Environmental Entitlements: Dynamics and Institutions in Community-Based Natural Resource Management

MELISSA LEACH, ROBIN MEARNS and IAN SCOONES *
Institute of Development Studies, Brighton, UK

Summary. — While community-based natural resource management (CBNRM) now attracts widespread international attention, its practical implementation frequently falls short of expectations. This paper contributes to emerging critiques by focusing on the implications of intracommunity dynamics and ecological heterogeneity. It builds a conceptual framework highlighting the central role of institutions — regularized patterns of behavior between individuals and groups in society — in mediating environment-society relationships. Grounded in an extended form of entitlements analysis, the framework explores how differently positioned social actors command environmental goods and services that are instrumental to their well-being. Further insights are drawn from analyses of social difference; "new", dynamic ecology; new institutional economics; structuration theory, and landscape history. The theoretical argument is illustrated with case material from India, South Africa and Ghana. © 1999 Elsevier Science Ltd. All rights reserved.

1. INTRODUCTION

The consensus in the wake of the United Nations Conference on Environment and Development (UNCED) suggests that the implementation of what has come to be known as "sustainable development" should be based on local-level solutions derived from community initiatives (Ghai and Vivian, 1992; Ghai, 1994). This reasoning comes with a long pedigree, dating at least from *The Ecologist*'s (The Ecologist, 1972) "Blueprint for Survival," Schumacher's (Schumacher, 1973) "Small is Beautiful" and, more recently, the Brundtland Commission (WCED, 1987; Conroy and Litvinoff, 1988). Statements of intent on global environmental problems issued following the 1992 Earth Summit, including Agenda 21 and the Desertification Convention, strongly advocate as solutions a combination of government decentralization, devolution to local communities of responsibility for natural resources held as commons, and community participation (Holmberg, Thompson and Timberlake, 1993). Such approaches — evident in the policies and programs of national governments, donor agencies and nongovernmental organizations (NGOs) — argue for "co-management", or an appropriate sharing of responsibilities for natural resource management between national and local governments, civic organizations, and local communities (Adams and McShane, 1992; Berkes, 1995; Baland and Platteau, 1996; Borrini-Feyerabend, 1996).

The practical implementation of community-based natural resource management (CBNRM) initiatives, however, has frequently fallen short of expectations. A number of reasons have been identified, including a tendency (despite rhetoric to the contrary) for the "intended beneficiaries" to be treated as passive recipients of project activities (Pimbert and Pretty, 1995; Arnstein, 1969); a tendency for projects to be too short-term in nature and overreliant on expatriate expertise; and a lack of clear criteria by which to judge sustainability or success in meeting conservation or development goals (Western, Wright and Strum, 1994). Others suggest that the interests of certain social groups have been consistently marginalized (e.g., Hobley, 1992; Sarin, 1995).

In this paper, we seek to complement and add to this emerging set of critiques and attempts to improve the practice of CBNRM through a particular focus on institutions as mediators of people-environment relations. We see institutions as "regularised patterns of behaviour between individuals and groups in society" (Mearns, 1995a, p. 103), rather than as community-level organizations. Yet the latter view prevails in current approaches to CBNRM, when they are concerned with institutions at all. In the emerging consensus, community-level organizations are commonly assumed to regulate the use of relatively homogeneous environments in the community's interests. Environmental degradation is assumed to reflect a growing lack of synchrony between the community and its natural environment, and the implied solution is to reconstitute CBNRM organizations so as to restore harmony to environment-society relations.

Recent advances in ecological theory suggest, however, that many more environments than was previously thought are characterized by high variability in time and space. This has important implications for managing natural resources and environmental risk, and suggests that understanding environmental change involves looking beyond natural-resource depletion or degradation in the aggregate. Similarly, local communities may be shown to be dynamic and internally differentiated, and the environmental priorities and natural-resource claims of social actors positioned differently in power relations may be highly contested. These factors point to the importance of diverse institutions operating at multiple-scale levels from micro to macro, which influence who has access to and control over what resources, and arbitrate contested resource claims.

To date, a poor understanding of such dynamic institutional arrangements has impeded practical efforts in CBNRM. In this paper we build a conceptual framework to assist such understanding, both drawing on a review of relevant theoretical literature and extending our earlier work on the notion of "environmental entitlements" (Leach and Mearns, 1991; Mearns, 1995b, 1996a). This framework seeks to elucidate how ecological and social dynamics influence the natural-resource management activities of diverse groups of people, and how these activities in turn help to produce and to shape particular kinds of environment. Rather than framing environmental problems simply in terms of aggregate population pressure on a limited natural-resource base, a more disaggregated entitlements approach considers the role of diverse institutions in mediating the relationships between different social actors, and different components of local ecologies. The insights derived from such analysis can help target external interventions more effectively, whether the objectives are to protect and promote the environmental entitlements of particular social groups, or to foster particular environmental outcomes. Such forms of intervention, we argue, may involve a much more diverse range of institutions than have been addressed in CBNRM efforts to date. We illustrate these arguments with reference to recent case study research on community-based or co-management initiatives in the fields of forestry in Ghana, protected areas in South Africa, and watershed development in India.

The paper is organized as follows. Following an introduction to the case studies (Section 2), Section 3 considers prevailing assumptions underlying approaches to CBNRM, and finds that they are flawed in their characterizations of communities and their local environments. It reviews the theoretical foundations of these characterizations in the social and ecological sciences respectively, and offers alternative perspectives from contemporary debates on social and ecological dynamics and heterogeneity. In Section 4, we outline the basis of our environmental entitlements framework, tracing its origins in the broader entitlements literature, defining terms, and specifying the distinguishing features of our own approach. Section 5 discusses in more detail the way we conceive of institutions, since these are the factors operating at different scale levels that undergird enti-

tlement relations. Our understanding of institutions is enriched by the alternative perspectives on community and ecology reviewed in Section 3, and leads us to a view of institutional change that takes seriously both history and power relations. Section 6 shows how the institutional dynamics that are at the core of the environmental entitlements framework also powerfully influence environmental change itself. The paper concludes by considering some implications of the analysis for policy and practice in CBNRM.

2. THE CASE STUDIES

To illustrate the arguments in this paper we draw on three case studies which applied the environmental entitlements framework to questions of CBNRM in different regions, and concerning different environmental issues.

In South Africa, research focused on the management of wildlife and protected areas. Community-based approaches to biodiversity conservation, including "integrated conservation and development projects" (ICDPs), are now widely pursued internationally. In the new political context of South Africa, these concerns interlock with a growing emphasis on community participation, with local communities now expected to be involved in decisions from which they were previously excluded. Yet major questions remain about how such processes work in practice, especially where conflicts over land and resource use are much in evidence. In this light, the case study examined how the interaction of social and ecological dynamics affects the livelihoods of the rural people who live near the Mkambati nature reserve on the Eastern Cape's Wild Coast, and how their resource use in turn helps to shape the local environment (Kepe, 1997a, b).[1] Different people derive livelihoods from varied natural-resource use and management activities, both within and outside the reserve, ranging from game hunting, livestock and crop production, to the collection of thatch grasses, medicinal plants and marine resources. Analysis using the environmental entitlements framework showed how access to and control over these resources is mediated by a set of interacting and overlapping institutions, both formal and informal, which are embedded in the political and social life of the area. Certain resource use practices result in ecological outcomes which are detrimental to others' livelihoods; for instance burning land for grazing destroys the thatch grass collected by women. Yet other resource uses are more mutually compatible; thatch grass collection appears to be in tune with many nature conservation objectives. An understanding of this complex set of institutional relationships, by making conflicts and complementarities explicit, is shown to be a vital precursor to exploration of any co-management options for the nature reserve area.

In Ghana's forestry sector, following a history of reserve-based, exclusionary approaches, there is currently much interest among government agencies and NGOs in community-based and co-management approaches which involve local communities in forest management and conservation. These concerns echo recent international debates concerning joint forest management. Yet important questions remain about the diversity of interests in and claims over forest resources, the institutions which underlie these claims, and the implications of different activities for forest cover and quality change. The case study explored these issues in two villages in the forest-savanna transition zone of Wenchi District, Brong Ahafo Region (Afikorah-Danquah, 1997, 1998).[2] Livelihoods here make use of a wide range of nontimber forest products, field and tree crops such as cocoa, with strong differentiation by gender and between long-term residents and recent immigrants. Ecological debates about this area counterpose the dominant view that human activities cause progressive savannization of forests, with competing views that the forest-savanna boundary is relatively stable, and even that people can assist forest formation. Analysis using the environmental entitlements framework showed that ecological outcomes vary for different parts of the landscape, depending on the institutional arrangements affecting particular social actors. Thus while land-owning farmers frequently enhance forest cover through hoeing practices, tree preservation and fallow enrichment, recent immigrants, food-cropping under insecure land tenancy arrangements, have at times contributed to savannization and soil degradation (see also Amanor, 1993). Equally, diverse practices in farming and nontimber forest product collection have affected the quality of forest patches. An understanding of socially differentiated practices and the institutions which underlie them is shown to be an essential basis for effective interventions in the forestry field.

In India, participatory watershed development is now widely espoused by governmental and nongovernmental organizations alike, with the support of donor agencies. Considerable progress has been made recently, for example, in bringing about greater convergence in the historically different approaches of the central Ministry of Agriculture and the Ministry of Rural Areas and Employment, and in acknowledging (as NGOs have more readily done) the importance of building local institutional capacity. Yet even current best practice in operational approaches frequently meets with only partial success, while important questions are being raised about the terms of participation and the distribution of benefits in socially highly divided local settings. This case study focused on a community-based, micro-watershed development project in the Aravalli hills in Udaipur district, Rajasthan, implemented by the NGO Seva Mandir (Ahluwalia, 1997, 1998).[3] It used the environmental entitlements approach to evaluate how residents of the seven hamlets in the project area experienced the project's activities and impacts. Nayakheda is characterized by strong social differentiation along axes of caste and tribe, gender and wealth, linked to a number of major occupational divisions (e.g., pastoralism and agriculture). Seva Mandir's conscious investments in building up local capabilities and social capital have successfully facilitated "community" action across these divides in the context of local political struggles: for instance, when Nayakheda residents united in a land struggle in opposition to a local mine-owner, and in the election of a tribal as leader of the local panchayat council. Natural resource management however remains an arena of conflict. Environmental entitlements analysis showed, for instance, how benefits from soil and moisture conservation have depended on the initial distribution of landholdings in relation to micro-topography, with certain private landholders gaining disproportionately. While many private landholders support the enclosure of commons, women have suffered from reduced local fuelwood entitlements and livestock rearers from reduced access to and availability of grazing. An understanding of social difference in natural resource management is shown to be essential if interventions are to support the claims of those otherwise excluded, and are to shape processes of landscape change that stand to benefit more than a powerful minority.

3. INTERROGATING ASSUMPTIONS IN COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT

Our environmental entitlements framework is in part a critical response to key aspects of the CBNRM consensus, so we begin by clarifying what is implied by this consensus. At least superficially, recent approaches to CBNRM appear as diverse as their varied implementing agencies and natural-resource settings, yet they rest on a set of common assumptions about community, environment, and the relationship between them. In broad terms, these applied to all the CBNRM interventions with which our case study research engaged.

One fundamental assumption is that a distinct community exists. While definitions vary, approaches commonly focus on "the people of a local administrative unit... of a cultural or ethnic group... or of a local urban or rural area, such as the people of a neighbourhood or valley" (IUCN/WWF/UNEP, 1991, p. 57). Such communities are seen as relatively homogeneous, with members' shared characteristics distinguishing them from "outsiders." Sometimes social difference within communities is acknowledged, and explicit efforts are made, using participatory rural appraisal methods, for example, to specify the implications for project interventions. But all too often it is implied that the public airing of conflict is sufficient, and that social consensus and solidarity will necessarily result (Mosse, 1994).

Equally fundamental is the assumption of a distinct, and relatively stable, local environment (usually not defined) which may have succumbed to degradation or deterioration, but has the potential to be restored and managed sustainably. The community is seen as the appropriate body to carry out such restoration and care, and is envisaged as being capable of acting collectively toward common environmental interests. For instance "primary environmental care", a term coined to encapsulate a range of operational experiences in the field of CBNRM, has been defined as: "a process by which local groups or communities organise themselves with varying degrees of outside support so as to apply their skills and knowledge to the care of natural resources and environment while satisfying livelihood needs" (Pretty and Guijt, 1992, p. 22).

A common image underlying these approaches is of harmony, equilibrium or balance between community livelihoods and natural

resources, at least as a goal. Indeed, frequently, the assumption is made — either implicitly or explicitly — that such harmony existed in former times until "disrupted" by other factors. Assumptions, in this way, are linked together within what Roe (1991, 1995) has termed development narratives; "stories" about the world which frame problems in particular ways and in turn suggest particular solutions. Frequently, the narrative focuses on population growth as the key force disrupting sustainable resource management. Indeed, many of the analyses of people-environment relations which inform CBNRM conceive of the relationship as a simple, linear one between population and resource availability, affected only by such factors as level of technology (Ehrlich and Ehrlich, 1991). Population growth is seen as triggering generalized resource over-exploitation, leading to generalized poverty and further environmental degradation, which feed each other in inexorable downward spirals (e.g., Durning, 1989, etc.). Other versions of the narrative modify this Malthusian model, seeing a functional community as having once regulated resource use and technology so that society and environment remained in equilibrium. But various factors — whether the breakdown of traditional authority, commercialization, modernity, social change and new urban aspirations, the immigration of stranger populations, or the intrusion of inappropriate state policies — may have weakened or broken down the effectiveness of such regulation. In either case, what is required is to bring community and environment back into harmony: "policies that bring human numbers and life-styles into balance with nature's capacity" (IUCN/WWF/UNEP, 1991). This requires either the recovery and rebuilding of traditional, collective resource management institutions, or their replacement with new ones; for instance by the community management plans and village environmental committees so often associated with CBNRM.

Versions of this narrative are to be found in all three case study sites, where they help justify the approaches taken in current project interventions. For example, dominant narratives in Ghana's transition zone hold that the breakdown of traditional organizations and forest-conserving religious practices, and accelerating commercialization and immigration, have disrupted earlier harmony between communities and extensive forest vegetation, leading to forest loss and savannization. In Rajasthan, a narrative of vegetation decline and "desertification" encouraged by population pressure and unregulated resource use justifies the perceived need to re-green the hills through watershed development programs intended to bring communities back into harmony with their local environments.

We do not dispute all elements of these narratives in CBNRM, nor the strategic value which they may carry in certain contexts (see Li, 1996). We do argue, however, that their oversimplification and flawed basic assumptions mean they serve as poor and misleading guides for translation into operational strategies and programs. We now develop this argument by addressing some of their foundations respectively in social and ecological theory, and by raising alternative perspectives put forward in recent theoretical debates.

(a) *Community, social difference and dynamics*

The assumption that communities can be treated as static, relatively homogeneous entities so often implicit in today's CBNRM literature has identifiable roots in much earlier social theory. Early sociology and anthropology conceived of society as a bounded object or closed social system analogous to an organism. Individual members were seen as united by culture into "moral communities" sharing common interests and mutual dependence. The related ideas of structural-functionalism (e.g., Radcliffe-Brown, 1952; Fortes and Evans-Pritchard, 1940), also find strong echoes in recent approaches to CBNRM. Social structure was seen to drive rules which unproblematically governed people's behavior and maintained social order, and to comprise parts that interlocked functionally to fulfill society's needs and maintain an equilibrium. Change to this equilibrial state was conceived of mainly as being a result of external factors that precipitated breakdown and dysfunction, much as in CBNRM narratives.

A dominant approach in ecological anthropology and cultural ecology, especially in the 1950s and 1960s, saw such functionally integrated societies as also functionally integrated with their environment; in much the same way that CBNRM portrays community and environment as (once or potentially) linked in harmonious equilibrium. At the extreme, society was seen as adapted to the environment through homeostatic feedback loops which ensured that resource use did not disrupt the

ecological balance (e.g., Rappaport, 1968). Social structure and institutions, such as traditional authority and ritual, were seen as maintaining this functional adaptation, often over and above the consciousness of community members.

Social science debates and empirical work have, however, fundamentally questioned many of these suppositions. First, a large body of work concerned with social difference has highlighted the ways that gender, caste, wealth, age, origins, and other aspects of social identity divide and crosscut so-called "community" boundaries. This work emphasizes how diverse and often conflicting values and resource priorities — rather than shared beliefs and interests — pervade social life and may be struggled and "bargained" over (e.g., Carney and Watts, 1991; Leach, 1994; Moore, 1993). Feminist work especially has shown clearly how institutions can shape and reproduce relations of unequal power and authority (e.g., Kabeer and Subrahmanian, 1996; Goetz, 1996). Now commonplace in social science literature, and long integral to the critique of "community development" approaches in development studies more generally (e.g., Holdcroft, 1984), serious attention to social difference and its implications has been remarkably absent from the recent wave of "community" concern in environmental policy debates.

Second, and closely related, has been a sustained critique of structural and structural-functionalist approaches from a perspective that emphasizes actors, action and agency; a broad shift in theoretical emphasis echoed in more recent ecological anthropology (see Nyerges, 1997). Communities cannot be treated as static, rule-bound wholes, since they are composed of people who actively monitor, interpret and shape the world around them (e.g., Long and van der Ploeg, 1989; Long and Long, 1992). Linking agency and structure emphasizes how structures, rules and norms emerge as products of people's practices and actions, both intended and unintended. These structural forms subsequently shape people's action; not by strict determination but by providing flexible orientation points which may either constrain or enable what is possible. While some routinized action serves to reproduce structures, rules and institutions, other action has agency, serving to change the system and perhaps, in time, remake new rules (Giddens, 1984; Bryant and Jary, 1991; Bebbington, 1994).

Such a perspective conceives of social change very differently from the CBNRM narrative of external disruption to a static society or community. Rather, history is seen as a manifold process of interaction between external and internal actions and events, in which contingencies and path-dependency play a significant part.

These perspectives do not reject the notion of "community" altogether, but rather contextualize it by describing a more or less temporary unity of situation, interest or purpose. For instance, people in the Indian case study area are divided among at least seven multicaste and multitribe hamlets, drawn from three different revenue villages, and associated with different occupations and resource priorities. Whether or not they are regarded as comprising a single community depends on one's perspective and scale of analysis. They may sometimes appear as a larger, united community, for instance when village committee members represent Nayakheda to the NGO project staff, or in apparently uniting to support the tribal member's election to the local Panchayat council (Franzén, 1996). Such representations of wider community are arguably best seen as actively created and manipulated by powerful people for particular (and not necessarily shared) purposes, or at least as the contingent and temporary outcome of dynamic interaction between differentiated social actors.

(b) *Dynamic ecologies*

The science of ecology over much of the 20th century — including the science that has influenced CBNRM — has been built upon notions of equilibrium, balance, harmony and functional order, showing notable parallels with structural-functionalist theories in the social sphere. But, just as there are problems with structural-functional explanations of community and social relations, so interpretations of nature and environment based on assumptions of balance and system regulation are subject to dispute.

Key concepts in ecological science have included gradual, linear change, homeostatic regulation of systems and stable equilibrium points or cycles (Cherrett, 1987; McIntosh, 1985; Pimm, 1991); concepts grounded in a notion of the "balance of nature" deriving from much longer traditions of thought about the natural world (Worster, 1985, 1993). Dominant theories of vegetation succession, population

modeling, ecosystem functioning, or species-area relationships all have equilibrium assumptions at the core of their models and, not surprisingly, their findings and applied management recommendations (Botkin, 1990; Zimmerer, 1994). Thus succession theory has emphasized linear vegetation change and the idea of a stable and natural climax. Since Clements's early work in the United States (Clements, 1916), this has become the principal guide for managing rangelands and forests, the benchmark against which environmental change is assessed. In the Ghana case study, for instance, semi-deciduous forest has been seen as the natural climax vegetation, and its restoration has been identified as a key management objective. Equally, models of population dynamics identified carrying capacities and maximum sustained yield levels for managed animal populations, using calculations based on assumptions of predictable and linear growth patterns in stable environments (Caughley, 1977). Management regimes for domestic livestock, wildlife and fisheries populations have been devised according to such assumptions; they have, for instance, informed the enclosure strategies for grazing and fodder management promoted in the India case study. At the same time, following the classic work by Odum (1953), ecosystem theory has focused on the system regulation of flows and so how environmental impacts are assessed. The assumption is that natural systems are homeostatically regulated and, if disturbed, such regulation may collapse with detrimental consequences. Finally, conservation biology has claimed a stable relationship between species diversity and area (MacArthur and Wilson, 1967) and so a basis on which biodiversity policy could be created and protected areas could be designed. For example, in South Africa a control-oriented protected area policy has dominated conservation thinking for much of the 20th century, resulting in an exclusionary approach to national park and nature reserve management (Carruthers, 1995).

While there have always been disputes within each of these areas of theory, the period since the 1970s has seen a sustained challenge from the emergence of key concepts making up nonequilibrium theory and, more broadly, what has been termed the "new ecology" (e.g., Botkin, 1990). Three themes stand out from these new approaches (see Scoones, forthcoming). First, an understanding of variability in space and time, which has led to work on time-series

population analysis, stochastic and dynamic modeling (Hastings *et al.*, 1993; Elner and Turchin, 1995) and an interest in the relationships between disturbance regimes and spatial patterning from patches to landscapes (e.g., Kolasa and Pickett, 1991; Turner, 1989). Second, nonequilibrium perspectives suggested a need to explore the implications of scaling on dynamic processes, which has lead to work on hierarchies and scale relationships in ecosystems analysis (Allen and Hoekstra, 1991; O'Neill *et al.*, 1986; Dunning and Stewart, 1995). Third, a recognition of the importance of history on current dynamics has led to work on environmental change at a variety of time scales (Worster, 1990; Williams, 1994). The latter parallels the historical emphasis of much recent social theory, and invites analytical attention to the historical relationships between environmental and social change (Mearns, 1991).

These ecological themes have prompted increased interest in understanding dynamics and their implications for management. For example, recent thinking in ecology informs our understanding of the key relationship between savanna grassland and forest areas. For both the Ghana and South Africa case study sites, this is an important issue, as different products and different environmental values are associated with forests and grasslands. The conventional, equilibrial interpretation of succession theory sees forest as a later successional form, closer to natural "climax" vegetation, and the presence of grasslands as evidence of degradation from a once-forested state. This linear interpretation of vegetation dynamics has a major influence on the way such landscapes are viewed by policy makers and others (Fairhead and Leach, 1996, 1998). But in some areas forest and savanna may be better seen as alternative vegetation states influenced by multiple factors. Despite powerful environmental narratives to the contrary, there is strong evidence, in both the forest-savanna transition zone of Ghana and the coastal grasslands of the former Transkei in South Africa, that forest or woodland areas have been increasing in places over the century timescale as a result of a combination of disturbance events (Fairhead and Leach, 1998 for Ghana; Feeley, 1987 for South Africa). Changes in soils, shifts in fallowing systems, manipulation of fire regimes, alterations in grazing patterns, and climatic rehumidification have combined to change the relationship between forests and grasslands. This dynamic interaction is thus less the

outcome of a predictable pattern of linear succession, but more a result of combinations of contingent factors, conditioned by human intervention, sometimes the active outcome of management, and often the result of unintended consequences.

With a view of ecology that stresses spatial and temporal variability, dynamic, nonequilibrial processes and histories of disturbance events, a different view of the landscape emerges: a landscape that is transforming, not simply degrading, and one which is emerging as a product of both social and ecological history, not simply the result of deterministic patterns of environmental change.

4. ENVIRONMENTAL ENTITLEMENTS

We have argued, then, that communities cannot be treated as static or undifferentiated, made up as they are of active individuals and groups. The environment, equally, needs to be disaggregated into its constituent parts, and viewed dynamically. These dynamic, differentiated views have important implications for analyzing the links between people and environment, raising a very different set of questions from those addressed by conventional narratives around CBNRM. We need to ask, for instance, which social actors see what components of variable and dynamic ecologies as resources at different times? How do different social actors gain access to and control over such resources? How does natural resource use by different social actors transform different components of the environment?

To address such questions we draw on entitlements analysis, an approach first developed by Amartya Sen to explain how it is that people can starve in the midst of food plenty as a result of a collapse in their means of command over food (Sen, 1981). Undue emphasis on aggregate food availability, Sen argues, diverts attention from the more fundamental issue of how particular individuals and groups of people gain access to and control over food. Thus "scarcity is the characteristic of people not *having* enough..., it is not the characteristic of there not *being* enough. While the latter can be the cause of the former, it is one of many causes" (Sen, 1981, p. 1).

By analogy, entitlements analysis is useful in explaining how the consequences of environmental change in general, and access to and control over natural resources in particular, are

also socially differentiated (Leach and Mearns, 1991; Mearns, 1995b, 1996a). Just as with the food and famine debate, the environmental debate has been dominated by a supply-side focus, often giving rise to Malthusian interpretations of natural-resource depletion and degradation. But, as Sen observed, absolute lack of resources may be only one of a number of reasons for people not gaining access to the resources they need for sustaining livelihoods. It is important not to polarize this distinction excessively, however; as others have pointed out in the context of famine analysis, resource availability and access are often interconnected. Conflicts over access often intensify when the resources in question become scarce in absolute terms (Devereux, 1988; Nolan, 1993).

Before exploring our own "extended entitlements" approach, applied to environmental questions, it is worth revisiting Sen's work to clarify concepts and establish any key distinctions. In explaining how command over food, rather than overall availability, is key in explaining famine, Sen emphasized entitlements in the descriptive sense. The term entitlements therefore does not refer to people's rights in a normative sense — what people *should* have — but the range of possibilities that people *can* have. In Sen's words, entitlements represent: "the set of alternative commodity bundles that a person can command in a society using the totality of rights and opportunities that he or she faces" (Sen, 1984, p. 497). They arise through a process of mapping, whereby endowments, defined as a person's "initial ownership", for instance, of land or labor power, are transformed into a set of entitlements. According to Sen, entitlement mapping is "the relation that specifies the set of exchange entitlements for each ownership bundle" (Sen, 1981, p. 3). In Sen's work, these entitlement relations may be based on such processes as production, own-labor, trade, inheritance or transfer (Sen, 1981, p. 2). Sen's concern was therefore to examine how different people gain entitlements from their endowments and so improve their well-being or capabilities, a descriptive approach to understanding how, under a given legal setting, people do or do not survive.[4]

Some elements of Sen's otherwise useful framework are too restrictive in the environmental context, however (see also Gasper, 1993; Gore, 1993; Devereux, 1996). First, at least in his early work, he focuses almost exclusively on entitlement mapping — how

endowments are transformed into entitlements — and pays limited attention to endowment mapping — how people gain endowments. Instead of assuming that endowments are simply given, an extended framework would focus on how both people's endowments and entitlements arise, a possibility recognized by Sen in later work (Drèze and Sen, 1989, p. 23). Second, Sen is principally concerned with command over resources through market channels, backed up by formal legal property rights. Although in later work (e.g., Sen, 1984, 1985; Drèze and Sen, 1989, p. 11), the idea of "extended entitlements" is introduced, it is unclear whether the concept is restricted only to mechanisms governing the intrahousehold distribution of resources or whether it also includes other institutional mechanisms. In our view, Sen's version of "extended entitlements" does not go far enough. Since there are many ways of gaining access to and control over resources beyond the market, such as kin networks, and many ways of legitimating such access and control outside the formal legal system, such as customary law, social conventions and norms, it seems appropriate to extend the entitlements framework to the whole range of socially sanctioned, as well as formal legal institutional mechanisms for resource access and control (Gore, 1993).

Given these concerns, we adopt the following definitions of key terms.[5] First, *endowments* refer to *the rights and resources that social actors have*.[6] For example, land, labour, skills and so on. Second, *entitlements*, following Gasper (1993), refer to *legitimate effective command over alternative commodity bundles*. More specifically, *environmental entitlements* refer to *alternative sets of utilities derived from environmental goods and services over which social actors have legitimate effective command and which are instrumental in achieving well-being*.[7] The alternative set of utilities that comprise environmental entitlements may include any or all of the following: direct uses in the form of commodities, such as food, water, or fuel; the market value of such resources, or of rights to them; and the utilities derived from environmental services, such as pollution sinks or properties of the hydrological cycle. Entitlements, in turn, enhance people's *capabilities*, which are *what people can do or be with their entitlements*. For example, command over fuel resources derived from rights over trees gives warmth or the ability to cook, and so contributes to well-being.

There is nothing inherent in a particular environmental good or service that makes it *a priori* either an endowment or an entitlement. Instead, the distinction between them depends on empirical context and on time, within a cyclical process. What are entitlements at one time may, in turn, represent endowments at another time period, from which a new set of entitlements may be derived.

An emphasis on the "effectiveness" or otherwise of command over resources highlights two issues. First, resource claims are often contested, and within existing power relations some actors' claims are likely to prevail over those of others. Second, certain social actors may not be able to mobilize some endowments (e.g., capital, labor) that are necessary in order to make effective use of others (e.g., land). For instance, kinship-based institutions that regulate command over labor may embody power relations structured around gender and age, that leave young men, and especially young women, strongly disadvantaged in their ability to control their own labor and to call on that of others.

By "legitimate" we refer not only to command sanctioned by a statutory system but also to command sanctioned by customary rights of access, use or control, and other social norms. In some cases, these sources of legitimacy might conflict, and different actors may espouse different views of the legitimacy or otherwise of a given activity. In the South Africa case study, communities surrounding Mkambati are legally prevented from hunting game within the government-owned reserve. Nevertheless, groups of young men, with active encouragement from local civic organizations and/or the tacit blessing of their local chief, depending on his current political stance *vis-a-vis* the local authorities, regularly hunt within the reserve. They justify their actions by calling on customary rights, locally referred to as *ukujola*, which are based on historical claims predating the gazetting of the protected area, and which amount to legitimized poaching.[8]

Figure 1 links together in diagrammatic form those elements of our environmental entitlements framework discussed so far. An undifferentiated "environment" has been replaced by one that is disaggregated into particular environmental goods and services. Their distribution, quality and quantity are influenced by ecological dynamics (see Section 3 above) which are in part shaped by human action (discussed in Section 6 below). The relationship
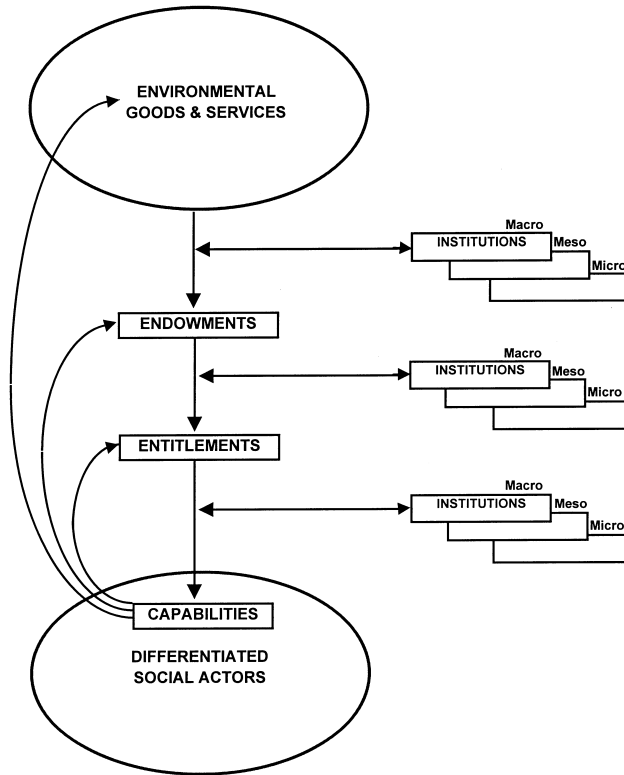
Figure 1. *Environment entitlements framework.*

between a given "community," made up of differentiated social actors (see Section 3 above), and the changing ecological landscape, can be analyzed in terms of the ways different social actors gain capabilities, or a sense of well-being, by acquiring legitimate, effective command over resources through processes of endowment and entitlement mapping. Endowments for particular social actors are distinct from environmental goods and services (which are given "in nature"), and so lie outside the ellipse in Figure 1 that represents environmental goods and services. By contrast, capabilities are attributes of particular social actors, and so are included within rather than lying outside the ellipse representing differentiated social actors.

Our analysis has led us away from a focus on the particular endowments, entitlements and capabilities of a given social actor at a given moment, since these represent only a snapshot in time. Instead, our analysis focuses principally on the dynamic mapping processes that underlie each of these static sets, which are mediated by various forms of institutions (appearing to the right of Figure 1) operating at a range of scale levels from the macro to the micro. Section 5 examines in more detail what we mean by institutions, since they are central to our framework. The relationships among these institutions and between scale levels is of central importance in influencing which social actors — both those within the community and those at some considerable remove from it — gain access to and control over local resources. In turn they influence the uses to which resources are put and the ways they are managed, and thus progressively help to modify and shape the landscape over time (see Section 6). The environmental entitlements framework therefore links both macro and the micro levels of concern. It situates "a disaggregated (or 'micro') analysis of the distinctive positions and vulnerabilities of particular [social actors] in relation to the 'macro' structural conditions of the prevalent political economy" (Jenkins, 1997, p. 2).

In various ways our three case studies illustrate the interactions among institutions at

different scale levels, and the ways they circumscribe the resource claims and management practices of different social actors. At the international level, for example, the policies of donor agencies play an important role not only in directly shaping local approaches to CBNRM, but also in influencing domestic macroeconomic policy or governance in ways that cascade down to affect local natural resource management. At national or state level, government policies and legislation are of primary interest, including land tenure reform policies, or approaches to forestry and wildlife conservation and tourism. At progressively more local levels these intersect with rural livelihood systems, intrahousehold dynamics, and so on. But the interrelationships between scale levels are far from deterministic. Land claims at the local level may spill over into national, state or provincial-level politics, for example, and influence the direction of future policy and the scope of legally enforceable rights.

An institutional focus also highlights relations of power in the mapping processes. Such issues are notably absent in Sen's analysis (Watts, 1991), suggesting the need to examine the degree to which different people can influence decisions about endowments and entitlements (Appadurai, 1984). An extended entitlements approach therefore sees entitlements as the outcome of negotiations among social actors, involving power relationships and debates over meaning (Gore, 1993, p. 452), rather than as simply the result of fixed, moral rules encoded in law. To illustrate some of the types of endowment and entitlement mapping processes that are of interest in our case studies, consider the following, simplified example from Ghana. The particular sets of endowments, entitlements and capabilities discussed, and the relevant mediating institutions, are summarized in Figure 2. In Ghana's forest zone, the leaves of *Marantaceae* plants are commonly collected by women and used and sold widely for wrapping food, kola nuts and other products (Falconer, 1990; Agyemang, 1996). The leaves are associated with particular sites and times within dynamic, variable forest and forest-savanna ecology. These include disturbed forest sites, moderately burnt forest, swamps, and abandoned cocoa farms and fallows, especially during the rainy season.

The leaves become endowments — people gain rights over them — in different ways depending on whether they lie inside or outside government-reserved forest. Off-reserve, the leaves are usually the common property of a village, with an actor's endowment mapping depending on village membership. Where they occur on farmland, collection rights are acquired through membership of, or negotiation with, the appropriate land-holding family or farm household. On-reserve, endowment mapping depends on the Forest Department's permit system, with women often using established trading relationships as a source of finance for permits. Without such a permit, leaf-gathering is illegitimate from the state's perspective, although it may be sanctioned by customary tenure arrangements grounded in different definitions of reserved land as ancestral farmland.

The set of entitlements derived from *Marantaceae* leaves may include direct use of the leaves or cash income from their sale. In practice, most women involved in gathering leaves prefer to sell them as an important source of seasonal income. In entitlements mapping, both labor and marketing issues are important. Women may have to negotiate with their husbands and co-wives — in relation to other farm work and domestic duties — for labor time to collect the leaves. They find leaf-gathering in groups more effective, so collection depends on membership of a regular group or on impromptu arrangements among kin and friends. There is frequently competition between groups for the best sites, as well as competition for leaves among group members. When disputes arise, whether between individual women, collection groups, or with forestry officials, a "queen mother of leaf gatherers"— appointed by each village or neighborhood's women gatherers — helps to mediate them. Marketing effectively depends on establishing a regular relationship with village-based or visiting traders who will guarantee a reasonable price even at times of year when the market is flooded. Women frequently invest actively in maintaining such relationships, for instance collecting one type of leaf for one buyer, and another type of leaf for another buyer.

The utilities derived from the cash sale of *Marantaceae* leaves contribute to a woman's capability to ensure that she and her children are well-fed and to satisfy other cash-dependent basic needs. In particular, the leaves offer a timely source of rainy season income when money is otherwise scarce. But whether a woman can keep control of the income, and how it is used, depends on intrahousehold
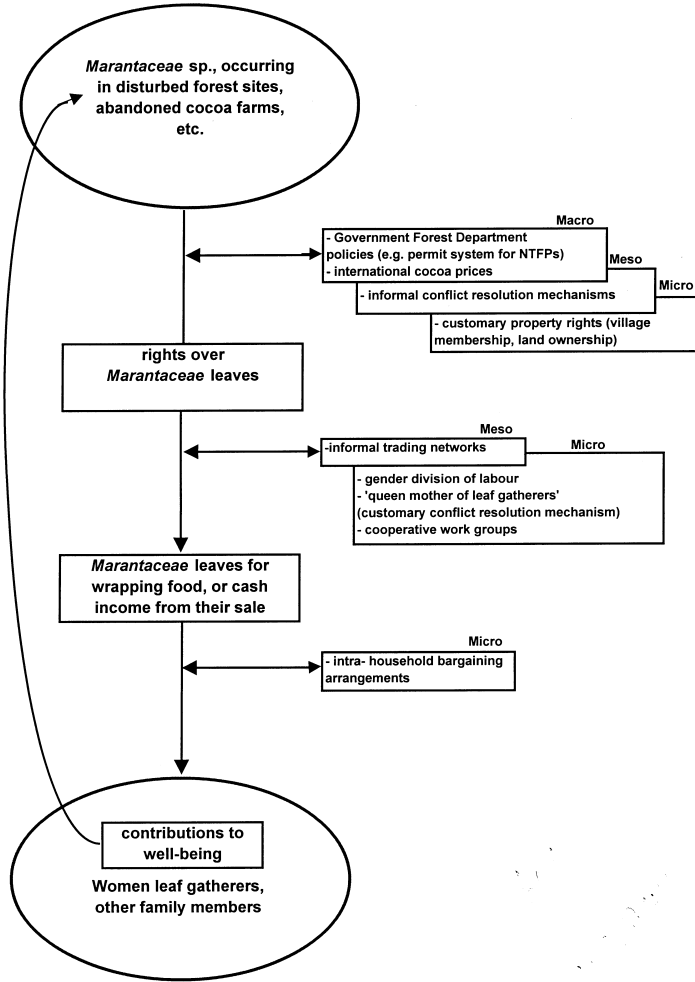
Figure 2. *Marantaceae leaf collection in southern Ghana.*

bargaining arrangements, such as negotiations with husbands and co-wives over expenditure priorities and responsibilities for providing food.

A further important addition to Sen's analysis offered by our institutional focus is the introduction of a dynamic, historical perspective, over different time scales. Mapping processes are not static; indeed the various elements of the framework as set out so far continuously change over time. In the process of actors gaining legitimate, effective command over a resource bundle, negotiations over labour or land may take place which in turn transform the nature of certain actors' land or labor rights. Over longer time frames, a process

of commoditization of certain resources might serve to increase the role of the market as a key institution in endowment and entitlement mapping. This dynamic and historical perspective therefore informs our interpretation of endowment and entitlement mapping processes and, in turn, our approach to the institutional analysis of environmental change, a subject to which we now turn.

5. INSTITUTIONS

Since institutional arrangements shape the processes of endowment and entitlement mapping, the way we understand institutions and

institutional change is central to our analytical framework. For example, several different kinds of both formal and informal institution emerged as being important in mediating access to and control over *Marantaceae* leaves in southern Ghana. Consider the case of property rights, which serve to allocate endowments to different individuals. On the one hand there are formal property rights, such as permits to gather nontimber forest products. These are issued by the Forest Department, legitimized by the state, and in principle could be defended in courts of law. On the other hand there are also informal or customary property rights, legitimized by social norms and codes of behavior. These are legitimate in the eyes of those local resource claimants who regard government-reserved land as ancestral farmland, but illegitimate in the eyes of the state. Another informal institution, the authority vested in the queen mother of leaf-gatherers, helps mediate in disputes between forestry officials and local resource claimants on forest-reserve land. The question of entitlement mapping, or who ultimately gets effective command over *Marantaceae* leaves, is influenced by the interplay of other formal and informal institutions, including the gender division of labor, cooperative work groups, and trading networks.

So, how should we conceptualize institutions as part of the environmental entitlements framework? Several key themes emerge from recent work on institutions across a range of disciplines, and here we attempt to clarify our position in relation to these. First, following work in new institutional economics, new economic history and public choice theory, institutions can be distinguished from organizations. If institutions are thought of as "the rules of the game in society," then organizations may be thought of as the players, or "groups of individuals bound together by some common purpose to achieve objectives" (North, 1990, p. 5). Organizations, such as schools, NGOs and banks, exist only because there is a set of "working rules" or underlying institutions that define and give those organizations meaning. Many other institutions have no single or direct organizational manifestation, including money, markets, marriage, and the law, yet may be critical in endowment and entitlement mapping processes.

Second, and in addition to a clarification of the institution-organization distinction, perhaps the most enduring contribution of the new institutional economics is the focus on transaction costs as an important factor underlying institutional change. In this respect, while it may not offer a grand theory, the new institutional economics does yield insights that are useful in suggesting hypotheses to guide empirical research (Harriss, Hunter and Lewis, 1995). For example, the inability of the state Forest Department to meet the transaction costs entailed in monitoring and enforcing controls over access to state-owned forest land in Rajasthan has arguably exacerbated the rate of commercial exploitation and subsequent deforestation. It is now more widely acknowledged that forest cover is more likely to be maintained under "joint forest management", an institutional arrangement in which management responsibility is shared between local communities and the Forest Department, and in which the information, monitoring and enforcement costs are both lowered and borne in part by local communities themselves. Similarly, in the former Transkei, South Africa, the type of tenure regime associated with different types of grazing can be related to the relative costs and benefits of managing exclusion. In high-value grazing sites, institutional forms with relatively high transaction costs may persist, while for low-value, highly variable grazing resources the opposite is most likely (Scoones, 1995).

Some definitions of institutions derived from a transaction costs approach, however, can be criticized for being tautologous and functionalist, resulting, in the extreme, in the definition paraphrased by Harriss, Hunter and Lewis (1995, p. 7) that: "existing institutions minimise transaction costs because transaction cost minimization is their function." The widely-cited definition of institutions by de Janvry, Sadoulet and Thorbecke (1993, p. 566) — "complexes of norms, rules and behaviors that serve a collective purpose" — is problematic on this account, as well as in its tendency to lump together norms, rules and behavior, discussed below.

Third, then, our case studies lead us to view institutions not as the rules themselves, but as regularized patterns of behavior that emerge from underlying structures or sets of "rules in use." While some new institutionalists adopt this perspective (e.g., Schotter, 1981), it is more commonly associated with sociological and anthropological approaches (e.g., Giddens, 1984). Rather than existing as a fixed framework, "rules" are constantly made and remade through people's practices. This is a perspective

developed in anthropological literature on customary law (Chanock, 1985), and in the work of Berry (1989, 1993) who sees institutions as maintained by (and only existing because of) people's active "investment" in them. Regularized practices, performed over time, eventually constitute institutions. Yet, as they consciously monitor the consequences of past behavior and the actions of others, different social actors may choose — or be forced — to act in irregular ways. Over time, perhaps as others similarly alter their behaviour, institutional change may occur. But owing to the embeddedness of informal institutions, institutional change in society may be a slow, "path-dependent" process, even if formal institutions, such as legal frameworks, macroeconomic policies or political regimes, change quickly.

There are also many situations in which behavior appears to contravene the rules. In an insightful critique of Sen's narrow view of the rules of entitlement, Gore (1993) refers to such behavior as "unruly" social practices, emphasizing the ways that different forms of protest and resistance challenge legal rules governing people's ability to gain command over commodities. But such "unruly" practices may well be bound by different sets of moral/informal rules (Gore, 1993, p. 446); such situations thus exemplify instances of competing notions of legitimacy, in which actual entitlements are influenced by the interplay of these competing rule sets in the context of prevailing power relations. Such an approach recognizes that the law necessarily operates within a particular social context, whereby, for example, the judiciary is able to bend the rule of law to favor selective class, gender or ethnic interests, particularly in weak states.

Fourth, the distinction between formal and informal institutions is highlighted by these analyses. Formal institutions may be thought of as rules that require exogenous enforcement by a third-party organization. The rule of law is an example, usually upheld by the state through such organizational means as law courts, prisons and so on. Informal institutions, however, may be endogenously enforced; they are upheld by mutual agreement among the social actors involved, or by relations of power and authority between them. Recent work on institutions stresses the socially "embedded" nature of informal institutions, or the multiplicity of institutional relations in which people are engaged at any one time (Runge, 1986; Mearns, 1996b; Swallow et al., 1997). As argued in the

burgeoning literature on social capital, trust and networks of civic engagement (e.g., Gambetta, 1988; Putnam, Leonardi and Nanetti, 1993; Stewart, 1996; Humphrey and Schmitz, 1996; Mearns, 1996c; Dasgupta, 1996), multiple involvement may promote mutual assurance among social actors, promoting cooperation and collective action. Yet this argument potentially neglects issues of power relations and the very different meanings that different institutions may carry for different actors. As Bates (1995) has emphasized, there is a need to ground institutional analysis in a theory of power. While this is currently lacking in much new institutional economics (but see Bowles and Gintis, 1993 for a notable exception in the economics literature), it is strongly present in other strands of work, for instance in feminist analysis of institutions (e.g., Kabeer and Subrahmanian, 1996; Goetz, 1996). Many institutions patently do not serve a collective purpose, even if they may once have done, and different actors' perceptions of the "collective good" depend very much on their social position. Equally, involvement in some groups may be a response to inequities in others. A view of institutions as simply coexisting in benign complementarity may be misleading. Women's investment in resource-sharing networks with neighbors, for instance, may in part compensate for their lack of power within the household. To understand how different actors' practices are embedded in — and help to shape — such a range of formal and informal institutions necessitates an actor-oriented approach to understanding institutions (Long and van der Ploeg, 1994; Nuitjen, 1992), one which takes an analysis of difference and an appreciation of power relations seriously. Our framework therefore seeks to investigate the embedded nature of formal and informal institutions, exploring institutional change in an historical perspective.

6. STRUCTURATION OF THE ENVIRONMENT

So far, the presentation of our framework has focused on how social actors access, use and benefit from different components of the environment, and how an extended entitlements approach, coupled with an analysis of institutions, helps to conceptualize these processes. But a key set of questions remains, concerning the ways in which the environment

is, in turn, shaped and transformed through people's interactions with it (see the "feedback loop" on the left in Figure 1). In debates around global environmental change, the degree to which particular landscapes have been shaped by their inhabitants, as well as by processes operating at some remove, is often underrecognized.

As we have argued, CBNRM narratives tend to conceive of local environments in terms of a baseline "natural balance" or optimum which human intervention disturbs or degrades over time, but may be called upon to restore. Our discussion of new thinking in ecology (Section 3) criticized this perspective, arguing for a different view in which environments are constantly transforming and emerging as the outcome of dynamic and variable ecological processes and disturbance events, in constant interaction with human use. In other words, environmental conditions at any given time can be seen as the product of both ecological and social history. Sections 4 and 5 explained the social history of environmental use in terms of institutional dynamics which shape the changing ways that differentiated social actors perceive, use and manage components of the environment as resources. Some of the ideas in structuration theory, which we have already addressed in relation to social and institutional dynamics, add significantly to our understanding of people–environment interactions (Redclift and Woodgate, 1994).

Seen in this way, the environment provides a setting for social action but is also a product of such action. People's actions and practices, performed within certain institutional contexts, may serve to conserve or reproduce existing ecological features or processes (e.g., maintain a regular cycle of fallow growth or protect the existing state of a watershed and its hydrological functions). But people may also act as agents who transform environments (e.g., shorten the fallow, altering soils and vegetation, or plant trees in a watershed). Such agency may involve precipitating transitions of ecological state that push ecological processes in new directions or along new pathways. While some actions may be intentional, constituting directed management aimed at particular goals or transformations, others may be unintentional, yet still have significant ecological consequences.

Over time, the course of environmental change may be strongly influenced by particular conjunctures of institutional conditions, or by the coming together of contingent events and actions. Practices and actions carried out at one time — under one set of institutional arrangements — may leave a legacy that influences the resources available to become endowments for actors at some future time. For instance, the farming practices of one group of people may enduringly alter soil conditions such that subsequent inhabitants may make use of these in their farming of different crops, whether or not they acknowledge this as the legacy of past farmers. Equally, past actions influence the possibilities for agency open to subsequent actors. As present practices build on the legacies of past ones, so the causality of environmental change may need to be seen as cumulative, sequential or path-dependent.

The concept of landscape serves usefully to encompass these linked ecological and institutional dynamics, with landscape history referring to the reflexive relationship between environmental and social history. In this sense, our perspective articulates with a large literature that has explored the idea of landscape in cultural geography (e.g., Sauer, 1925; Hoskins, 1955; Glacken, 1967; Cosgrove, 1984; Duncan and Ley, 1993) and in social anthropology (e.g., Bender, 1993; Guyer and Richards, 1996). Considering how regional, national or international processes articulate with local ones to shape landscapes over an historical time frame is also a shared feature of approaches in what has come to be termed political ecology (e.g., Blaikie and Brookfield, 1987; Bassett, 1988; Bryant, 1992; Moore, 1993; Peet and Watts, 1996). With some exceptions however, (e.g., Rocheleau et al., 1996) these have given rather less attention to issues of intracommunity social difference. Equally, they have paid rather little attention to recent theoretical perspectives in ecology (but see Zimmerer, 1994). Landscapes, over time, then, may come to embody layer upon layer of the legacies of former institutional arrangements, and of the changing environmental entitlements of socially differentiated actors.

This can be illustrated for the Ghana and South Africa case studies by the resource- and biodiversity-rich forest patches that are distinctive features of both landscapes (see Fairhead and Leach, 1996, 1998 for other cases). Contrary to strong narratives suggesting a decline in forest cover, it seems that over the 20th century tree cover has increased on specific sites within the settled landscapes of both the South African and Ghanaian case study areas. Shifts

from grassland to wooded area have resulted from diverse interactions over time between social actors and ecological processes, influenced by institutions. Around settlement sites, for instance, tree growth has been encouraged by localized improvements in soil fertility resulting from inhabitants' everyday activities (gardening, waste deposition, etc.), by livestock management practices and by fire protection regimes such as early-burning. The form and composition of such woodland patches has been influenced by management for tree crops (e.g., cocoa in the Ghana case), and by enrichment planting with indigenous and exotic species valued by particular social actors. Such management patterns have altered over time in response to changing market opportunities, labor relations and different social actors' priorities. Frequently, forest patches have endured even when settlements have been abandoned, for instance as a result of migration or settlement consolidation, and, at least in the Ghana case, they are sometimes actively preserved as burial and ancestral worship sites by the descendants of settlement founders. Understanding such changes in vegetation therefore requires insights into institutions influencing settlement patterns, labor organization, fire and grazing management, tree product marketing and so on, and into the ecological legacies left by actions under each set of institutional arrangements for people's subsequent resource use and management.

7. CONCLUSIONS AND PRACTICAL IMPLICATIONS

In focusing attention on the mapping processes by which components of heterogeneous environments become endowments and entitlements of particular social actors, the framework outlined in this paper has attempted to provide a dynamic perspective on the role of institutions in people–environment relations. Diverse institutions, both formal and informal, and often acting in combination, shape the ways in which differentiated actors access, use and derive well-being from environmental resources and services and, in so doing, influence the course of ecological change. As people interact with each other and with the environment in the context of these mapping processes, their actions may, over time, serve to reproduce particular institutions, but they may also serve to alter them, and thus to push institutionally

influenced ecological dynamics along new pathways.

By seeing people–environment relations in this way, the environmental entitlements framework offers some fundamental challenges to the ways in which "community," "environment" and the links between them are commonly portrayed in the policy narratives surrounding CBNRM. In so doing, it raises a number of implications for development planning and practice.

Conventional approaches to CBNRM are frequently centered on "community" organizations as the main vehicle for their activities. Yet as environmental entitlements analysis shows, these may be a very poor reflection of the real institutional matrix within which resources are locally used, managed and contested. Considerable caution is therefore needed before assuming that new formal organizations will replicate the assumed successes of indigenous systems, or enhance community involvement effectively (Mosse, 1997). This paper has shown, first, how multiple institutions are involved in natural resource management. Most of these are not dedicated to the purpose or dependent on it in any functional way — marriage and kinship exchange networks "do" many other things besides their role in land access, for instance — yet are important in mediating the endowments and entitlements of certain social actors. Second, then, amid this multiplicity different people rely on different institutions to support their claims to environmental goods or services. For most activities they combine sets of claims supported by different institutions; rights to access trees for woodfuel may be of little use to generate income unless combined with kinbased claims on labor for wood-cutting and transport, and trading networks for effective marketing. Such combinations of institutions, operating in concert and at particular historical moments, shape particular trajectories of environmental change. Third, many of these institutions are informal, and consist more in the regularized practices of particular groups of people than in any fixed set of rules; as such they are also dynamic, changing over time as social actors alter their behavior to suit new social, political or ecological circumstances. Introduced, formal organizations may miss — or reduce — this flexibility.

An understanding of social difference, and the diverse institutions which support different people's endowments, entitlements and envi-

ronmental management, points toward possibilities for more strategic specificity in interventions. If certain institutions can be identified as supporting the interests of certain social actors, or as contributing to "desired" courses of ecological change, then they can be targeted by policy in strategies of institution-building or support. This would imply agencies moving away from generalized community support towards far more explicit partiality; what Mehta (1997) has termed "aggressive partisanship".

There is, however, a danger that such targeting becomes, in effect, another form of imposition of formal organization on previously informal, dynamic arrangements, open to the same criticisms as apply at a generalized community level. Indeed, design-oriented responses almost inevitably gloss over complexity and dynamism, assuming that steady-states — ecological or social — are achievable and supportable. Such assumptions may well be misplaced, as we examine further below. Instead, a more flexible approach may be needed; one which, as Mosse (1997) puts it, strategically supports subordinate groups to enhance access to and control over resources by taking "operational clues" from ongoing struggles, knowledge and strategies (Li, 1996 p. 515).

In recognition of the ongoing struggles and conflicts which pervade natural resource politics, and as an alternative to the type of aggressive partisanship which "sides" with particular social groups, development agencies might choose to facilitate negotiation. The aim here would be to decide on desired ends through a negotiated process, whether between an encompassing range of social actors at local and state level, or between smaller groups of resource users, depending on the issue in question. Through negotiation, it might be assumed, conflicts between users' perspectives could be laid bare and worked through.

It would clearly be naive however, to assume that negotiation processes take place on a level playing field. Indeed, the very idea of negotiation conjures up an image of parties equally able to voice their positions and argue for them, which is very far from reality in most of the situations confronted by CBNRM. Just as power relations pervade the institutional dynamics of everyday resource use, so they would pervade any negotiation process. Different social actors have very different capacities to voice and stake their claims. All negotiation processes will reflect prevailing power relations, it could be argued; and if powerful groups do

not achieve their desired outcome through open negotiation, they are likely to do so through other means.

Empowerment to subordinate groups therefore needs to accompany negotiation, through approaches aimed at enhancing the claims-making capacity of such groups. Indeed, entitlement failure frequently results less from people's lack of institutionally grounded claims, but their incapacity to make claims "stick" against those of more powerful actors in the context of resource struggles. Projects and public policies may have a role to play in purposive action to enhance the capabilities of particular social actors, to protect and promote both their endowments and their entitlements (Bradbury, Fisher and Lane, 1995). This is precisely the approach taken by the NGO Seva Mandir in Rajasthan, in which direct investments in adult literacy, leadership training and other capacities have proven to be of instrumental value in building the social capital needed for natural resource management. Using the analytical tools of the environmental entitlements framework, claims-making capacity could even be seen as an endowment, which social actors combine with other endowments — rights to land, labor and so on — in attempts to achieve effective command over environmental goods and services. The challenges for participatory development initiatives, then, can be thought of in these terms, whereby the links between local negotiating capacities and power relations are firmly made. This requires an approach to participation which takes the dynamics of power relations between social actors involved in the development process seriously (Nelson and Wright, 1995).

Just as approaches which aim to give strategic support to institutions must confront issues of conflict and power, so they must confront questions of uncertainty; both social and ecological. Because institutional arrangements are dynamic, influenced by the ongoing practices and agency of numerous social actors, as well as by contingent events in economy and society, institutional design cannot assume predictable outcomes. Changes in land law, for instance, cannot be assumed to have predictable effects on farmers' practices given ongoing changes in other institutions affecting agriculture: market networks and crop pricing policies or marriage and gender relations, for instance. From this perspective, it is clear that strategic institutional changes — such as alterations of legal frameworks — do not necessarily lead to particular

outcomes. Nevertheless, they can provide altered settings in which people can struggle to make their claims realized, perhaps with more chance of success.

Ecological uncertainties compound the problems already inherent in defining desirable courses of environmental change or sustainable development. The notion of environmental sustainability is problematic given the diverse, partial perspectives of different social actors: what is to be sustained, and for whom? This is not to argue that there is no place for consideration of overall resource availability, and for management processes which aim at increasing it. Indeed, in some circumstances this might be important to reduce resource conflict. Different people will have different views, however, as to which resources or services should be given priority within overall attempts to enhance "natural capital". Recent thinking and non-equilibrium perspectives in ecology, however, question the notion that future environmental states can be planned for in such a way. Historical conjunctures of processes and contingent ecological events, can bring about quite rapid and unpredictable, shifts in landscape ecology. In this context, management needs to seek to influence processes rather than to define states; and in a manner which is adaptive rather than pre-planned.

We have argued that the image of consensual communities so frequently presented in the literature on CBNRM is a poor reflection of empirical reality, and hence a misleading guide to practical intervention strategies. This is not to argue, however, that they have no value in a policy context. There may be contexts in which certain idealized representations of communities successfully managing environments at equilibrium, supported by social harmony, equality and tradition, can have great strategic value (Li, 1996). As counternarratives, planners, analysts and policymakers may be able to use them in making the case against other, more dominant narratives or orthodoxies; for example, to counter an inappropriate emphasis on state control over resources, or a misplaced neoliberal agenda stressing privatization and market liberalization. By providing a legitimating vocabulary for alternative approaches, such images may be argued to have an important role in opening up a space for policy shifts and new program directions (Li, 1996, p. 506). Images of consensual, ecologically harmonious communities are also created (or invented) by local social actors, as part of ongoing political relations and struggles over resources in contexts of uneven power. An emphasis on the use of representations of community in institutional dynamics serves to emphasize further that external development interventions do not confront a static reality. Rather, they "offer material and symbolic resources for use in the on-going renegotiation of social relations" (Mosse, 1997, p. 500).

Thus intervening agencies, whether government or nongovernment, are also actors within this complex nexus of multilayered, institutional dynamics. The type of analysis attempted here may potentially be most helpful in helping agencies involved in CBNRM initiatives to reflect critically on their own roles, and on the ways they become embroiled — wittingly or unwittingly — in the struggles of other actors. By making institutional interactions explicit, and by situating these within an understanding of the dynamics of both social and environmental realms, the environmental entitlements approach offers one route to a more reflective, analytic and, hopefully, effective intervention in this important and challenging area of development endeavor.

NOTES

1. This case study, documented more fully in Kepe (1997a, b), was carried out for the Environmental Entitlements project by Thembela Kepe, in collaboration with the Programme for Land and Agrarian Studies, University of the Western Cape, South Africa, with local supervision from Professor Ben Cousins.

2. The Ghana case study (Afikorah-Danquah, 1997, 1998) was carried out by Seth Afikorah-Danquah in collaboration with the Department of Geography and

Resource Development, University of Ghana at Legon, with local supervision from Professor Edwin Gyasi.

3. The India case study (Ahluwalia, 1997, 1998) was carried out by Meenakshi Ahluwalia in collaboration with Seva Mandir and the Institute of Development Studies, Jaipur, with local supervision from Dr. M.S. Rathore.

4. Within this descriptive framework, Sen had a broader agenda, deriving from particular moral philo-

sophical concerns, which point to the injustice in a legal system which can legally permit people to starve (Sen, 1981). In order to highlight this moral point, Sen did at times refer to "entitlements" in a normative sense, and initially restricted the notion of entitlements to command over resources through formal legal arrangements, thus downplaying other extralegal, informal means of gaining access to resources (Gore, 1993).

5. These differ in certain respects from our earlier work on environmental entitlements (Leach and Mearns, 1991; Mearns, 1995b, 1996a), which did not effectively establish the distinction between endowments and entitlements (Gasper, 1993).

6. Devereux (1996) identifies units of analysis as one of two important sources of "fuzziness" in Sen's entitlements approach. For Sen the unit of analysis is held to be the individual, but the analysis may also apply at the collective level (e.g., household, group, class) by assuming a notional "representative individual". Devereux is concerned that this device "sidesteps the reality that any group of people is composed of diverse individuals who are neither homogeneous nor "representative" (Devereux, 1996, p. 2). We adopt the "social actor" as our unit of analysis, which both meets Sen's (and Osmani's) requirements and overcomes Devereux's concern. While "social actor" will often refer to an individual person, it could also refer to a group who share a certain set of characteristics (e.g., age, class, gender, caste) held to be important for the particular entitlement mapping in question. The empirical contexts with which we are concerned, like Devereux's, are characterized by property rights that overlap and are contested. (Devereux identifies this as the second source of fuzziness in the entitlements approach). The use of "social actor" as the unit of analysis allows for multiple, complex resource claims to be separately specified to the level of actors who share similar bundles of claims without necessarily moving to the level of each individual person. It is not necessary for analytical purposes to disaggregate to all possible degrees of difference among social actors in order to demonstrate the importance of particular forms of entitlement mapping for different social actors.

7. For the purposes of our analysis, we adopt the following working definitions, based on Leach and Mearns (1991). *Environmental goods* refer to the specific source (material and energy natural-resource) inputs that are essential to sustaining the livelihoods of present and future generations of people. *Environmental services* refer to sink (pollution-absorbing) and other service functions of the environment (e.g., the hydrological cycle) that are also essential to sustaining the livelihoods of present and future generations of people. Environmental goods are *resources* in the sense that they are "materials available 'in nature' that are capable of being transformed into things of utility to man [sic]" (Harvey, 1979, p. 178). As Harvey makes clear, resources can only be defined in relational terms, and are a function of a knowledge and technology within a given cultural context.

8. Jenkins (1997) includes a very useful discussion on questions of illegality and enforceability in the context of entitlement mapping processes, where forms of legitimacy for contested resource claims come into conflict with one another. For our purposes, we maintain the practical distinction that while endowments may include various formal and informal rights over resources that social actors have in principle, entitlements refer to the sets of utilities they are able to derive in practice.

REFERENCES

Adams, J.S., McShane, T. O. (1992). The myth of wild Africa: Conservation Without Illusion, University of California Press, Berkeley.

Afikorah-Danquah, Seth, (1997). Local resource management in the forest-savanna transition zone: The case of Wenchi District, Ghana, *IDS Bulletin* **28** (4), 36–46.

Afikorah-Danquah, Seth, (1998). Local resource management in the forest-savanna transition zone: The case of Wenchi District, Ghana. Report Commissioned by The Global Economic Change Programme, ESRC, May, Institute of Development Studies, University of Sussex, Brighton.

Agyemang, M., (1996). The leaf gatherers of Kwapanin, Ghana. Forest Participation Series No 1, Forestry and Land Use Programme, IIED, London.

Ahluwalia, Meenakshi, (1997). Representing communities: The case of a community-based watershed management project in Rajasthan, India. *IDS Bulletin* **28** (4), 23–34.

Ahluwalia, Meenakshi, (1998). Representing communities: watershed management in the Aravalli Hills, Rajasthan, India.

Allen, T., Hoekstra T. (Eds), (1991). Ecological Heterogeneity. Springer-Verlag, Berlin.

Amanor, K. S., 1993. Wenchi Farmer Training Project: Social/environmental baseline study, ODA Assignment, ODA, London.

Appadurai, A., (1984). How moral is South Asia's economy? *Journal of Asian Studies* **43** 481–497.

Arnstein, S., (1969). A ladder of citizen participation. *Journal of the American Institute of Planners* **35** 216–224.

Baland, J.-M., Platteau, J.-P. (1996). Halting degradation of natural resources: Is there a role for rural communities?, Clarendon Press for FAO, Oxford.

Bassett, T.J., (1988). The political ecology of peasant-herder conflicts in the northern Ivory Coast. *Annals of the Association of American Geographers* **78** (3), 453–472.

Bates, R. H., (1995). Social dilemmas and rational individuals: an assessment of the new institutionalism. In Harris, J. Hunter J. and Lewis C.M. (Eds). The New Institutional Economics and Third World Development, Routledge, London pp. 27–48.

Bebbington, A., (1994). Theory and relevance in indigenous agriculture: knowledge, agency and organization. In Booth, D. (Ed.) Rethinking Social Development: Theory, Research and Practice, Longman, Harlow pp. 202–225.

Bender, B., (1993). Landscape: Politics and Perspectives, Berg Press, Providence and Oxford.

Berkes, F., (1995). Community-based management and co-management as tools for empowerment. In Singh N. and Titi V. (Eds.), Empowerment: Towards Sustainable Development, Zed Books, London pp. 138–146.

Berry, S., (1989). Social institutions and access to resources. Africa **59** (1), 41–55.

Berry, S., (1993). No Condition is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa. University of Wisconsin Press, Madison.

Blaikie, P., Brookfield, H. (1987). Land Degradation and Society. Methuen, London and New York.

Borrini-Feyerabend, G., (1996). Collaborative Management of Protected Areas: Tailoring the Approach to the Context. IUCN, Gland, Switzerland.

Botkin, D., (1990). Discordant Harmonies: A New Ecology for the Twenty-First Century. Oxford University Press, Oxford.

Bowles, S., Gintis, H. (1993). The revenge of homo economicus: contested exchange and the revival of political economy. *Journal of Economic Perspectives* **7** (10), 83–102.

Bradbury, M., Fisher, S., Lane, C., (1995). Working with pastoralist NGOs and land conflict in Tanzania. IIED London.

Bryant, R. L., (1992). Political ecology: an emerging research agenda in Third World studies. *Political Geographical Quarterly* **11** (1), 12–36.

Bryant, C., Jary, D. (1991). Introduction: coming to terms with Anthony Giddens. In Bryant, C. and Jary D. (Eds.), Giddens Theory of Structuration: A Critical Appreciation, Routledge, London, 1–31.

Carney, J., Watts, M. (1991). Manufacturing dissent: work, gender and the politics of meaning in a peasant society. Africa **60** (2), 207–241.

Carruthers, J., (1995). The Kruger National Park: A Social and Political History. University of Natal Press, Pietermaritzburg.

Caughley, G., (1977). The Analysis of Vertebrate Populations. John Wiley and Sons, Chichester.

Chanock, M., (1985). Law, Custom and Social Order: The Colonial Experience in Malawi and Zambia. Cambridge University Press, Cambridge.

Cherrett, J. (Ed), (1987). Ecological Concepts: The Contribution of Ecology to an Understanding of the Natural World. Basil Blackwell, Oxford.

Clements, F., (1916). Plant succession: an analysis of the development of vegetation. Publication No. 242, Carnegie Institute, Washington DC, 1–512.

Conroy, C., Litvinoff, M. (Eds.), (1988), The Greening of Aid: Sustainable Livelihoods in Practice. Earthscan Publications, London and IIED, London.

Cosgrove, D. E., (1984). Social Formations and Symbolic Landscape. Croom Helm, London and Sydney.

Dasgupta, P., (1996). Trust, social capital and economic analysis. Paper presented at the Fourth World Bank Conference on Environmentally Sustainable Development, Washington DC, September 25–27 .

de Janvry, A., Sadoulet, E. and Thorbecke, E. (1993). State, market and civil organizations: new theories, new practices, and their implications for rural development. *World Development* **21** (4), 565–575.

Devereux, S., (1988). Entitlements, availability and famine: a revisionist view of Wollo, 1972–74. *Food Policy* **13** (3), 270–282.

Devereux, S., (1996). Fuzzy entitlements and common property resources: Struggles over rights to communal land in Namibia. IDS Working Paper No 44, IDS, Brighton.

Drèze, J., Sen, A. (1989), Hunger and public action. WIDER Studies in Development Economics Series, Clarendon Press, Oxford.

Duncan, J., Ley and D. (Eds), (1993). Place/Culture/Representation, Routledge, London.

Dunning, J., Stewart, D. (1995). Spatially explicit population models: current forms and future uses. *Ecological Applications* **5** (1), 3–11.

Durning, A. B., (1989). Poverty and the environment: Reversing the downward spiral. Worldwatch Paper 92, Worldwatch Institute, Washington DC.

The Ecologist, (1972). Blueprint for survival. *The Ecologist* **2** (1), 1–43.

Ehrlich, P., and Ehrlich, A. (1991). The Population Explosion. Hutchinson, London.

Elner, S., Turchin, P. (1995). Chaos in a noisy world: new methods and evidence from time series analysis. *American Naturalist* **15** (3), 343–375.

Fairhead, J., Leach, M. (1996). Misreading the African landscape: Society and ecology in a forest-savanna mosaic. Cambridge University Press, Cambridge and New York.

Fairhead, J., Leach, M. (1998). Reframing Deforestation: Global Analysis and Local Realities: Studies in West Africa. Routledge, London.

Falconer, J., (1990). The major significance of "minor" forest products: local people's uses and values of forest in the West African humid forest zone. Community Forestry Note No 6, FAO, Rome.

Feeley, J., (1987). The early farmers of Transkei, southern Africa, before AD 1870. Cambridge Monographs in African Archaeology No 24, BAR International Series No 378, Cambridge.

Fortes, M., Evans-Pritchard E. (Eds), (1940). African Political Systems. Oxford University Press, Oxford.

Franzén, L.-O., Trotset i Nayakheda (Defiance in Nayakheda). In Dagens Nyheter, Stockholm.

Gambetta, D., (1988). Can we trust trust? In Gambetta D. (Ed.), Trust: Making and Breaking Cooperative Relations. Basil Blackwell, Oxford.

Gasper, D., (1993). Entitlements analysis: relating concepts and contexts. *Development and Change* **24**, 679–718.

Ghai, D., and Vivian J. (Eds.), (1992). Grassroots Environmental Action: People's Participation in Sustainable Development. Routledge for UNRISD, London.

Ghai, D. (ed.), (1994). Development and Environment: Sustaining people and Nature, (special issue) *Development and Change* **25** (1).

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

Glacken, C., (1967). Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century. University of California Press, Berkeley.

Goetz, A. M., (1996). Understanding gendered institutional structures and practices at the macro, meso and micro levels. Mimeo, Institute of Development Studies, Brighton.

Gore, C., (1993). Entitlement relations and unruly social practices: a comment on the work of Amartya Sen. *Journal of Development Studies* **29** (3), 429–460.

Guyer, J., Richards, P. (1996). The invention of biodiversity: social perspectives on the management of biological variety in Africa. Africa **66** (1), 1–13.

Harriss, J., Hunter J. Lewis, C.M. (1995). Introduction: development and significance of NIE. In Harriss, J. Hunter J. and Lewis C.M. (Eds.), The New Institutional Economics and Third World Development. Routledge, London, pp. 1–13.

Harvey, D., (1979). Population, resources, and the ideology of science. In Gale, S. and Olsson G. (Eds.), Philosophy in Geography, Dordrecht: D. Reidel: 155–185 (first published in *Economic Geography* Vol **50** [1974]).

Hastings, A., Hom, C. Ellner, S. Turchin P. Godfray, C. (1993). Chaos in ecology: is mother nature a strange attractor? *Annual Review of Ecology and Systematics* **24**, 1–33.

Hobley, M., (1992). Policy, rights and local forest management: the case of Himachal Pradesh, India. Rural Development Forestry Network Paper No 13b, ODI, London.

Holdcroft, Lane E., (1984). The rise and fall of community development 1950–65: A critical assessment?. In Eicher Carl K. and Staatz John M. (Eds.), Agricultural Development in the Third World. Baltimore and London: Johns Hopkins University Press.

Holmberg, J., Thompson K. Timberlake, L. (1993). Facing the Future: Beyond the Earth Summit. IIED/Earthscan, London.

Hoskins, W. G., (1955). The Making of the English Landscape. Hodder and Stoughton, London.

Humphrey, J., Schmitz, H. (1996). Trust and economic development. IDS Discussion Paper No 355, IDS, Brighton.

IUCN/WWF/UNEP, (1991). Caring for the Earth: a Strategy for Sustainable Living, IUCN, WWF and UNEP, Gland, Switzerland.

Jenkins, H., (1997). Social response to environmental injustice: legal and moral gateways to entitlement. Mimeo, Department of Law, School of Oriental and African Studies, University of London.

Kabeer, N., Subrahmanian, R. (1996). Institutions, relations and outcomes: frameworks and tools for gender-aware planning. IDS Discussion Paper No 357, IDS, Brighton.

Kepe, Thembela, (1997a). Communities, entitlements and nature reserves: The case of the Wild Coast, South Africa. IDS Bulletin **28** (4), 47–58.

Kepe, Thembela, (1997b). Environmental entitlements in Mkambati: Livelihoods, Social Institutions and environmental change on the Wild Coast of the Eastern Cape. Research Report No. 1, Programme for Land and Agrarian Studies, School of Government, University of the Western Cape.

Kolasa, J., Pickett S. (Eds.), (1991). Ecological Heterogeneity. Ecological Studies No 86, Springer-Verlag, Berlin.

Leach, M., (1994). Rainforest relations: Gender and resource use among the Mende of Gola, Sierra Leone. Edinburgh University Press, Edinburgh.

Leach, M., Mearns, R. (1991). Poverty and environment in developing countries: An overview study. Report to ESRC, Global Environmental Change Programme; and Overseas Development Administration, ESRC, Swindon.

Li, T.M., (1996). Images of community: discourse and strategy in property relations. *Development and Change* **27**, 501–527.

Long, N., Long A. (Eds.), (1992). Battlefields of Knowledge: The Interlocking of Theory and Practice in Social Research and Development, Routledge, London.

Long, N., and van der Ploeg, J. D. (1989). Demythologizing planned intervention: an actor perspective. *Sociologia Ruralis* XXIX (3/4), 227–249.

Long, N. and van der Ploeg, J. D. (1994). Heterogeneity, actor and structure: towards a reconstitution of the concept of structure. In Booth, D. (Ed.), Rethinking Social Development: Theory, Research and Practice. Longman, Harlow.

MacArthur, R., Wilson, E. (1967). The Theory of Island Biogeography. Princeton University Press, Princeton.

McIntosh, R., (1985). The Background of Ecology: Concept and Theory. Cambridge University Press, Cambridge.

Mearns, R., (1991). Environment implications of structural adjustment: reflections on scientific method. IDS Discussion Paper 284, Institute of Development Studies, University of Sussex, Brighton.

Mearns, R., (1995a). Institutions and natural resource management: Access to and control over woodfuel in East Africa. In Binns, T. (Ed.), People and Environment in Africa. John Wiley & Sons, Chichester, pp. 103–114.

Mearns, R., (1995b). Environmental entitlements: Towards empowerment for sustainable development. In

Singh N. and Titi V. (Eds.), Empowerment: Towards Sustainable Development. Zed Books, London, pp. 37–53.

Mearns, R., (1996a). Environmental entitlements: pastoral natural resource management in Mongolia. Cahiers des Sciences Humaines 32 (1), 105–131.

Mearns, R., (1996b). Community, collective action and common grazing: the case of post-socialist Mongolia. *Journal of Development Studies* 32 (3), 297–339.

Mearns, R., (1996c). Commons and collectives: The lack of social capital in Central Asia's land reforms. IDS Working Paper No 40, IDS, Brighton.

Mehta, Lyla, (1997). Social difference and water resources management: Insights from Kutch, India. In IDS Bulletin 28 (4), 79–89.

Moore, D. S., (1993). Contested terrain in Zimbabwe's Eastern Highlands: political ecology, ethnography and peasant resource struggles. *Economic Geography* 69 (4), 380–401.

Mosse, D., (1997). The symbolic making of a common property resource: History, ecology and locality in tank-irrigated landscape in South India, *Development and Change*, 28 (3).

Mosse, D., (1994). Authority, gender and knowledge: Theoretical reflections on the practice of participatory rural appraisal. *Development and Change* 25, 497–526.

Nelson, N., Wright, S., (1995). Power and Participatory Development: Theory and Practice. IT Publications, London.

Nolan, P., (1993). The causation and prevention of famines: A critique of A.K. Sen. *Journal of Peasant Studies* 21 (1), 1–28.

North, D. C., (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press, Cambridge.

Nuitjen, M., (1992). Local organization as organizing practices: rethinking rural institutions. In Long, N. and Long A. (Eds.), Battlefields of Knowledge: The Interlocking of Theory and Practice in Social Research and Development. Routledge, London.

Nyerges, E., (1997). The Ecology of Practice: Studies of Food Crop Production in Sub-Saharan West Africa. Gordon and Breach, Amsterdam.

Odum, E., (1953). Fundamentals of Ecology. Saunders, Philadelphia.

ONeill, R., De Angelis, D. Waide, J. Allen T. (Eds.), (1986). A Hierarchical Concept of Ecosystems. Princeton University Press, Princeton.

Peet, R., Watts M. (Eds.), (1996). Liberation Ecologies: Environment, Development and Social Movements. Routledge, London.

Pimbert, M., Pretty, J. (1995). Parks, people and professionals: Putting participation into protected area management. UNRISD Discussion Paper No 57, UNRISED, Geneva.

Pimm, S., (1991). The Balance of Nature? Ecological Issues in the Conservation of Species and Communities. University of Chicago Press, Chicago.

Pretty, J., Guijt, I. (1992). Primary environmental care: an alternative paradigm for development assistance. *Environment and Urbanization* 4 (1), 22–36.

Putnam, R. D., Leonardi R. and Nanetti, R.Y. (1993), Making Democracy Work: Civic Traditions in Modern Italy. Princeton University Press, Princeton, NJ.

Radcliffe-Brown, A. R., (1952). Structure and Function in Primitive Society. Cohen and West, London.

Rappaport, R. A., (1968). Pigs for the Ancestors: Ritual in the Ecology of a New Guinean People. Yale University Press, New Haven, .

Redclift, M., Woodgate, G. (1994). Sociology and the Environment: Discordant discourse?. In Redclift, M. Benton T. (Eds.), Social Theory and the Global Environment, Routledge, London, pp. 51–66.

Rocheleau, D., *et al.* (Eds.), (1996). Feminist Political Ecology: Global Issues and Local Experiences. Routledge, London.

Roe, E., (1991). "Development narratives" or making the best of development blueprints. *World Development* 19 (4), 287–300.

Roe, E., (1995). Except Africa: Postscript to a special section on development narratives. *World Development* 23 (6), 1065–1070.

Runge, C.F., (1986). Common property and collective action in economic development. *World Development* 14 (5), 623–635.

Sarin, M., (1995). Regenerating India's forests: reconciling gender equity with joint forest management. IDS Bulletin 26 (1), 83–91.

Sauer, C.O., (1925). The morphology of landscape. *University of California Publications in Geography* 2 (2), 19–53.

Schotter, A., (1981). The Economic Theory of Social Institutions. Cambridge University Press, Cambridge.

Schumacher, E. F., (1973). Small is Beautiful: A Study of Economics as if People Mattered. Blond and Briggs Ltd, London.

Scoones, I. (forthcoming). Non-equilibrium ecology and the social sciences: is a new social ecology emerging? *Annual Review of Anthropology* 28.

Scoones, I. (1995). New directions in pastural development in Africa. In: Scoones, I. (Ed.) *Living with Uncertainty. New Directions in Pastural Development in Africa*. Intermediate Technology Publications, London, pp. 1–37.

Sen, A. (1981). Poverty and Famines: an Essay on Entitlement and Deprivation. Oxford University Press, Oxford.

Sen, A., (1984). Rights and capabilities. In: Sen, A. Resources, Values and Development. Basil Blackwell, Oxford, pp. 307–324.

Sen, A., (1985). Commodities and Capabilities. Elsevier Science Publishers, Amsterdam.

Stewart, F., (1996). Groups for good or ill. *Oxford Development Studies* 24 (1), 9–26.

Swallow, B. M., Meinzen-Dick, R. Jackson, L. A. Williams, T. O. White, T. A. (1997). Multiple functions of common property regimes. EPTD Workshop Summary Paper 5, IFPRI, Washington DC.

Turner, M., (1989). Landscape ecology: The effect of pattern on process. *Annual Review of Ecology and Systematics* 20, 171–197.

Watts, M., (1991). Entitlements or empowerment? Famine and starvation in Africa. *Review of African Political Economy* **51**, 9–26.

WCED, (1987). Our Common Future. Report of the World Commission on Environment and Development. Oxford University Press, Oxford.

Western, D., Wright M. and Strum S. (Eds.), (1994). Natural Connections: Perspectives in Community-Based Conservation. Island Press, Washington DC.

Williams, M., (1994). The relations of environmental history and historical geography. *Journal of Historical Geography*, **20**, 3–21.

Worster, D., (1985). Nature's Economy: A History of Ecological Ideas. Cambridge University Press, Cambridge.

Worster, D., (1990). The ecology of order and chaos. *Environmental History Review* **14**, 1–18.

Worster, D., (1993). The Wealth of Nature: Environmental History and the Ecological Imagination. Oxford University Press, New York and Oxford.

Zimmerer, K., (1994). Human geography and the new ecology: The prospect and prospect of integration, *Annals of the Association of American Geographers* **84** (1), 108–125.