

Editorial: Environmental Governance in an Uncertain World

Lyla Mehta, Melissa Leach and
Ian Scoones

IDS Bulletin 32.4, 2001

© Institute of Development Studies 2001



Editorial: Environmental Governance in an Uncertain World

Lyla Mehta, Melissa Leach and Ian Scoones*

Article

1 Introduction

If a single motif could capture realities in today's world, uncertainty – and the complexity, which underlies it - would be a likely candidate. Ecological, social, political and economic systems are undergoing change at a rapid pace. Changes occur simultaneously at multiple scales, in space and over time, and through numerous forms of geographical interdependence and historical path-dependency. Economic globalisation, shifting patterns of political governance, and new expressions of community and identity are all part of this growing complexity, as both contributors and responses to it. Interactions within and between processes and systems constantly generate unpredictable outcomes and surprises; the result is a world which is inherently less predictable and knowable. In this context, conventional models which have guided the study of environment and development interventions, based on notions of equilibrium and predictability, fail to hold up.

In this *IDS Bulletin*, we focus on local natural resource issues as one key area of environmental governance, asking how rural people sustain their livelihoods in an uncertain world and what institutional arrangements mediate their access to resources. We argue that the recognition of uncertainty and complexity requires a significant re-thinking of conventional wisdoms concerning resources, resource users, community and institutions governing common property. The past few decades have seen community-based, decentralised and participatory approaches to natural resource management proliferate in national and international donor agendas. While these approaches have rightly focused on the role of local people and institutions in resource use and conservation, their efforts have often been undermined by failure to take on board socio-political, economic and ecological dynamics and complexities ranging from the local to the global. Thus in the run-up to the 2002 Johannesburg (Rio + 10) Summit, it is a good time to reflect on how assumptions shaping the landscape of environment and development can be made more attuned to the uncertain world we live in, in order to develop more appropriate and effective approaches to environmental governance.

* This article was first published in the *IDS Bulletin* Volume 32 No 4 'Environmental Governance in an Uncertain World' edited by Lyla Mehta, Melissa Leach and Ian Scoones. © Institute of Development Studies 2001. 1

2 Conceptualising uncertainty

Uncertainty describes a situation where we don't know what we don't know. This is importantly distinct from risk, where probabilities of outcomes can be calculated (cf. Knight 1921; Douglas 1985). We highlight four different types of uncertainty relevant to people's use of natural resources (see Mehta *et al.* 1999, for a more complete discussion):

2.1 Ecological uncertainties

Environments have usually been understood in terms of being stable and in balance. Any shifts are seen to disturb this. However, changing understandings in ecology have challenged such ideas (e.g. Zimmerer 1994; Scoones 1999): ecosystems are increasingly seen to be characterised by variability and unpredictability, with non-equilibrial dynamics often being the norm.

2.2 Livelihood uncertainties

Natural resource management has tended to focus on the micro level, ignoring the unpredictable nature of broader ecological, economic and social processes, and the uncertainties they create for local livelihoods. Rapid and unexpected environmental change originating elsewhere can cause hazards such as droughts, floods and pollution, affecting people's natural environments and their livelihood strategies. Economic systems, too, are in a constant state of flux with, for example, global capital flows or exchange rate fluctuations affecting the livelihoods of local cultivators and determining the future of their products.

2.3 Knowledge uncertainties

Uncertainty in knowledge results out of the partial and incomplete nature of different kinds of knowledges. Both lay and scientific knowledge perspectives are plural, partial, contingent, situated and contested (e.g. Funtowicz and Ravetz 1993; Wynne 1990; Harding 1987) and are located within particular institutional settings. The focus on knowledge uncertainties helps us to appreciate the multiple meanings and viewpoints that different people attach to natural resources, and their plural and partial nature (Mehta *et al.* 1999).

2.4 Social and political uncertainties

Changing socio-political configurations often lead to uncertainty, as do multiple forms of political action or development intervention, which can interact to generate unanticipated outcomes.

Uncertainty is experienced very differently in different places, and amongst people distinguished by wealth, background, gender, social or political affiliation, and so on. Differentiated experiences of and capacity to cope with uncertainty, we believe, increasingly define the contours of inequality within and across countries, regions and social groups.

3 Evaluating the legacy of natural resource management theory

How then have mainstream approaches in natural resource management dealt with uncertainty and what is their legacy? Most analyses in the natural resource management field have drawn, whether implicitly or explicitly, on approaches grounded in Common Property Resources (CPR) theory which in turn draws on New Institutional Economics (NIE). This work has contributed significantly to establishing that institutions matter and that local people, as well as state governments, can successfully manage resources through common property regimes varying in scale and space.¹ This work has also succeeded in undermining the simplistic premises of the ‘tragedy of the commons’ hypothesis, and the policy implications that followed from it. By demonstrating theoretically, and in some cases empirically, the potentials for collective action in natural resource management, this work has provided a foundation for a whole wave of experimentation in community-based management based on common property resources.

The transaction cost and collective action approaches central to NIE see institutions as key in eliminating uncertainty (see North 1990; Williamson 1985; Ostrom 1990). In the transaction costs approach, ‘institutions’ are seen as encompassing the formal rules and conventions and also informal codes of behaviour or norms that regulate human behaviour (North 1990). These institutions serve to minimise the costs of constantly monitoring and responding to others’ individually motivated behaviour and are thus efficient ways to reduce certain types of uncertainty. Common property analysts often take their theoretical grounding from game theory and show how rules can be purposively crafted to produce collective action (Ostrom 1990). Institutions are seen as ‘rules of the game’ and collective action is seen as a rational option that produces results beneficial to all, whereas self-interested action would produce sub-optimal results for the collective. In such thinking, institutions regulate action to eliminate uncertainty, with the latter seen largely in terms of people’s behaviour.

There is no denying the important policy lessons that arise from these approaches. In recognising the importance of institutions, this has resulted in investment in establishing formal legal systems, fixing property regimes, and formalising informal institutional arrangements. CPR theory establishes the conditions under which these institutions will work best and specifies ‘design principles’ which include the need for clear resource boundaries, relative socio-economic homogeneity among users, sanctions,

rules, monitoring and so on (Ostrom 1990; Wade 1988). A wide variety of empirical cases indicate, however, that these conditions are not so easy to re-create, and that institutions which are already managing natural resources were rarely designed for such purposes (Lawry 1990; Mehta, forthcoming).

In recent years a growing number of authors has employed historical, sociological and anthropological approaches to point to some of the limitations of simplistically-applied CPR approaches to studying and promoting the role of institutions in NRM (e.g. Mosse 1997; Mehta, forthcoming; Cleaver 2000; Potkanski and Adams 1998; Leach *et al.* 1999). This work has criticised the tendency to valorise the virtues of indigenous institutional arrangements without understanding their complexity. Criticism is also leveled at the use of ahistorical and apolitical understandings of institutions and at static notions of the dynamic relationship between individuals and institutions. Furthermore, critics point out, CPR approaches frequently assume a non-interactive divide between formal and informal institutions. Thus, policy prescriptions have focused either on state-level recommendations or on local-level or informal institutions. This dichotomy has become a self-fulfilling prophecy, helping to create formal-informal divides in practice, while denying empirical evidence showing the overlaps and interrelationships between various institutional domains. In this “messy middle” institutional arrangement are often highly contested, beset with ambiguities and open to diverse interpretations (Mehta *et al.* 1999). The use of simplistic notions of the ‘community’ and community-based sustainable development in natural resource governance has also been criticised (see for example: Li (1996), Agrawal and Gibson (1999), Mosse (1997), Leach *et al.* 1999). Such perspectives encourage a vision of community as bounded, homogenous, local and designated to a particular “user group”, neglecting questions of social difference and the diverse- sometimes conflicting - concerns of resource users.

4 Emerging views

Taking uncertainty seriously calls, we argue, for a rethinking of certain key assumptions embedded in over-simplistic applications of such CPR perspectives. The following table summaries some key distinctions between what we term ‘mainstream’ views and ‘emerging’ views (recognising of course that in reality things are not so neatly divided). Where ‘mainstream’ views focus on local areas, bounded communities and rule-based management, emerging views look at look at multiple levels (global to local), diversity (in terms of livelihoods and perceptions) and see institutions as part of a constant process of negotiation that involves power and conflicting interests within communities, and between their members and other actors. Emerging views try to break down the distinctions between local/global and between formal/informal institutions in order to understand better the complexities and uncertainties that face the governance of natural resources today.

Emerging views have also enhanced our understanding of institutions. There is no standard definition of institutions and they can be seen as both enabling (in terms of providing means through which people negotiate their ways through the world) or constraining (in providing rules for action). While mainstream views have tended to focus on institutions either as rules or as formal organisation, emerging views shy away from functionalist and managerialist perspectives. Instead, institutions are viewed in more processual and dynamic terms and as the products of social and political practices.

Theme	Mainstream views	Emerging views
Livelihoods and natural resource management	Links between single resource and use (e.g. Rangelands, forests, fisheries)	Multiple users, complex and diverse livelihood systems
Community	Local, specific user groups, homogenous, bounded	Multiple locations, diffuse, heterogeneous, diverse, multiple social identities
Institutions	Static, rules, functionalist, formal	Social interaction and process, embedded in practice, struggles over meaning; formal and informal; interlinked with knowledge and power
Property regimes	CPRs as a set of rules based on collective action outcomes; clear boundaries	Practice not rule determined; strategic; tactical; overlapping rights and responsibilities; ambiguity, inconsistency, flexibility
Legal systems	Formal legislation	Law in practice; different systems co-existing
Resources	Material, economic, direct use-value, property	Also as symbolic, with meanings that are locally and historically embedded and socially constructed
Knowledge	Linear transfer; science as sole source of expertise	Multiple sources; plural and partial perspectives; negotiated understandings
Power and control	Transaction cost focus; elites; community leaders	Differentiated actors; conflict, bargaining, negotiation and power relations central
Governance	Separated levels – international, national, local; micro-level focus	Multi-level governance approaches; fuzzy/messy interactions; local and global interconnected

Source: Mehta *et al.* (1999).

Thus a recasting of the theoretical lens through which social and institutional arrangements seen, suggests a questioning of the managerialist approach, based on ‘design principles’, for natural resource governance.

Instead, with the acknowledgement of uncertainty and complexity as the starting point, a much more nuanced approach emerges; one where institutions are viewed as inextricably linked with people's cultures, beliefs and life-world. In this view, institutions are then seen as social practices and sites of ongoing negotiations, imbued with power relations (cf. Berry 1989 and 1993).

In different ways, all the contributions to this *IDS Bulletin* are representative of these emerging views. In the following sections, we introduce the *IDS Bulletin* articles and show how they help lay out some key challenges of the emerging agenda, in terms of theoretical frameworks, issues of political economy, and the rethinking of the relationship between institutions, community and environmental governance.

5 Theoretical frameworks for a post-institutionalist agenda?

The first set of papers in this *IDS Bulletin* provides a set of theoretical approaches that present alternatives to the mainstream views presented above. These approaches could constitute a 'family of resemblances' contributing to a 'post-institutionalist agenda' around a set of key overlapping critiques and concerns.ⁱⁱ These include challenging limited conceptions of human agency in theorising resource use; universalist conceptions of both resources and social identities, and traditional views of institutions as static, single-purpose and decontextualised. The articles seek to re-conceptualise resource uses and users in terms of new timeframes, multiple purposes, shifting frameworks and multi-functionality, by offering a constructivist perspective on resources and inserting institutions into social processes and practices.

The emerging field of *legal pluralism*, for example, recognises the co-existence of many different 'legal' frameworks, laws and rules by which people might access natural resources. As argued by Ruth Meinzen-Dick and Rajendra Pradhan, law is open to interpretation and is broader than statutory law. Legal pluralism recognises many sources of rights (including state, project, customary, religious laws), although the strength of these depends on the strength of the institutions behind them. People may engage in 'forum shopping' amongst these co-existing legal orders in their strategies for claiming use or control of resources – although social and power relations may shape different people's abilities to do so.

Natalie Steins' paper addresses how *Actor-Network Theory* (ANT) might help conceptualise how and why particular natural resource governance outcomes emerge. Rejecting a priori categories, ANT emphasises how knowledges and views of natural resource issues are socially constructed. It focuses on how individuals – as creative, knowledgeable agents – interact with others and with non-human 'actors' (e.g. natural resources, technological objects) in the formation and building of networks which establish particular perspectives as credible and lead to certain outcomes. In contrast with the 'rational individual'

perspective underlying much mainstream CPR theory, ANT offers a re-socialised conception of agency, seeing ordered networks of people and materials (*nested collectifs*) as the driving force behind human-resource / technology interactions. Its emphasis on the meticulous analysis of interactions, tactics, critical events and contexts from which NRM outcomes are built up contrasts, again, with the design principles perspective.

Frances Cleaver's paper also offers a critique of the design principles perspective by presenting the idea of *institutional bricolage*. People draw on existing mechanisms (social, cultural, symbolic resources and relationships) to form 'new institutions' under conditions of 'stress' on an ad-hoc basis. Thus, institutions are shaped historically by previous 'needs', by borrowing from different cultures, by incorporating rules and meanings from one area of life to another, and by drawing on the repertoire of local forms of decision-making. In its emphasis on the bricoleur as flexible 'amateur', on historical embeddedness, and on the multi-functionality of institutions as arenas for actor's different interests, this approach can be strongly contrasted with the mainstream approaches described above.

There are however some crosscutting arenas which could be strengthened in these theoretical approaches. First, there is a central need to incorporate power into the analysis, to address diverse loci of power, how power relations shape and are shaped by practices around institutions and natural resource governance, and the 'structural' constraints on apparently fluid processes. A second key challenge concerns how to incorporate issues of scale and history, integrating analysis of local institutions with political-economic and policy processes occurring nationally and globally. Third, it is important to integrate an understanding of institutions as practices – 'what people do' – and the ways this makes and re-makes social and power relations – with an understanding of 'institutions as discourse'; how certain images of institutions may be constructed and deployed 'strategically' in struggles over resources, power and policy.

6 Uncertainty and its political economy

The second set of articles focuses on the multiple forms of uncertainty. Ecological and livelihood uncertainties are presented in the paper by Richard Chase-Smith and his colleagues, which discusses the dynamic nature of floods and fisheries in the Peruvian Amazon. The authors argue that the tropical rhythms of the Tahuayo river combined with El Nino phenomena have led to an unpredictable hydrological regime and resource base confronting the El Chino community. Thus resource use and management have emerged as flexible and adaptive, waxing and waning according to these tropical rhythms. The other two articles by Ben Cousins and Christian Lund highlight the socio-political uncertainties associated with land tenure and its reforms in South Africa and Niger. Ironically, as Lund

demonstrates, land titling measures taken by the state in Niger, ostensibly to reduce the insecurity that rural people face daily, often increase uncertainty. They lead to the empowerment of the local Chef de Canton who has an ambiguous relationship with the state, accentuating the uncertainty of authority. The article by Cousins argues that even land rights policies that take into account the complex and variable nature of the South African land holding system are not effective unless they are accompanied by institutional support to enable right holders to claim their rights and seek legal redress.

Several more generic themes emerge from these papers, suggesting particular challenges for the development of new conceptual approaches. The first concerns multiple uncertainties: As Lund's and Cousins' paper demonstrates, analyses which focus on one or two sorts of uncertainty are led into describing a highly complex picture, full of flexible and fluid responses which elude conventional approaches to institutional design. Such conventional approaches can add new rules, which may even exacerbate uncertainty further. Instead institutions need to be adaptive and flexible, a response frequently best grounded in those, which already exist, or in local forms of negotiation. However each form of uncertainty also operates in interaction with others, multiplying complexity considerably. If, for example, Richard Chase-Smith et al. had discussed how socio-political uncertainties interact with tropical rhythms, there would be major challenges in dealing both analytically and practically with the interlocking of these multiple forms of uncertainty.

Second, these articles raise questions about the political economy of uncertainty: It is often assumed either that either uncertainty is a problem for livelihoods which could and should be reduced; or that it is an inevitable and intrinsic fact of life, which is lived with and coped with. However, the papers suggest that we need to dwell on ways in which uncertainty may be 'manufactured' – whether explicitly or implicitly. Questions then arise about the material and power relations which enable and which may be sustained through the manufacture of uncertainty, whether among village patrons who create and sustain their control over clients through repeated litigation, or multi-national companies whose interests in wage labour are better served by smallholders' insecure rights to land. This puts aspirations to 'manage' uncertainty in a new light. Whether one should attempt to reduce it or not should be seen as part of intensely political processes.

Uncertainty therefore needs to be understood not only in terms of processes and practices in social life and resource use, but also as a concept that can be created and deployed strategically by different actors. For example, how are ideas about the uncertainty effects of El Nino linked with wider political processes at the regional and national level in Peru? Or how do particular bureaucratic styles, geared to eliminate

uncertainty and complexity, result in the imposition of certain forms of development from above? Such questions push us to reflect on the cultural, political and discursive contexts for the deployment of uncertainty (and order or stability), as part of the development process.

7 Rethinking institutions, community and environmental governance

Much 'mainstream' work on institutions and natural resource management has focused on 'local' processes and people's interactions with natural resources in particular places. While acknowledging the value of this micro perspective, the final set of articles argues for the need to link local analysis upwards and outwards to other national, regional and global scales. They illustrate how people's resource use practices are increasingly shaped by intersections with larger-scale processes. These raise fundamental questions concerning the efficacy of conventional managerialist assumptions. Thus the article by Diane Rocheleau discusses how issues of drought, military and state interventions create surprise situations that interplay with women's social movements and community identities around land in Kenya. Tania Li's paper links local resource struggles and agrarian differentiation in upland Indonesia with trends in the global cocoa market. Tidiane Ngaigo et al. describe how intensified market relations shape sheep owners' strategies in the Syrian rangelands, while Le Thi Van Hue looks at mangrove forest use in the context of shifting governance regimes in Vietnam.

Several inter-related themes emerge. First, a replacement of bounded ideas of 'community' (as are so frequently found in discussions of community-based natural resource management) with a picture instead of heterogeneity (around gender, age, origins and so on) and diverse groups based on entities and affinities; affinities which could link local, state and other actors, across scales. The 'social glue' that holds together a given 'we group' might be kinship, but could equally come from many other sources. The shifting, dynamic relationships between these groups might well be analysed in terms of actor-network concepts (Steins, this *IDS Bulletin*) or as Diane Rocheleau suggests, in terms of 'neural pathways and nodes' (this *IDS Bulletin*). Second, the identity and label of 'community' – around organisations or interests – may nevertheless be invoked strategically by diverse actors as part of negotiating and re-negotiating relationships within these networks. Cases in point might include donors' and governments' need for notions of 'community' as part of 'cultures of control'; or the appropriation of notions of community by local people in order to gain access to development resources and state support (Li 1996).

The different types of uncertainties discussed earlier invariably engender new institutional dynamics. For example, people might create new mechanisms to deal with livelihood loss arising due to global economic shifts. In turn, these new conditions will provoke new kinds of responses from natural resources users

which in turn can lead to new sets of institutions and more-or-less regularised practices, as demonstrated by Diane Rocheleau's study of the changing nature of women's self-help groups' responses to drought in Kenya. By investing in multiple institutions with different meanings people can cope with various kinds of ecological and livelihood uncertainty, and thus keep open diverse options and opportunities which would help them deal with future vagaries arising from social, political-economic or ecological processes (Mehta *et al.* 1999).

The histories of 'communities' are embedded in shifting state regimes, colonially and post-colonially, and changing global markets and connections. While problems may be identified as 'local', it is often global issues that set the agenda of, say, what is cut in mangroves or forests (as shown in Van Hue's article). In the context of shifting global agendas and opportunities, states may engage in changes of regime, governance and status that generate anxieties for some people and 'quick wealth' for others. The political economy of these processes is key. As Li warns us, it is the grab for land ownership propelled by the promise of economic gain through the cocoa boom, rather than the deficiency of institutions, that is shaping the transformation of livelihoods in Southeast Asia's upland populations (this *IDS Bulletin*). The preoccupation with managerial interventions may occlude the necessary, detailed analysis of agrarian struggles against the backdrop of wider economic and political processes (Li, this *IDS Bulletin* and Woodhouse *et al.* 2000).

8 Implications for research and practice

The 'post-institutionalist agenda' calls for a more ethnographic approach to resource use where the dynamic interplay of history, socio-political and economic context, process, practice and agency must be analysed. This of course does not mean rejecting all that went before. Indeed many of the insights from CPR theory and new institutionalist approaches remain pertinent. What is required, though, is a continued nuancing of such approaches (see for example Keohane and Ostrom 1995; Agrawal and Gibson 1999 and Ostrom *et al.* 1999), allowing for uncertainty and complexity to be put centre-stage. This will mean a downplaying of the importance of 'design principles' and managerialist forms of intervention, and a greater emphasis on power dynamics, negotiation and contestation of institutional arrangements across multiple scales.

One concern is that such a move could widen yet further the gap between research and analysis, and policy-making. If policy makers largely opt for legible and easily applicable prescriptions, for reasons of both administrative ease and political acceptability, then the suggestion that a more complex route to institutional change is required may not be readily accepted. But by contesting insistent bureaucratic

procedures which treat the world as stable, and which, by portraying things as more certain allow for management styles which support often heavy handed bureaucratic intervention, concerned scholars and activists may be able to challenge the framing of policy and the nature of policy making more fundamentally. ‘Uncertainty’ can variously be mobilised as a tool to help local people to help themselves, as a tool to manage or control them, or as a shield to against the effects of ‘simplicity’ imposed through policies from above.ⁱⁱⁱ

Such a political economy of uncertainty could be examined in relation to a ‘map’ of the complex, multi-leveled networks and alliances that now characterise the field of natural resource governance and policy processes. By mapping out competing discourses of uncertainty, the actor-networks promoting them, and the ways they interlock with political processes at a variety of levels, a ‘kaleidoscopic’ vision of alternative strategies for action could be defined, where diverse scales and multiple and partial positions are simultaneously compared, and negotiated between.^{iv} Such an approach, drawing on recent work in complexity theory, in turn has particular implications for how policy positions are conceived and arrived at.

Finally, there is a need for researchers and practitioners to locate themselves on such a map of local-global networks and fields of power, and consider how they might use their positions in particular types of alliance. There is scope for reflexivity about our own interest in uncertainty as researchers and practitioners: what are its politics and effects? Questions arise about how coalitions might be sought around various forms of activism, as well as in international arenas where broader governance issues are addressed around natural resource control and access. By reflecting on the possibilities of social and political engagement in wider activist and civil society alliances in both the North and South, researchers can thus attempt to contribute to a rights-based and socially just environmental agenda.

ⁱ See for example: Ostrom (1990), Bromley and Cernea (1989), Wade (1988.), Mackay and Acheson (1987) and Berkes (1989), among others.

ⁱⁱ These suggestions are owed to David Mosse, as part of his discussant’s comments at the workshop at which these papers were originally presented.

ⁱⁱⁱ These ideas were presented by Diane Rocheleau in a commentary at the workshop's final session.

^{iv} *Ibid.*

References

- Agrawal, A. and Gibson C.C. (1999) 'Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation', *World Development* 27.4: 629–49
- Berkes, F. (1989) *Common Property Resources. Ecology and Community Based Sustainable Development*, London: Belhaven Press
- Berry, S. (1993) *No Condition is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa*, Madison: University of Wisconsin Press
- Berry, S. (1989) 'Social Institutions and Access to Resources', *Africa* 59.1: 41–55
- Bromley, D.W. and Cernea, M. (1989) *The Management of Common Property and Natural Resources: Some Conceptual and Operational Fallacies*, Washington, DC: World Bank
- Cleaver, F. (2000) 'Moral Ecological Rationality, Institutions and the Management of Common Property Resources', *Development and Change* 31.2: 361–83
- Douglas, M. (1985) *Risk Acceptability According to the Social Sciences*, London: Routledge & Kegan Paul
- Funtowicz, S.O. and Ravetz, J.R. (1993) 'Science for the Post Normal Age', *Futures* 25.7: 739–55
- Harding, S.G. (ed.) (1987) *Feminism and Methodology: Social Science Issues*, Milton Keynes: Oxford University Press
- Keohane, R. and Ostrom, E. (eds) (1995) *Local Commons and Global Independence*, London: Sage
- Knight, F.H. (1921) *Risk, Uncertainty and Profit*, Chicago: Chicago University Press
- Lawry, S. (1990) 'Tenure Policy Toward Common Property Natural Resources in Sub-Saharan Africa', *Natural Resources Journal* 30: 403–22

-
- Leach, M., Mearns, R. and Scoones, I. (1999) 'Environmental Entitlements: Dynamics and Institutions in Community-based Natural Resource Management', *World Development* 27.2: 225–47
- Li, T.M. (1996) 'Images of Community: Discourse and Strategy in Property Relations', *Development and Change* 27.3: 501–27
- Mackay, J. and Acheson, J.M. (1987) *The Question of the Commons: The Culture and Ecology of Communal Resources*, Tucson: University of Arizona Press
- Mehta, L. forthcoming, 'Water, Difference and Power: Unpacking Notions of Water "Users" in Kutch, India', *International Journal of Water*
- Mehta, L., Leach, M., Newell, P., Scoones, I., Sivaramakrishnan, K. and Way, S. (1999) *Exploring Understandings of Institutions and Uncertainty: New Directions in Natural Resource Management*, IDS Discussion Paper 372, Brighton: IDS
- Mosse, D. (1997) 'The Symbolic Making of a Common Property Resource: History, Ecology, and Locality in a Tank-irrigated Landscape in South India', *Development and Change* 28.3
- North, D.C. (1990) *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press
- Ostrom, E. (1990) *Governing the Commons: The Evolution of Institutions of Collective Action*, Cambridge: Cambridge University Press
- Ostrom, E., Burger, J., Field, C.B., Norgaard, R.B., Policansky, D. (1999) 'Revisiting the Commons: Local Lessons, Global Challenges', *Science* 248: 278–84
- Potkanski, R. and Adams, W.M. (1998) 'Water Scarcity, Property Regimes and Irrigation Management in Sonjo, Tanzania', *Journal of Development Studies* 34.4: 86–116

Scoones, I. (1999) 'Ecological Dynamics and Grazing Resource Tenure: A Case Study from Zimbabwe', in M. Niamir-Fuller (ed.), *Transient Institutions in Common Property Management in Africa's Arid Lands*, London and Stockholm: Earthscan and Beijer Institute of Ecological Economics

Wade, R. (1988) *Village Republics*, Cambridge: Cambridge University Press

Williamson, O.E. (1985) *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, New York: Free Press

Woodhouse, P., Bernstein, H. and Hulme, D. (2000) *African Enclosures? The Social Dynamics of Wetlands in Drylands*, Oxford: James Currey

Wynne, B. (1990) 'Sheepfarming After Chernobyl – A Case Study in Communicating Scientific Information', in *Dirty Words: Writings on the History and Culture of Pollution*, London: Earthscan Publications

Zimmerer, K. (1994) 'Human Geography and the "New Ecology": The Prospect and Promise of Integration', *Annals of the Association of American Geographers* 84.1: 108–25