). The Nkayi case offers data to query both models. Whilst authority structures in Nkayi were deeply embedded in social structure, the ‘right way of doing things’ and ‘tradition’ it was at the same time diffuse, eclectic and subject to interpretation and contestation.

In Nkayi we see a partial incorporation of certain concepts into discourse and varying calls on tradition and modernity as required. Few of these can be taken for granted as the social and political history has been one of repeated disruption, resettlement of population and changing of boundaries and authority structures. In Douglas’ words; the categories of political discourse, the

cognitive base of the social order are being constantly negotiated (Douglas 1987:29). In Nkayi debate tends to revolve around the 'right way of doing things' shaped by history, agro-ecology and claims to 'tradition' and by everyday livelihood demands.

Authority structures in Nkayi are complex. 'Traditional' (based on the chiefly system of headmen at various levels) and 'modern' (based on ward village and district chairmen) systems exist side by side; both to some degree having been discredited at various points in a troubled political history. Moreover, development introduced new players in the form of headmasters and other development workers who are perceived as having authority derived from their professional knowledge and status. The supernatural world also provided an overarching system of authority, which will be elaborated below. People in Nkayi were notably eclectic in their use of these various human authority figures. When asked to whom they would turn in the case of problems or disputes to be resolved, or for advice; their only principle was to keep conflicts at the lowest possible level. Otherwise a web of relationships with authority figures was called upon, according to the nature of the problem, the perceived effectiveness of the individual in being able to deal with it and perceptions of the proper way of going about things. Whilst political and administrative authority figures are interesting we need to look more carefully at authority, at compliance with community norms and decisions, as expressed through everyday social relations.

Solidarity and co-operation play key parts in moral-ecological explanations of environment and change in Nkayi. Whilst the past is often evoked as the 'golden age' of co-operation, solidarity and co-operation are also perceived as something difficult to achieve, something that requires considerable and sustained effort on the part of the cooperators. Generalised notions of the desirability of solidarity may provide a substitute for clear authority structures and for sanctions. I have already illustrated how people would far rather spend longer negotiating consensus than establishing and imposing sanctions. Solidarity in this sense cannot simply be interpreted functionally as being directly about co-operation over the mechanisms of water resource management (Berry 1989, Solway 1994). It rather comprised of complex networks of co-operation based on family structure, labour sharing arrangements and numerous cross cutting associational activities such as church groups, savings clubs and income generating groups. The village apparently most successful at collective action regarding water supplies was also remarkable for its other co-operative activities, its success in agricultural production and for the frequency and cheerful creativity of its social occasions, seemingly confirming Putnam's ideas about density of association being important in the formation of social capital (Putnam 1993).

Such ideas lead to common assertions of the desirability of small size, socio-economic homogeneity and living in close proximity amongst resource using groups as such factors will assist in the generation of trust and co-operation (Seabright 1993, Wade 1988 Ostrom 1993). However, we can query the common supposition that such solidarity and association is the natural result of living closely together in small and relatively homogeneous communities. In Nkayi close association was not without difficulty; indeed we see manifestations of conflict within families (particularly polygynous ones) over distribution of resources and amongst leaders within and between villages. People were conscious that solidarity and co-operation had to be consciously and explicitly worked at involving large investments of time, resources and creativity. People therefore saw solidarity both as functionally desirable (in terms for example of gaining access to donor resources) as well as morally desirable and critically necessary for the maintenance of the social and natural order, as will be illustrated below. The theme of solidarity, of struggle against

scarcity was commonly illustrated by people referring to the war years when co-operation was critical to survival and disputes between neighbours could lead to treachery and death:

‘During the war many people ran away, so the few who were left really stuck together or we would all be dead. We warned each other if the soldiers were coming, then we would run away and spend the night in the forest together and help each other with food. We loved each other then. If that had continued we would be God’s own people’ (Mrs Sibanda, Caretaker of Ngwaladi Clinic Borehole 3/10/92).

The mix between conscious and unconscious generation of solidarity is illustrated by Sando community; the village which displayed most evidence of organised collective action over water:

‘Villagers had settled deep in the forest in the early 1970s; coming from different parts of the district, some to escape pressure on land, others to escape family disputes. They had chosen a ‘traditional’ leader, formulated rules for grazing and settlement and cut fields through collective labour. Due to their remoteness from the district centre, their forest location and the disruption caused by war they had been cut off from contact with local government for much of this period. In recent years the community had built a school to save the children walking many kilometres to the next nearest one. Community members commonly interpreted their own actions in a positive light; constantly working at a reinforcement of solidarity and at the belief that co-operation pays dividends. Thus, when they, along with other severely water scarce villages, were given a water cart by Lonhro to ease the situation and keep the school functioning, they interpreted this as a reward for previous collective endeavour. Creatively, they construed the very name of their community (‘Sando’ means ‘Hammer’) as evidence of their strength and perseverance in adversity;

‘One of the residents said that when they came to the area it was thick forest filled with wild animals. Other communities did not like the idea of the newcomers staying but they resisted. They stayed there and had good yields due to working collectively together. Due to their being obstinate other people thought of giving them this ‘Sando’ name saying that they are like a hammer since it can hit anything without breaking. The headmaster of the local school later offered a more prosaic view suggesting that the name was given after the first person who settled in the area.’

Such creativity in generating co-operation undoubtedly required constant working at, reassertion and regeneration; it was not merely a ‘natural’ consequence of living together.

Strongly linked to the perceived desirability of general solidarity is the generous interpretation of compliance with rules, regulations and norms; only **approximate compliance** being generally required. General compliance with rules is assumed; for example wells were frequently ‘closed’ by the removal of a bolt from the pump arm, so rendering it temporarily inoperable. The caretaker or one of their family members, possibly a youth, might perform this task. In the dry season pumps were opened for two periods during the day, so requiring all to fetch water together, facilitating orderly queuing and lessening the need for constant monitoring. The closing of such pumps by these means was largely symbolic; any child could reactivate the

pump by inserting a stick in place of the missing bolt, something which rarely happened. The symbolic 'locking' of wells thus generated generalised compliance despite the lack of compulsion or explicit authority. However, such compliance cannot be read as unwitting adherence to the generalised dictates of social norms or blind compliance with authority as the following case makes clear:

'In Eguqeni village I observed Mrs P Nyoni persistently using the pump at closed times, apparently without incurring punishment, or even disapproval. When questioned villagers suggested that this was acceptable in her case as she had large number of young children and lived far from the pump. In view of her labour constraints and spatial distance it would be difficult for her to collect sufficient water for her basic needs at the specified opening times, as, by the time she had carried one bucket home and returned for another, the pump would be closed again.'

This generous interpretation of the rules was a conscious modification of the norm of compliance, and a recognition of the specific structural constraints and social identity of the non-complier; her reputation for being hard working and her relationship to the dominant family in the village undoubtedly worked in her favour here.

The structures of authority and community level decision making, whilst often accepted, were nonetheless open to challenge. The very act of introducing restrictions was queried in some places. Significantly when it was queried it was an assertion by the excluded of norms of access, and a questioning of the constitutional rights of those who had imposed restrictions to so do. We have already come across Ngwaladi clinic borehole:

'At Ngwaladi Clinic the community, faced with increasing pressures on the borehole, took some action. They made a rule that no-one should bring scotchcarts and drums, nor should they use the borehole for garden or livestock watering. They publicised this rule by posting letters on the shearlegs and sending letters through the schools. However, the distant users refused to abide by the rules and the notices were torn down. Then they started to bring their carts secretly at night and threatening to put stones or poison down the borehole. They also threatened to take dirty dam water to district officials in Nkayi and claim that they were being forced to drink it because of the Ngwaladi clinic borehole restrictions. They claimed that the borehole did not belong to Ngwaladi but to the government and therefore everyone could use it. That is when the chairman began to disconnect the pump arms in the afternoons.'

The issue of **conflict avoidance** helps to illuminate some of the complex interactions between functional instrumental motivations, generalised norms of solidarity, authority and the link to the moral economy. As mentioned above, there are strong imperatives in Nkayi in favour of conflict avoidance. People have strong memories of the disastrous effects of conflict between neighbours during years of guerrilla war and evidence abounds from interviews that people regard current everyday conflict as extremely distressing and its avoidance as desirable. People commonly attributed early or unexpected death to stress or witchcraft related to conflict between neighbours. When asked what qualities they identify in people they respect or would elect to positions in their community, most people put ability to live peacefully together with other and not cause disputes high on their list. Village level leaders identified 'ensuring people live peacefully together' as one of their main tasks while even less prominent office holders such as

members of the waterpoint committee identified their roles in a similar way as ‘to avoid disputes and maintain good behaviour amongst the community’

More generally interviewees went to great lengths to present their communities as co-operative and conflict free even when they were obviously arguing over things. Conflict within families (often between the offspring of polygamous families) was apparent and often played out over access to resources such as water and livestock or over positions in development related committee structures. However, such conflict was rarely publicly admitted, every effort was made to resolve it within the family and the ideal of harmonious family relations was upheld. Indeed when asked to describe a model for community solidarity people often suggested ‘living together like one family’ as an aim. Whether this represents a romantic interpretation of family life or the recognition that communities too will suffer such disputes as a natural part of life is open to interpretation. Other research in this region found arguments with relatives as one of the main reasons why men chose to resettle away from their natal homes (Gwebu nd).

We can reject over simplified notions of conflict avoidance as simply functional in terms of securing access to resources (Wade 1988) in exchange for one which recognises its historical evolution, its place in complex and diffuse reciprocity occurring over lifetimes, its psychological role in well-being, and its role in linking the natural and supernatural worlds. The first is highly instrumental in that it suggests that conflict is undesirable because it restricts access to the resource in question. Thus ‘we queue to avoid quarrels’ at the water point is a rational strategy to ensure that all do collect the water they require. We could however expand this narrowly functionalist view to suggest that conflict avoidance is linked to the complex web of diffuse and long term reciprocity within which people secure their livelihoods and that co-operation is not so much about direct exchange and anticipation of benefit but about the generalised concept of the need for accommodation and compliance with neighbours. Such motivations notably affected actors differently; for example poor women were far more dependent on communal labour arrangements and reciprocal arrangements to secure food, agricultural inputs and school fees from wealthier kin in return for often minimal contributions of labour by themselves or their children. They struggled to present themselves as ‘worthy’ rather than ‘lazy’ poor and therefore be more deserving of the benefits of such unequal reciprocation.

Both Douglas and Giddens assert the importance of a psychological sense of well-being, of ontological security in shaping people’s perceptions and actions and yet this is rarely referred to in the modelling of incentives in common property resource management literature. It is clear from the historical background why people should find the prospect of conflict so distressing, but it also relates to a wider explanation of a world order, to perceptions of the moral ecological framework within which their lives are conducted.

## **9. Moral ecological framework**

In concluding we can look more closely at how many of the above principles and issues come together in the moral ecological framework within which individual and collective action for resource management is shaped. Douglas writes convincingly of the need for credible social institutions to be attributed some natural (or supernatural) legitimacy, rather than being perceived as contrived arrangements (Douglas 1987:48) and Giddens echoes this in highlighting the role of ideology in the reification of social relations and the discursive naturalisation of human action (Giddens 1984:25-26). The moral ecological framework in Nkayi provides the context for

individual and collective action and the exercise of authority over resource use, linking the human, physical and supernatural worlds.

The desirability of conflict avoidance is deeply embedded in the moral-ecological and solidarity models. Conflicts are perceived as deeply threatening to communities and disputes between people and a failure to live together is likely to incur the wrath of the ancestors and result in punishment through lack of rain, disease and crop failure. The 'traditional' local religion, the Mwali rain cult has generally emphasised peace and fertility. Many people explain drought in Nkayi as due to the violent events associated with the war and the waning of traditional practices due to modernisation. Amos Nyoni illustrates this point:

'In the 1950's there was plenty of rain but from the start of the liberation struggle the rains started to decline. 1967 was the last year that we had good thatching grass around here....The lack of rains is due to the bad deeds by the people who are no longer following the traditional ways. There is too much fighting and too much blood being shed. The other problem is that long back the *hosanas* (spirit mediums) were respected. They would come without being asked and they were really respected. Now little respect is shown.' (Amos Nyoni 14/11/92)

Conflict avoidance as the 'right way of doing things' becomes part of a wider authority system which reinforces human authority structures with supernatural legitimacy, and combines the concepts of rationality and morality with respect for authority. As Douglas suggests 'A community works because the transactions balance out. The risk of free riding is controlled by the accounting system. The accounts are audited and the debts are collected by the way that God or nature furnishes defaulters with disease and death.' (Douglas 1987:74)

In Nkayi, the moral-ecological framework generates, legitimises and reinforces social relations of authority and norms of respect and conflict avoidance by linking them to the natural and supernatural worlds. Moral ecological activities and beliefs illustrate several of the points made above about collective action and authority. The principle of approximate compliance is strongly practised in relation to the dictates of the spirits. For example, observance of Wednesday, the *izilo* day when people must not work in the fields (in respect of the spirits) was general, and commonly reinforced at ceremonies. However, although publicly observing it, people were very flexible in their private interpretation of what exactly it meant. Thus individuals commonly excluded picking food for that day's consumption from the prohibition on going into the fields and would often 'take a walk in the fields' to check on progress of their crops on these days.

The flexible, pragmatic and evolving nature of people's beliefs is well illustrated by Amos Nyoni's explanation for the effectiveness of rain making ceremonies. Like other older men in positions of authority he particularly emphasised the need for respect in maintaining the natural order. The rain making ceremony was held in one village in the driest part of the year. Such ceremonies require a considerable amount of collective action amongst local people to arrange for gifts for the spirit medium, for the slaughtering of a beast and for nightly attendance at the dances.

'Amos Nyoni suggested that belief in the Njelele rain shrines was one adopted by his 'tribe', the Eguqeni people, when they came to Nkayi. He claimed that though these *hosana* (spirit mediums) were a 'new thing' to his people when they arrived in the district early this century, they nevertheless participate fully in the ceremonies because these things can definitely

work if everyone believes in them and joins in. Asked whether, if it rains, he would attribute this to the Christian God or the Njelele spirit he said 'God as they are all one and the same but God is the highest authority.' His daughter in law Mrs Nyoni also expressed the view that these ceremonies have been known to work if everyone believes wholeheartedly.'

Giddens, in querying the modelling of action as individual acts, draws attention to the differences between much routinised activities which is not directly monitored and which may form part of 'practical consciousness' and that about which actors may be discursively conscious and can analyse and reflect upon. He also questions the direct links between motivation, individual acts and consequences, pointing out that the effects of motivated and intentional action may ripple out into unintended consequences.

So here in the rainmaking ceremony we have participation in a form of collective action in which the actors are not blindly following habit or social norms but can discursively justify their participation and consciously construct the 'traditions'. However, they both refer to the importance of inclusiveness and the participation of all; a deeply embedded principle of living together. The rainmaking ceremony also provides an example of the unintended consequences of action as attendance involved a huge number of incidental personal interactions with effects on the management of resources other than water. For example, being an area wide meeting it provided a forum for the young men who were grazing 'policemen' from neighbouring villages to get together and compare notes.

Such ceremonies, with participants coming from a neighbourhood wider than simply that of the village, helped to maintain social solidarity and to retain the idea of a broad community, so perhaps also facilitating access to water resources outside the immediate area and across administrative boundaries. This reinforces the idea that it is useful to see boundaries of resource use and authority in a dynamic relationship with overlapping and interactive social networks.

Finally, the moral ecological framework helps to illustrate the concept of **institutional bricolage**. The concept of the crafting of institutions suggests that specific institutions are deliberately developed for particular functions. This model can be queried on a number of grounds. Institutions for resource management may be multipurpose, management may be both intermittent **and** robust, embedded in social relations and accepted norms **and** subject to negotiation. Here I will concentrate additionally on institutional formation through a practice of 'bricolage', implying a less purposeful, more partial, ad-hoc and historically embedded process than that suggested by the concept of 'crafting'.

Douglas elaborates Levi-Strauss' concept of 'intellectual bricolage' (Douglas 1987:66) and extends it to institutional thinking to illustrate how the construction of institutions and decisions to act are rarely made on the basis of rational choice. Instead 'institutions do the thinking' on behalf of people and institutions are constructed through a process of bricolage - gathering and applying analogies and styles of thought already part of existing institutions. Formulae are used repeatedly in the construction of institutions, thereby economising on cognitive energy by offering easy classification and legitimacy (p76). She emphasises the sameness and constraint of this form of institutional development ; 'The bricoleur uses everything there is to make transformations within a stock repertoire of furnishings' (p66). In earlier work Douglas considers the concept of institutional leakage; 'Sets of rules are metaphorically connected with one another, allow meaning to leak from one context to another along the formal similarities that they show' (Douglas 1973:13). This suggests a less conscious or intended construction of

institutions that that proposed by many authors writing of the institutions of common property resource management.

Adapting Douglas I would use the term 'institutional bricolage' to suggest how mechanisms for water resource management are borrowed or constructed from existing institutions, styles of thinking and sanctioned social relationships. A number of examples illustrate this point. Principles of water use derived from living by the river are applied to artificial water sources where they are may be less suitable and so subject to contestation and change. 'Meetings of the people' perhaps derived from meetings of male elders in the nineteenth century Ndebele state, have, under the impact of modernisation, come to include (in principle) *all adults* in a community. The experience of conflict and war, when solidarity was critical to survival has reinforced a principle of inclusiveness, co-operation and conflict avoidance in everyday relations. The form that institutions for co-operation take however is also strongly influenced by development messages; linking responsibility to ownership, collective action to payment. Desirable community relations are modelled on the ideal of family relations whilst appeals to the Njelele rain spirits, to Christian gods and to proper behaviour on the part of the people all have their part to play in resource management.

Moreover there were numerous instances where institutions purposefully established to manage one resource were adapted for others. For example a general 'community purse' was established in a village initially to finance hospitality for visitors, then extended to fund water supply maintenance and the construction of fencing for the pre-school. Grazing policemen act also as community messengers and occasionally as monitors of the water sources. In Sando village, new settlers originating from different locations 'elected' their 'traditional' leader and drew on their perception of the 'right way of doing things' to formulate grazing and settlement rules'. Calling on supernatural sanctions, concepts of respect and authority to regulate water supply is both a conscious and unconscious use of the institutional repertoire.

Resource management in Nkayi is not based on structures of authority manifested in particular leaders but on a wider system of authority based on the collective ethos of the 'right way of doing things'. Strong principles within this are inclusiveness, conflict avoidance and respect, and the inter-connectedness of human economic and social activity with the natural environment. Such principles are deeply held but open to negotiation; the 'institutional stock' provides the basis from which consciously *and* unconsciously the mechanisms of co-operation are drawn.

## **Conclusion**

The various manifestations of collective action that we find in Nkayi do not then correspond to the ideal type suggested by the design principles literature. Collective action is as often organised around reproductive as productive activities, is intermittent, partial, variable and not necessarily objective optimising. The solidarity and social discourse around everyday life, the co-operative activities that make up the continuous web of existence are every bit as important manifestations of community action as formal organisational structures.

In attempting to illustrate the diverse influences operating on individuals and the various strategies which they may pursue in social interaction, I reject pure methodological individualism in favour of an actor oriented approach emphasising the diversity of human agents' response to and effects on structure. Whilst the predominant model of institutions in common property

resource management literature is essentially organisational; ascribing value to bureaucratic manifestations of association and to unilineal progressions from 'weak' to 'robust' forms, I have drawn on other theorists to put forward an alternative view based on multiple evolutionary paths and a more complex, less solid version of embeddedness. Examples from Nkayi suggest that institutions are partial, intermittent and indeed often invisible; being located in the daily interactions of ordinary lives. I therefore question Ostrom's vision of the possibility of the 'conscious and rational crafting' of institutions and support instead ideas about multiple processes of institutional formation combining both conscious and unconscious acts, unintended consequences and a large amount of 'borrowing' of acceptable patterns of interaction from sanctioned social relationships. Institutions formed in this way are not necessarily weak or unsustainable but may on the contrary be highly robust due to their interlinkages with the social and historical milieu.

I have tried to illustrate how the addition of social theory may assist in adding the complexities, the continuities and uncertainties that more closely reflect the lives of ordinary people. The bounded rationality concern with the actions of individuals and the operating of institutions can be extended into a more complex analysis of the relation between structure and action whilst the recognition of the importance of social context and the establishment of the concept of embeddedness opens the way for a more complex modelling of the social relationships which shape collective action.

## References

- Berkes F (1989) *Common Property Resources: Ecology and Community Based Sustainable Development*, Belhaven Press, London.
- Berry S (1989) 'Social Institutions and Access to Resources' *Africa*, (1) pp41-55
- Bromley D (1992) *Making the Commons Work: Theory, Practice and Policy*, ICS press, San Francisco.
- Bromley D W and Cernea M M (1989) 'The Management of Common Property Natural Resources, Some Conceptual and Operational Fallacies' World Bank Discussion Papers No 57, The World Bank, Washington DC.
- Cleaver F (1995a) 'Water as a Weapon: The History of Water Supply Development in Nkayi District, Zimbabwe' *Environment and History* 1 pp313-33, The White Horse Press, Cambridge.
- Cleaver F (1995b) 'Gendered priorities for water resource management in Nkayi District, Zimbabwe' in Ingrid Yngstrom et al (eds.) *Gender and Environment in Africa: Perspectives on the Politics of Environmental Sustainability*, Centre for African Studies, University of Edinburgh.

Cleaver F (1996) '*Community Management of Rural Water Supplies in Zimbabwe*', PhD thesis, University of East Anglia, Norwich.

Cleaver F (1998a) 'Gendered incentives and institutions: women, men and the management of water' *Journal of Agriculture and Human Values*, Forthcoming December.

Cleaver F (1998b) 'There's a right way to do it - informal arrangements for local resource management' *WATERLINES* vol.16, no.4, April

Cousins B, Jackson C and Scoones I (1989) *Proceedings of a Workshop on Socio-Economic Dimensions of Livestock Production in the Communal Lands of Zimbabwe*, Centre for Applied Social Science, University of Zimbabwe.

Ford Runge C (1992) 'Common Property and Collective Action in Economic Development' in D W Bromley (ed.) *Making the Commons Work: Theory, Practice and Policy*, ICS Press, San Francisco, pp17-39.

Douglas M (1973) *Rules and Meanings*, Penguin, Harmondsworth

Douglas M (1987) *How Institutions Think*, Routledge and Kegan Paul, London.

Giddens A (1984) *The Constitution of Society: Outline of the Theory of Structuration*, Polity Press, Cambridge.

Giddens A (1989) *Sociology*, Polity Press, Cambridge.

Granovetter D (1992) 'Economic Action and Social Structure: the problem of embeddedness' in M Granovetter and R Swedburg (eds.) *The Sociology of Economic Life*, Westview Press, Oxford.

Gwebu T D (no date) *Agrarian Change in Zimbabwe 1980-89: An analysis of the impact of the resettlement programme on the resettled population in Matabeleland and Masvingo Provinces*, Bulawayo.

Long N (1992) 'From paradigm lost to paradigm regained?'; the case for an actor orientated sociology of development' in N Long and A Long (eds) *Battlefields of Knowledge: the interlocking of theory and practice in social research and development*, Routledge, London, pp16-43.

Oakerson R J (1992) 'Analysing the Commons: A framework' in D W Bromley, *Making the Commons Work: Theory Practice and Policy*, ICS Press, San Francisco, Chapter 3 pp41-59.

McKean M A (1986) 'Management of Traditional Lands ('Iriachi') in Japan' in National Research Council, *Proceedings of the Conference on Common Property Resource Management*, Washington DC, pp533-589.

Mosse D (1995) 'Social analysis in Participatory Rural Development' in PLA Notes no24 *Critical Reflections from Practice*, IIED, Sustainable Agriculture Programme, London.

Nelson R R (1995) 'Recent Evolutionary Theorising About Economic Change' *Journal of Economic Literature*, vol XXX111, March 1995 pp480-90.

Ostrom E (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, New York.

Ostrom E (1992) *Crafting Institutions for Self Governing Irrigation Systems*, ICS Press, San Francisco.

Peters P (1987) 'Embedded Systems and Rooted Models' in B McCay and J A Acheson, *The Question of the Commons*, University of Arizona Press, Tuscon.

Peters P (1994) *Dividing the Commons: Politics, Policy and Culture in Botswana*, The University Press of Virginia, London.

Putnam R (1993) *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton University Press.

Scoones I and Wilson K (1989) 'Households, Lineage Groups and Ecological Dynamics: Issues for Livestock Research and Development in Zimbabwe's Communal Lands' in Cousins B, Jackson C and Scoones I *Proceedings of a Workshop on Socio-Economic Dimensions of Livestock Production in the Communal Lands of Zimbabwe*, Centre for Applied Social Science, University of Zimbabwe, Harare.

Scott J C (1985) *Weapons of the Weak: Everyday Forms of Peasant Resistance*, Yale University Press, London.

Seabright P (1993) 'Managing Local Commons: Theoretical Issues in Incentive Design' *Journal of Economic Perspectives*, vol.17, no.4, pp113-134.

Solway J S (1994) 'Drought as a revelatory crisis: An exploration of shifting entitlements and hierarchies in the Kalahari, Botswana' *Development and Change*, vol. 25, pp471-495.

Wade R (1988a) *Village Republics: Economic Conditions for Collective Action in South India*, Cambridge University Press, Cambridge.

UNDP (1990) *Proceedings of the Global Consultation on Safe Water and Sanitation for the 1990's*, 10-14 September 1990, New Delhi India, Safe Water 2000.