Indigenous Environmental Knowledge and its Transformations

Critical Anthropological Perspectives

Edited by Roy Ellen, Peter Parkes and Alan Bicker

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Cover: Kantu' smallholder tapping one of his rubber trees

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PREFACE

Roy Ellen, Peter Parkes and Alan Bicker

The workshop on which the present volume is based was held at the University of Kent at Canterbury in May 1997, under the title 'Indigenous environmental knowledge and its transformations'. It was funded by the Asia Committee of the European Science Foundation, and a brief report to the Foundation was published in the Summer Newsletter of the International Institute for Asian Studies in Leiden (1997, no. 13). The workshop was the third in a series organised under the auspices of the East-West Environmental Linkages consortium, an informal multidisciplinary network of individuals and institutions from Europe, North America and Asia.

The workshop was conceived as an opportunity to reflect critically on what is now widely described as 'indigenous knowledge' (specifically, traditional, local or folk knowledge of the environment), and sought to address the way such knowledge has been used, and by equal measure abused, in different cultural contexts; incorporated into official knowledge, caricatured, misused and misunderstood, repackaged and sometimes re-invented, through, successively, colonial science and top-down development strategies; and more recently through farmer-first approaches and the contemporary politics of 'indigenous' populations. As the introduction starts by pointing out, the workshop was not directly concerned to enter the practical and moral debates concerning the technical efficacy or value of indigenous knowledge. It took the empirical value of a great deal of IK for granted. By the same token it was not part of its remit to provide further empirical examples of IK in action or its applications in development, scientific or commercial contexts. There are many other books and articles which do this [e.g. Warren, Slikkerveer and Brokensha, 1995] and indeed many of the contributors to this volume have demonstrated their commitment to documenting the intricacies of local knowledge

systems and promoting their practical applications (e.g. Posey, Dove and Ellen). Rather, the workshop was motivated by observing the exponential growth in the applications of IK (see Sillitoe, 1998) and a feeling that it was time to take stock of its growth, to take a critical look at its underlying assumptions, methodologies and concepts; to stand back and place it in some kind of grounded theory of ideas and practices.

All chapters in the present volume, with the exception of those by Peter Brosius and Peter Parkes, were prepared especially for the workshop, and appear here in a revised form. Earlier, and slightly modified, versions of the chapters by Ellen and Harris; Posey; and Masipiqueña, Persoon and Snelder have appeared as working papers 1, 2 and 3 respectively of the EU funded programme, Avenir des Peuples des Forêts Tropicales. The chapter by Brosius first appeared in *Human Ecology* (1997, volume 25, number 1), and we are grateful to the editors of that journal for permission to reproduce. The chapter by Peter Parkes has been written especially for inclusion in the volume.

We would like to acknowledge the support we have received from the Asia Committee of the IIAS and its various officers, in particular Professor W.A.L.Stokhof, Max Sparreboom, Cathelijne Veenkamp and Sabine Kuypers. Ulrich Kratz of the London School of Oriental and African Studies attended the workshop on behalf of the Committee. Other thanks are also due. Charles Zerner of the Rainforest Alliance, Henri Bastaman of the Indonesian Ministry of State for the Environment, Oekan Abdullah of Padjadjaran University in Bandung, Nicole Revel of LACITO-CNRS in Paris, Juju Wang, Chun-chieh Chi and Michael H.H.Hsiao of the National Institute of Technology at Kaohsiung, Taiwan, and François Simard of the Musée Océanographique in Monaco, all presented papers at the workshop but were unable for various reasons to contribute to this book. We thank them for their contributions which have fed instructively into the final published outcome. We are also grateful for the contributions of Kamal Misra of the University of Hyderabad, Klaus Seeland of ETH Zentrum in Zurich, and Nigel Leader-Williams of the Durrell Institute for Conservation and Ecology for their intellectual and organisational inputs. Finally, we are grateful for the assistance and comments of Laura Rival and Christin Kocher during the preparation of this volume, and to Bob Parkin for his professional sub-editing.

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INTRODUCTION

Roy Ellen and Holly Harris

Let us begin by indicating what this book is not about. It does not seek to demonstrate the superiority, or even the complementarity, of local knowledge compared with dominant global scientific knowledge in particular instances; nor does it seek to provide further empirical documentation of indigenous knowledge for its own sake, or of its applications in development and scientific contexts; nor does it seek to enter into any polemical discourse suggesting the converse. It is assumed that most readers will already be persuaded that indigenous environmental knowledge (hereafter IK)[1] can hardly be ignored in development contexts and that it is an essential ingredient in any pragmatic development strategy, especially those which claim to achieve a degree of sustainability, as well as having applications in industry and commerce. And yet, equally, we suspect, most of us will also accept that the claims made for the environmental wisdom of native peoples have sometimes been misjudged and naive, replacing denial with effusive blanket endorsement and presenting an 'ecological Eden' to counter some European or other exemplary 'world we have lost'.

Here our aim is different: to examine dispassionately yet critically the status of, and claims made for, IK in the rhetoric and practice of different academic disciplines, at different times and in different political situations, ranging through environmental movements, states, NGOs and local indigenist activism. We are particularly concerned to focus on the *transfer* of ideas between these groups and contexts. In short, we take it for granted that IK is useful in particular contexts, but seek to go beyond such demonstrations and statements of the obvious to ask what role it plays in 'green' arguments and scientific and political discourse more generally.

Our intention in this introduction is to focus on several issues and themes: 1) the extent to which IK is still a significant category

within western patterns of production and consumption and the extent to which the development of professional science and technology have undermined or obscured it; 2) the relationship between the great indigenous traditions (such as Ayurvedic medicine) and the local myriad little folk traditions; 3) the way IK is constantly changing, being produced as well as reproduced, discovered as well as lost; 4) the often contradictory and changing scientific and moral attitudes towards IK which are linked to a history in which western science has by turns absorbed local knowledge (both non-western and folk European) into its own and rejected it as inferior, only to rediscover its practical benefits; and 5) competing definitions and conceptions of IK in the context of contemporary theory and practice in development and conservation. In this last respect, we place particular emphasis on how IK has been recorded and represented. We take the view that the distinction indigenous-non-indigenous has many highly specific regional and historical connotations which are not always appropriate to other ethnographic contexts. This makes comparative generalizations difficult. Some, indeed, argue that the term 'indigenous' forces us into an oppositional logic of 'us and them', while others assert that the category of IK is wholly compromised by the 'hegemonic opposition' of the privileged *us* to the subordinated *them* and is therefore morally objectionable as well as being practically useless. We try to explain how it has become possible to articulate these positions, given the way in which IK studies have developed, without necessarily agreeing with the more extreme formulations.

INDIGENOUSNESS AS APPLIED TO KNOWLEDGE: A PROVISIONAL MODEL

What is meant by 'indigenous knowledge' is by no means clear, and part of the purpose of this introduction is to draw attention to the variety of terminologies, definitions and cognate concepts through their geographical, local-global and various historic and disciplinary refractions. The words we use are not insignificant, since whether we speak of 'indigenous knowledge' (IK), 'indigenous technical knowledge' (ITK), ethnoecology, 'local knowledge', 'folk knowledge', 'traditional knowledge', 'traditional environmental (or ecological) knowledge (TEK)', 'people's science' or 'rural people's knowledge' says something about the direction from which we approach the subject and the assumptions we make about it.[2] However, these terms are often used interchangeably, and there is arguably enough overlap between their meanings to recognize the existence of a shared intersubjective understanding, some 'epistemic community' which permits a sufficient degree of common-sense engagement to allow that they refer to the same focal semantic space. However, if

we are to move beyond the level of describing particular empirical bodies of such knowledge and their applications, we cannot proceed far without a more rigorous attempt to deconstruct the subject.

Part of the problem is what we mean by 'indigenous'. Those to whom we attribute indigenous knowledge must be indigenous people, and yet the terminological difficulties we confront in saying as much uncover a veritable semantic, legal, political and cultural minefield. For Posey (1996:7) indigenous people are 'Indigenous and local communities embodying traditional lifestyles', a formulation which indicates the inevitable immanence of tautology. Moreover, it is impossible to use 'indigenous' in a morally neutral or apolitical way. Peoples identify themselves as indigenous to establish rights and to protect their interests, NGOs are established to support them, and government departments to administer them. We have Survival International, Cultural Survival, the International Work Group for Indigenous Affairs (IWGIA), periodical publications with titles such as *Indigenous Affairs* and *The Indigenous World 1995–6,* which 'support indigenous people in their struggle against oppression', and so on. At the same time, governments claim that peoples so labelled are no more or less indigenous than other minorities or majorities under their jurisdiction. This, for example, is the very clear view of the Indonesian government. Although it may be convenient to seek a technical definition of indigenousness in terms of prior occupancy, length of occupancy, a capacity to remain unchanged or whatever, such matters are seldom politically neutral. Measuring indigenousness is not an exact science (see, for example, Barnes 1995, Gray 1995, Kingsbury 1995).

Given its conflicting, ambiguous and strong moral load, 'indigenous' might seem the least useful way to describe a particular kind of knowledge. 'Native' and 'aboriginal' have similar connotations; 'tribal' is too restrictive and confuses a political condition with a distinct kind of knowledge; 'folk' and 'traditional' are less morally loaded, though 'folk' still has rather quaint associations in some quarters. 'Local' has the merit of sounding more neutral, but fails adequately to indicate key qualitative differences in the character of knowledge usually alluded to, while being in danger of becoming coyly euphemistic. Of them all, despite its implications of anachronism and long-term cultural stasis, 'traditional' seems to have more credibility and is among the most common ways of describing a particular kind of anthropological other. Like the other terms, it derives its meanings from variations on the modernity-traditional dualism, which we have quite rightly learned to treat with suspicion.

We shall return to some of the problems associated with this dualism as applied to knowledge below, where we outline a more critical approach to the distinctive features attributed to indigenous or traditional knowledge. At this stage, however, it is convenient to have some standard by which to operationalize a few

arguments, and to this end we can at least provisionally list some of the more commonly asserted characteristics of IK:

1. IK is local: it is rooted to a particular place and set of experiences, and generated by people living in those places. The corollary of this is that transferring that knowledge to other places runs the risk of, quite literally, dis-locating it. Thus, the salience and significance of the same series of, let us say, plant species for a particular indigenous people compared with global science is likely to be very different, as their taxonomic and utilitarian linkages are on the one hand, local, culture-specific and restricted, and on the other, global, culturally de-contextualised and extensive.
2. IK is orally-transmitted, or transmitted through imitation and demonstration. The corollary is that writing it down changes some of its fundamental properties. Writing, of course, also makes it more portable and permanent, reinforcing the dislocation referred to in 1. The latter transformation is in evidence every time the affinities between ethnobotanical categories are rendered as abstract taxonomic trees.
3. IK is the consequence of practical engagement in everyday life and is constantly reinforced by experience, trial and error, and deliberate experiment. This experience is characteristically the product of many generations of intelligent reasoning, and since its failure has immediate consequences for the lives of its practitioners its success is very often a good measure of Darwinian fitness. It is, as Hunn (1993:13; cf. Chambers 1983: 91) neatly puts it, 'tested in the rigorous laboratory of survival'.
4. 1 and 3 support a further general observation, that IK tends to be empirical and empirico-hypothetical knowledge rather than theoretical knowledge in the strict sense. To some extent its non-literate oral character—as well as, in many cases, its embeddedness in the non-verbally articulated interstices of everyday technical practice and the memory which informs this —hinders the kind of organization necessary for the development of true theoretical knowledge.
5. Repetition is a defining characteristic of tradition (Hobsbawm and Ranger 1983), even when new knowledge is added. Repetition (redundancy) aids retention and reinforces ideas; it is also partly a consequence of 1 and 2.
6. Tradition is 'a fluid and transforming agent with no real end' when applied to knowledge; negotiation is a central concept (Hunn 1993:13). IK is, therefore, constantly changing, being produced as well as reproduced, discovered as well as lost, though it is often represented as being somehow static.

7. IK is characteristically shared to a much greater degree than other forms of knowledge, including global science. This is why it is sometimes called 'people's science', an appellation which also arises from its generation in contexts of everyday production. However, its distribution is still segmentary, that is, socially differentiated (Hobart 1993:13). It is usually asymmetrically distributed within a population, by gender and age, for example, and preserved through distribution in the memories of different individuals. Specialists may exist by virtue of experience, but also by virtue of ritual or political authority.
8. Although IK may be focused on particular individuals and may achieve a degree of coherence in rituals and other symbolic constructs, its distribution is always fragmentary: it does not exist in its totality in any one place or individual. Indeed, to a considerable extent it is devolved not from individual to individual at all, but in the practices and interactions in which people themselves engage.
9. Despite claims for the existence of underlying culture-wide (indeed universal) abstract classifications of the biological world based on non-functional criteria (see e.g. Atran 1990, Berlin 1992), where IK is at its densest its organization is essentially functional, denotative 'know-how' geared to practical response and performance (Lyotard 1979).
10. IK is characteristically holistic, integrative and situated within broader cultural traditions; separating the technical from the non-technical, the rational from the non-rational is problematic (Scoones and Thompson 1994:18).

Using this rather crude checklist of characteristics, we are now in a position to examine a number of substantive areas of critical relevance. The first is what IK and its various semantic cognates might mean in the context of western traditions of knowledge, what they might mean in the context of non-western (particularly Asiatic) traditions of knowledge, and what its impact has been on the development of those traditions we call science.

INDIGENOUS KNOWLEDGE AT HOME IN THE WEST

The West often assumes that it has no IK that is relevant, in the sense of 'folk' knowledge, that it once existed but has now disappeared, and that somehow science and technology have become its indigenous knowledge. Certainly, there is plenty of evidence that the existence of, for example, codified pharmacopoeias such as the *De Materia Medica* of Dioscorides displaced local knowledge and oral tradition extensively in Europe and the

Mediterranean, but uncodified knowledge persisted and gradually filtered into organized texts, as the number of modern remedies of European folk origin manifestly attests to (Cotton 1996:10–11).

But western folk knowledge (non-professional, experimental, uncodified, *ad hoc,* often orally transmitted) is arguably just as important as it ever has been, though different, informed by science where appropriate and located in different contexts (gardening, dog-breeding, bee-keeping etc.): the folk are no less creative. Moreover, in parts of Europe urbane folk actively seek out the authoritative knowledge still regarded as being present in their own peasant traditions, as in truffle-hunting, geese-rearing or the preservation of rare breeds of sheep. This is splendidly illustrated in the work of people like Raymond Pujol (e.g. Lecuyer and Pujol 1975) in France. Peasant or rural knowledge becomes, in this context, the peculiar product of Europe's own inner indigenous other. Interestingly, and paralleling a development we shall examine later for indigenous knowledge elsewhere, such European folk traditions have in the last forty years or so been reified, reinvented, celebrated and commoditized, as demonstrated in the contemporary cultural significance of living folk museums, craft fairs and such like. One of the ironies of this is that these 'folk' traditions have become highly codified. But the double irony, as we shall see, is that the process of codifying folk knowledge into organized scholarly knowledge has ever been thus.

In mediaeval and early modern Europe, proto-scientific knowledge of plants and animals superseded folk knowledge through classification, analysis, comparison, dissemination (usually through books and formal learning) and thus generalization. The process was not sudden: for a long time, common experience, oral tradition, personal experience and learned authority contributed to the 'aphoristic' knowledge or 'received wisdom' upon which organized specialised knowledge, particularly medical knowledge, depended (Wear 1995: 158–9); and knowing where unorganized folk knowledge, professionally restricted organized knowledge and proper scientific knowledge began and ended is not at all easy. In such proto-scientific technological practices, it is significant that elements of discrete knowledge do not usually disclose how they were arrived at. In other words, their 'epistemic origins' are hidden. Sometimes they are of European folk origin, but especially from the sixteenth century onwards they incorporated medicines of Asian and American origin. It was this anonymity which helped define an emergent scientific practice in opposition to folk knowledge. Even after scientific discourse and practice had become distinct, methodologically self-conscious and discriminating, it continued to draw on practical folk experience. Darwin, for example, depended extensively on the knowledge of pigeon fanciers in working out the details of natural selection (Desmond and Moore 1991:425–30; Secord 1981, 1985). Indeed, more generally we can see that modern

natural history arose through a combination of such indigenous expertise and field studies (Zimmermann 1995:312), and field studies themselves often drew heavily in turn on the knowledge of local experts. Some have argued that the phylogenetic taxonomies of contemporary post-Linnaean biology are based on a European folk template (Atran 1990, Ellen 1979, Knight 1981). Others have gone further by claiming that the European folk scheme and that of modern biology are no more than variants on a single cognitive arrangement of living kinds to which all humans are predisposed through natural selection (Atran ibid., Boster 1996).

What we now recognize as scientific knowledge of the natural world was, therefore, constituted during the eighteenth and nineteenth centuries in a way which absorbed such pre-existing local folk knowledge as was absorbable and, ultimately, confined what was not to oblivion. The latter was at best of antiquarian interest, at worst denied any existence as a meaningful and credible set of practices, precisely because of the inability of the new paradigm to absorb it. Part of this residue re-emerged as recognized folk knowledge in the late twentieth century and has been subjected to the kind of cultural revival we have already referred to. The rest, unlabelled and unloved, continues as that vast body of tacit knowledge which is necessary to operationalize book and theoretical knowledge and which continues to inform the practical engagement of ordinary skilled people: the informal uncodified knowledge of house workers, of Durrenberger and Pálsson's (1986; also Pálsson 1994, Pálsson and Durrenberger 1982) Icelandic fishing skippers, or of any number of skilled professionals who take their cue from real life situations unmediated by books. Unfortunately, nowadays the economic pressures of publishing and the demand for useful information are leading us to the further codification of the hitherto uncodified, of the '1001 handy household hints' and 'tips from the greenhouse' variety, thus giving the appearance of moving even further from the realm of IK.

IMPACT OF ASIAN FOLK KNOWLEDGE ON THE DEVELOPMENT OF WESTERN SCIENTIFIC TRADITIONS

As we have seen, much western science and technology emanates from indigenous European folk knowledge (e.g. herbal cures), but from the earliest times ideas and practices were flowing into Europe from other parts of the world and vice versa. By the later middle ages, however, and the beginnings of modern European global expansion, there emerged a self-consciousness about the desirability of obtaining new knowledge. We can see this process at work by examining some recent scholarship relating to European scientific interests in India and Indonesia.

As early as the sixteenth century, travellers were being advised to observe indigenous practices and to collect material with a view to extending European materia medica. For example, Garcia da Orta, a Portuguese physician living in Goa, provides us with a description of plants of the east which formed the basis of medicines available in Europe and Portuguese colonies, and from which they could be extracted. Orta relied on personal medical experience, fieldwork and indigenous knowledge, and initially depended on Arabic sources, thus reflecting the centre of gravity of the international trade in materia medica. Orta's *Coloquios dos simples e drogas he cousas medicinais da India,* published in Goa in 1563, was translated into Latin in 1567 by Charles d'Ecluse (Clusius), who went on to establish the Hortus Medicus in Vienna and, in 1593, the Leiden botanical gardens.[3] In turn, Jacob Bondt relied heavily on the *Coloquios* for his pioneering book on tropical medicine, *De Medicina Indorum,* published in Leiden in 1642).[4] The decline of Portuguese power in Goa and the establishment of the Dutch in Cochin was marked in botanical terms by the *Hortus Indicus Malabaricus,* initiated by Hendrik van Rheede tot Drakenstein (1636–1691) in response to the medicinal needs of the Dutch East India Company.[5] We can thus see a remarkable chain linking Indian medical ethnobotany, compilations of Middle Eastern and south Asian knowledge organized on essentially non-European precepts, Portuguese and Dutch political interests, and the formative period of modern scientific botany and pharmacology.[6] But this is only the beginning.

What makes this story of knowledge transformation of particular interest here is that in both the *Coloquias* of da Orta and the *Hortus* of van Rheede, contemporary Hippocratic emphases on accuracy and efficiency tended to privilege strongly local medical and biological knowledge, leading to effective discrimination against older classical texts and systems of cognition in natural history. Because van Rheede, in particular, was unable to rely on any pre-existing European template for south Asian plant knowledge, Grove argues that he was largely responsible for elevating Ezhava knowledge above that of the dominant Ayurvedic schemes, with the aim of acquiring the highest quality indigenous expertise. The Ezhavas were a lowly Shudra caste whose traditional occupation was toddy-tapping, but many were also Ayurvedic physicians who were highly regarded. As Brahmans were forced to rely on their low-caste servants for detailed field knowledge of plants, it made sense for van Rheede to bypass 'academic' Brahman knowledge (Grove 1996:136–7, n 52). He thus went through the same process of rejecting Arabic classification and nomenclature and European knowledge as da Orta, in favour of a more rigorous adherence to local systems. It should be said, however, that an interpretation privileging Ezhava is not supported by the work of Zimmerman (1989; personal communication).

The perfection of European printing, the establishment of botanical gardens, global networks of information and materia medica transfer, together with the increasing professionalization of natural history, facilitated the diffusion and dominance of Indian medico-botanical knowledge and epistemological hegemony, and imposed an Indie technical logic on subsequent 'European' texts on south Asian botany. These retain the essentially indigenous structure of the *Coloquios* and the *Hortus,* thereby transforming European botanical science through contact with south Asian methodologies of classification, rather than the other way round. But given the long history of mutual knowledge transfer going back to ancient times, any division between European and Asian botanical systems might be construed as arbitrary (Grove 1996:127–8).

We can see a similar, though, in terms of the epidemiology of ideas, less complex process in the work and influence of George Rumphius. Rumphius was a German naturalist employed by the Dutch East India Company who lived in Amboina between 1653 and 1702, where he systematically recorded the natural history of not only the islands immediately surrounding Amboina, but, through the organisms provided him, island southeast Asia in general. In doing this he relied heavily on local assistants and their knowledge. His most important work, on plants, was published posthumously as the *Herbarium Amboinense.* What is remarkable about this work is not just its importance in listing many species hitherto unknown in European botanical descriptions, but its heavy reliance on native descriptions of plant ecology, growth patterns and habits, as well as the extent to which its author relied on Malay and other local folk classifications and terms to provide a meaningful and comprehensive account (Beekman 1981, Peeters 1979). However, compared with van Rheede's work on western India, rather than interference from or rejection of classical Javanese and other politically dominant schemes, we find instead a reliance on Malay (essentially a new language at that time in the Moluccas) as a linguistic filter for indigenous ideas and knowledge. In turn, Linnaeus, in particular in 1740, fully adopted the Indian classification and affinities in establishing 240 entirely new species, and to a lesser extent relied on the Ambonese and Malay classifications and descriptions provided by Rumphius.

The influence of the *Herbarium Amboinense* and the *Hortus Malabaricus* immediately established Holland as the centre of tropical botany, and French, English and Dutch naturalists employed by respective East India companies, following Dutch methods, were instructed to collect as much indigenous knowledge as possible (Grove 1996:140–1). Their influence on the canonical Linnaean texts meant that subsequent authorities came to depend on essentially Asian organizing frameworks, as with Roxburgh, Buchanan-Hamilton and Hooker in India (ibid.: 139) and Burman,

Blume, Henschel and Radermacher in Indonesia. But more than this, the 'seeds of modern conservationism developed as an integral part of the European encounter with the tropics and with local classifications and interpretations of the natural world and its symbolism' (Grove 1995:3).

During the nineteenth and twentieth centuries, local knowledge was increasingly systematically tapped and codified. Such 'routinization' resulted in the publication of scientific accounts of new species and revisions of classifications which, ironically, depended upon a set of diagnostic and classificatory practices which, though represented as western science, had been derived from earlier codifications of indigenous knowledge. Numerous encyclopaedic inventories began to appear, such as George Watt's *Dictionary of the economic products of India* (1889–96) and Burkill's (1935) similar encyclopaedia on Malaya inspired by the work of Watt, which had all the hallmarks of the scholarly arm of imperialism. Thus, the European relationship with local Asian knowledge was, paradoxically, to acknowledge it through scholarly and technical appropriation and yet somehow to deny it by re-ordering it in cultural schemes which link it to an explanatory system which is proclaimed as western. While on a personal level scientists may have acknowledged the contributions of their local informants, on the professional level the cultural influences which those same informants represented were mute.[7]

INDIGENOUS KNOWLEDGE MARGINALIZED

If, in the context of late European colonial scientific fieldwork in Asia, traditional knowledge was evident but mute, with the inexorable rise of modernity it become a kind of ignorance (Hunn 1993:13). Tradition was something to be overcome, to be subverted rather than encouraged, its legitimacy questioned. Several generations of 'top-down' development experts and organizations engaged in resource extraction and management in the underdeveloped world either deliberately avoided IK on the grounds that their own models were superior, or simply never realized that it might be a resource to be tapped. For some fifty years or more, the dominant model of development has been based on useful knowledge generated in laboratories, research stations and universities, and only then transferred to ignorant peasants (Chambers and Richards 1995:xiii). Such attitudes are now very much on record thanks to the work of, for example, Paul Richards (e.g. 1985). But not only has IK been grossly undervalued by western-trained 'scientific' managers in terms of its potential practical applications, when it was at last absorbed into 'scientific' solutions it was curiously insufficiently 'real' to merit any certain legal status or protection from the battery of patents and copyrights

which give value and ownership to western scholarly knowledge and expertise. Even when the knowledge was clearly being utilized, it was often redescribed in ways which eliminated any credit to those who had brought it to the attention of science in the first place. This point is made by Harris (1996:11, following Shiva and Holla-Bhar 1993), in her discussion of *neem (Azadirachta indica):*

> Whether or not the chemical properties assumed to provide the active substance for cure have been identified by the communities does not appear relevant. Rather, it appeared that the method used by these western firms, and their ability to synthetically reproduce the compounds, was perceived as the true science and consequently, deserving of patent. Because the knowledge held by the local populations is commonly shared, it is deemed 'obvious' and traditional, folk knowledge as opposed to modern, scientific, specialist knowledge. Not only does this distinction seem arbitrary, it also implies certain institutionally based criteria where laboratory professionals practice recognized science, while indigenous lay peoples are seen to possess folk knowledge.

The inherent ethnocentrism and elitism of late twentieth-century global science, therefore, has made it difficult for scientists themselves to accept that the folk have any knowledge of worth (Johannes 1989: ix), a culture of denial which has been justified by a methodological reductionism and evaluative process which systematically renders such knowledge 'unscientific'. This view is reinforced by perceptions that traditional peoples often adopted wasteful, even delinquent patterns of resource extraction, as classically exemplified in the literature on shifting cultivation (e.g. Dove 1983) and that when subsistence practices were evidently damaging, this was a matter of preference or conscious indifference rather than poverty.

THE REDISCOVERY AND REINVENTION OF INDIGENOUS KNOWLEDGE

Since about the mid-nineteen-sixties the process of marginalizing IK as outlined above has been put into reverse and is indeed accelerating to a remarkable (some would say alarming) degree. There are both romantic and practical reasons for this.

The romantic reasons have their immediate political renaissance in the 'sixties counter-culture (Ellen 1986), with the notion that traditional, indigenous or 'primitive' peoples are in some kind of idyllic harmony with nature. Such a view was initially prompted by a crisis in the modernist project of science and technology, in terms of both the increasing remoteness and arcane character of science,

its perceived arrogance and negative technological outcomes, and its inability to explain much about the world which ordinary people sought explanations for. As has been suggested on various occasions (Budiansky 1995:3, n. 7; 251, quoting Kaufman, quoting Chesson) it amounted to 'good poetry' but 'bad science'. Others have gone even further and questioned the poetry. What this often involved was the selective remodelling of Asian and other exotic traditions to suit the aesthetics needs of western environmentalist rhetoric drawn from an intellectual pedigree which favoured idealized native images. Conklin and Graham (1995:697) put it this way:

> Contemporary visions of transcultural eco-solidarity differ in that native peoples are treated not as peripheral members whose inclusion requires shedding their own traditions but as paradigmatic exemplars of the community's core values.

In this new vision, indigenous peoples are given central focus *because of* rather than *in spite of* their cultural differences. But, as Conklin and Graham point out, this perception and consequent alliance between indigenous peoples and science is a fragile one, based upon an assumed ideal of (indigenous) realities which contrasts with realities for the local people themselves. Such assumptions are in danger of leading to 'cross-cultural misperceptions and strategic misrepresentations' (ibid.: 696). Reconstitution in an Asian context has often involved both the great and little traditions (the scholarly and the tribal), often failing to distinguish between the two and confusing ideal symbolic representations with hard-headed empirical practice. It is not altogether surprising, therefore, that this muddle has confirmed some scientists in their worst prejudices and led to the inevitable backlash summed-up in phrases such as 'the environmentalist myth' (see, for example, Diamond 1987; cf. Johannes 1987).

Nevertheless, with the discarding of the more fanciful portrayals of the wisdom of traditional peoples, a more practical approach has emerged. This has been encouraged by anthropologists and other development professionals eager to make IK palatable to technocratic consumers and by technocrats themselves already predisposed to see a role for IK. Its dissemination has been part of a rhetoric extolling the virtues of 'participation', 'empowerment', 'bottom up' and 'farmer-first'. Some measure of the institutionalization of this version of IK (and in this version abbreviations of the IK and TEK variety are *de rigeur*) is the number of networking organizations and research units (see Warren *et al.* 1995:xv–xviii, 426–516). One of the difficulties with this approach, however, has been that categorization of IK effectively becomes 'a direct consequence of the limited parameters of western development/scientific theories which rely upon an ordered

conceptual framework from which and in which to work'. As Hobart (1993:16) observes:

> there is an unbridgeable, but largely unappreciated gap between the neat rationality of development agencies' representations, which imagine the world as ordered and manageable, and the actualities of situated social practices.

As a consequence, we seem to end up with a theory which misrepresents the context in which certain knowledges occur and are experienced. Hobart has pointed to the limitations of development and scientific knowledge in that they ignore or undervalue contexts. Decontextualization is necessarily implied by the uncritical placing of local knowledge systems under the umbrella concept of 'indigenous knowledge', and the unique and important knowledge of specific local groups becomes subject to the same limitations and criticisms that we make on behalf of western science and development theories. Moreover, the tendency to define indigenous knowledge in relation to western knowledge is problematic in that it raises western science to a level of reference, ignoring the fact that all systems are culture-bound and thereby excluding western knowledge itself from analysis. This limits analysis of indigenous systems by narrowing the parameters of understanding through the imposition of western categories. Fairhead and Leach (1994:75) draw attention to this problem, particularly regarding the tendency to isolate bits of knowledge which are fitted into a 'mirror set of ethno-disciplines' for the purposes of analysis and documentation. By examining local knowledge in relation to scientific disciplinary distinctions, they are pointing out how this can lead to the construction of certain aspects of local knowledge as important, while excluding or ignoring other areas and possibilities of knowledge which do not fall within the selective criteria of western science. Moreover, they argue that this risks overlooking broadly held understandings of agroecological knowledge and social relations. So, for example, research and extension agents examining Kouranko farmers tree-management practices in Guinea fail to take into account farmers' tree-related knowledge, which involves knowledge and management of crops, water and vegetation succession, as well as the ecological and socioeconomic conditions which influence them. By failing to include the broader constitutive processes surrounding Kouranko tree-management, extension workers risk obscuring and decontextualizing local knowledge, thus jeopardizing the potential this may have for development on specific and general levels (ibid.).

Thus, in this depleted vision, IK becomes a major concept within development discourse, a convenient abstraction, consisting of bite-sized chunks of information that can be slotted into western

paradigms, fragmented, decontextualized, a kind of quick fix, if not a panacea. Such approaches are in danger of repeating the same problems of simplification and over-generalization that Richards and Hobart identify as major limitations in development theory, and in science applied to development 'ignoring specific and local experience in favour of a generalizable and universal solution' (Harris 1996:14). Moreover, IK has become further reified in the hands of NGOs—which in the last few decades have become significant 'knowledge-making institutions'—and within the 'universalizing discourse' of environmentalism. Because environmentalist and indigenous NGOs are now an influential moral and social force, stimulating public awareness, acting as whistle-blowers and watch-dogs, and moving from the role of critics to offering policy proposals to governments—and since they often use the rhetoric of science—they gain enormous authority (Yearly 1996:134). This process has evidently yielded politically advantageous results in terms of projecting a more positive image of IK.

In some important respects, the way development professionals have contextualized and scientized IK by codifying it and rejecting the cultural context has simply repeated what has happened in previous scientific encounters with traditional knowledge, as discussed above. And similarly, once IK is drawn within the boundaries of science, it is difficult to know where to draw the boundaries between it and science. As we have already seen, changing the boundaries is often sufficient to redefine something as science, as what defines it is to a considerable extent determined by who practises it and the institutional context in which the practices take place. However, the danger of turning local knowledge into global knowledge is that 'at the empirical level all IK is relative and parochial; no two societies perceive or act upon the environment in the same ways. Science, by comparison, is a system of knowledge in rapid flux that seeks universal rather than local understanding' (Hunn 1993:13–15). It is precisely the local embeddedness of IK which has made it successful.

RECORDING INDIGENOUS KNOWLEDGE

In the introduction to *The Cultural Dimension of Development,* Warren *et al.* (1995:xvii) express what is at present central to the indigenous knowledge enterprise—the focus on documenting and recording indigenous systems in order that they be 'systematically deposited and stored for use by development practitioners'. However, when we consider the ways in which indigenous knowledge is perceived and defined, the idea of a project to centralize and store this knowledge appears to be a contradiction in terms. Thus, how is it possible to organize something for practical

purposes which is inherently 'manifold, discontinuous and dispersed' (Scoones and Thompson 1994:19)? This is where its ambiguity as a concept is perhaps most evident. On the one hand, it is described as above, with the authors arguing against the assumption that indigenous knowledge is an 'easily definable stock of knowledge ready for extraction and incorporation'. On the other hand, despite this warning against erroneous assimilation and interpretation, Warren *et al.* observe that the priority of regional and international indigenous resource centres is currently the codification and documentation of this knowledge for general use. A similar stress is found in an editorial for the *Indigenous Knowledge and Development Monitor,* which states (vol. 1/3, 1993):

> Knowledge produced by universities and research institutes around the world is gathered, documented and disseminated in a coherent and systematic way. The same should be done with community-based, local or indigenous knowledge [which] should be included alongside the more usual scientific knowledge.

This is clearly an agenda for indigenous knowledge, despite the fact that Scoones and Thompson refer to it as 'embedded in a web of meaning and influence'. In his criticism of the western-indigenous dichotomy, Agrawal (1995:5) deals succinctly with this contradiction and its implications:

> If indigenous knowledge is inherently scattered and local in character, and gains its vitality from being deeply implicated in people's lives, then the attempt to essentialize, isolate, archive and transfer such knowledge can only seem contradictory. If western science is to be condemned for being non-responsive to local demands, and divorced from people's lives, then centralized storage and management of indigenous knowledge lays itself open to the same criticism.

Not only is this a concern to be addressed within a theory of indigenous knowledge, particularly for its implications in development projects—which makes it vulnerable to the same set of limitations that scientific theory possesses—it is also necessary to consider just what is being recorded and documented. For example, it is not clear whether 'local', when it defines indigenous knowledge, signifies that knowledge which is peculiar to a particular group of people, and if so, how it is to be utilized by other groups who must equally possess their own specific knowledge.

Richards's analysis (1993:62) of knowledge as performance challenges the very idea of practices being grounded in an 'indigenous knowledge', suggesting rather that the range of skills

and strategies employed by farmers extend beyond simple applied knowledge into a 'set of improvisational capacities called forth by the needs of the moment'. He posits a 'theory of performance' which challenges the assumption that cultivation practices are evidence of a fixed stock of knowledge from which techniques are drawn. Rather, by drawing on the analogy of musicians who rehearse many times for a performance but who adapt and draw on their own resource skills when needed at a particular moment, he suggests that farmers likewise adjust and adapt their techniques and skills according to the needs which arise at a particular time. He illustrates what he means by performance knowledge, and the difficulties this presents for the recording of these practices for use elsewhere, or even in the same location the following year, with an example of Hausa inter-cropping plans in northern Nigeria. He observes how Hausa farmers make a series of adjustments to drought by planting and replanting different seed mixes until germination is secured or until available resources are exhausted. The resulting cropping pattern is not, he argues, a necessarily predetermined design; rather (ibid.: 67):

> each mixture is a historical record of what happened to a specific farmer on a specific piece of land in a specific year. It is not the outcome of a prior body of 'indigenous technical knowledge' in which farmers are figuring out variations on a local theory of inter-species ecological complementarity.

His point has important methodological implications too, highlighting the dangers of 'misplaced abstraction' whereby development practitioners create a complete theory based on assumed and observed practices. Now, this idea seriously challenges the notion of a material stock of 'indigenous knowledge' which can be analysed and extracted for use in any context, even its own context, which, as Richards suggests, is constantly changing and intrinsically interactive. This is not to say that nothing is analysable or useful beyond its own boundaries, but rather that it perhaps makes better sense to recognize knowledge as grounded in multiple domains, logics and epistemologies. Richards' point is useful in calling attention to the range of skills and practices which a group collectively or individually may manipulate within their particular locations, thus making pertinent the local or peculiar knowledge generated within a particular cultural context. Furthermore, as Agrawal (1995:5) suggests, it may be far more productive to move away from the 'sterile dichotomy between indigenous and western' which idealizes and obscures knowledge and practices, disempowering peoples and systems through artificially constrictive frameworks.

Codifying and documenting indigenous knowledge systems could be a worthwhile endeavour if it were not for the tendency to present such systems as models or blueprints for general use, and under the broad heading 'indigenous knowledge'. As such people's knowledge and the different ways in which they use, expand and manage take on a static semblance, it increasingly resembles earlier anthropological accounts of culture as timeless, non-dynamic, bounded systems. The *Cultural dimension of development* (Warren *et al.* 1995) provides some evidence of this. Chapter one reads like a manual for development workers and even bio-prospecting agents, with an interest in the value and use of ethnobotanical resources. Without contextual analysis, Alcorn (1995:7) lists the kinds of resources which can be 'mined' from ethnobotanical knowledge: principles, facts, technologies, crops, farming systems, strategies, and information on local constraints and opportunities. She continues:

> Traditional farmers have developed *packages of practices* for tropical forested lands, arid lands, steep lands, swamp lands and other marginal lands.... Most of these systems renew fertility, control erosion, and maintain biodiversity through following...these systems integrate useful wild plants into their management regime, (ibid., our italics)

What are 'useful' plants? Useful to whom? By presenting these systems as 'packages of practices', all agency and creative, dynamic potential is drained, reducing local knowledge to some sort of packageable commodity, secured and easily transferable from its locality to somewhere else. The implication that people are not agents but actors simply reacting to a set of established prompts is strongly apparent, especially when Alcorn (ibid.: 6) advises us that:

> farmers do not describe the details of their traditional farming activities well. It is necessary to try to learn to farm as they do, learn the decisions that are made, to learn exactly what they are doing, and thereby, discover the wisdom held in their methods.

This is a far cry from the dynamic, living systems that indigenous knowledge is purported to be and which are advocated as the key to future development. Moreover, these kinds of analysis present little more than decontextualized inventories of people's knowledge, providing documents for, rather than about, people. From an anthropological perspective, such contributions are inadequate because they ignore the social and cultural context in which knowledge is generated and put to practical use. Fairhead and Leach (1994) make a similar point when they observe the ways in

which specific utilization patterns are separated into isolated parts for the purposes of scientific analysis. Research and extension workers thus isolate knowledge into studies of geographical differences, specific crop species and their uses, particular practices —agro-forestry, hunting, fishing, and so on—disregarding the entirety of circumstance which surround these practices. While we are not suggesting that Alcorn herself is guilty of depersonalizing and immobilizing local knowledge systems (she provides references to more detailed documentation of farming systems), the outcome of such a general analysis nevertheless suggests the existence of a definable body of knowledge *independent* of the contexts in which it arises. One of the problems with this approach is that it removes people's agency, facilitating the appropriation by non-local agents of these practices and techniques, only to be imposed as 'top-down' development. Not only does this defeat the objectives of participatory development and local empowerment which an IK-oriented theory expounds, it also establishes and legitimates itself in the same way as previous western-centred development theories have done, thereby presenting neither an effective nor a radical alternative to the present development crisis. Furthermore, as local knowledge is analysed and documented for use, it undergoes changes which necessarily result from the specific orientations, strategies and agendas of those using it, as well as the transformations which inevitably occur through translation.

Hobart (1993:14) underlines some of the potential problems for agency that can occur when knowledge is collected, codified and decontextualized using an example from Croll's (1993) study of the post-revolutionary period in China. He notes how people's agency was diffused and depersonalized by attributing knowledge to 'the masses' in a government attempt to reverse the idea of a vision of knowledge stemming from the elite and educated. He describes the result:

> As problems inevitably emerged in putting this reworked and decontextualized knowledge into practice, local populations came progressively to be defined as backward and ignorant… they became presented not as agents but as objects to be changed.

Similarly, Zerner (1994) discusses the introduction of an awards scheme by the Indonesian government for villages who observe idealized *sasi* customs in the central Moluccan Islands. *Sasi* are ritualized arrangements for controlling access to natural resources on a temporal and spatial basis, including closed seasons for particular species—often those of commercial value—enforced through traditional sanctions. Zerner (ibid.: 1104) notes that the effect of this is to put villages in the public eye and under the

direction of local officials who are now able to get villagers to make changes regarding the management of their resources. In the same way, support groups and NGOs have been set up to observe and ensure that *sasi* law is adhered to. Village councils, for example, now have to submit annual reports to the provincial Environmental Studies Center at Pattimura University.

It is not within the scope of this introduction to examine in depth the political implications of the reorientation in development towards indigenous people and their knowledge and practice. It is, nevertheless, an important issue which has a direct bearing on the indigenous people themselves and needs to be considered carefully for the future of indigenous knowledge in development projects. As it stands, indigenous knowledge emphasises the personal, the specific and the contextual. To some extent, we would suggest that it too is in danger of becoming a depersonalized, objectivized concept which, if used as a top-down approach to development, may inevitably lose its agency and efficacy once a new trend is established. Should this happen, it is doubtful whether western images of 'tribal', 'indigenous' peoples who require western aid will change, thereby guaranteeing a continued role within development enterprises. Much depends on the many indigenous groups and alliances which are active in advocating political rights for and over indigenous knowledge.

THE CONSTRUCTION OF INDIGENOUS KNOWLEDGE IN CONTEMPORARY CONTEXTS

So far, the conceptualizations of IK which we have offered have been implicitly those of western (or western-trained) professionals, even if they do claim to be acting with the authority, and in the interests, of indigenous peoples. However, the status of such knowledge from the point of view of indigenous peoples themselves or from their non-western compatriots and political leaders may be rather different. In Asia, for example, what counts as indigenous knowledge is certainly more problematic than it is for those operating from the West.

Thus, for western and non-western elites alike, IK variously refers to some great tradition (e.g. Ayurvedic medicine), or more often to a myriad little local traditions. The great Asian 'scholarly ways of knowing' were a combination of epistemic and gnostic knowledge, dependent respectively on an agreed shared authority and the personal authority of a practitioner. They were often grounded in written texts and resembled the European scholarly traditions already discussed. Galenic, Chinese and Ayurvedic traditions of medicine differed from each other, but each had scholarship in common: 'the foundational knowledge of each could only be acquired by careful study under teachers relying on ancient texts' (Bates 1995). Where the great and little traditions merge is unclear,

and as in the European case there is historical evidence to suggest, for example, that the great Asian herbalist traditions have been systematically absorbing and then replacing local folk knowledge. Indeed, traditional Chinese medicine is increasingly influenced by the work of medical scientifizers who seek to produce a body of internally consistent, uncontested and impersonal knowledge that can be called 'Chinese medicine' (Farquhar 1995:273, n. 27). Thus, we see here something very reminiscent of the codifying and simplifying processes which accompanied the incorporation of European folk knowledge into the early modern scholarly traditions.

In the modern period, Asian reliance on indigenous knowledge has been a combination of economic necessity and tradition. Many Asian scientists, decision-makers and administrators have frequently internalized an essentially western model in rejecting IK as backward and as something which has to be replaced. Others have always recognized the efficacy of some kinds of IK but seen it as strictly complementary knowledge, which has little to do with science-driven development. In recent years, however, the state sector and NGOs in many countries have moved from colonial hegemonic denial towards the positive acceptance of the utility of local knowledge in medicine and sustainable development, partly for political and partly for economic reasons. IK is being rediscovered and 'reinvented'. A classic example is the *sasi* institution of the central Moluccan Islands of eastern Indonesia, to which we have already referred. These arrangements for ritually protecting resources by imposing prohibitions on harvesting at a critical period in the growth or reproduction of the resource, which in many areas had become moribund by the 1980s, experienced a revival through endorsement by NGOs, were integrated into national development plans, celebrated at a national level in the discourse on development—linking ancestral culture with historic resistance to Dutch depredations on resources—and redefined as people's science, as a form of resource management and conservation that was wholly positive (Zerner 1994:1101–4). In his Canterbury workshop presentation Zerner took this argument still further, showing how rapidly changing representations, productions and reproductions of *sasi* raise interesting issues about what happens to knowledge once it becomes institutionalized, codified and packaged—perhaps disseminated globally through electronic media—and thereafter applied outside its original context.

Explicit and full recognition—in developing countries and in the West—together with the rights which are deemed to accompany this, has only come with the failure of top-down approaches. This has been associated with the quest for appropriate and cheap technologies for development and with the rise of ethnobotany in the pharmaceutical industry, at a time when the environmental movement has become morally committed to the notion of indigenous environmental wisdom. No wonder, then, that at this

precise historical moment, when IK (through the assertion of intellectual property rights) and the rights of 'indigenous' peoples in more general terms are higher on the political agenda than they have ever been before, 'indigenous' as a label is being reclaimed by the protagonists themselves in pursuance of their own interests. Distinct native peoples, though less so in Asia than in, say, the Americas, have seen indigenous knowledge as part of their own cultural identity and as a very concrete and politically appropriate way of asserting it. Part of the reason for this is that, although the guardians of such knowledge are traditionally oriented individuals and groups, those who wish to document it are from westernized elites or other outsiders. A very important relationship of unequal power is thus articulated (Healey 1993).

States and NGOs have both sought to protect indigenous rights to such knowledge, and this has given rise to a whole set of new issues in merging the philosophies, legal traditions and discourses of the West and the rest of the world. In some cases, cross-fertilization of different local traditions and the reification of 'tribal' or 'folk' knowledge has occurred. Third World politicians, scientists and others have had to work out for themselves how indigenous or traditional knowledge is to be defined and whether its existence is altogether to be welcomed. When it becomes a means by which to flag problematic local minorities making political and cultural claims against a government, it is clearly threatening; if it can be defined in a more nationally inclusive way and commoditized, it is a resource to be exploited.

Most of the contributions which follow address issues raised in this section of the introduction: 'indigenous knowledge' as a present social reality articulated through the voices of governments, NGOs, scientists, ordinary citizens and those who claim it for their own. Posey, whose chapter here situates IK in the context of the property rights debate and who summarizes the complex international legal and political setting in which other themes explored here must be understood, also provides a useful clarification of the distinction between 'the knowledge of indigenous peoples' and 'indigenous knowledge'. Osseweijer demonstrates the importance of nuancing what we mean by 'indigenous' or 'local' in anthropological appeals for the importance of stressing local knowledge and reminds us that specialist knowledge may—almost by definition—be accompanied by generalist ignorance: the IK which she demonstrates is a necessary precondition for both economic productivity and effective marine conservation of *trepang* (sea cucumbers) in the Aru Islands of eastern Indonesia is not only that of the 'indigenous' extractors and producers, but also the knowledge which non-indigenous traders have of the *trepang* from a distribution and consumption angle. Indeed, these knowledges are 'dialogically' related, to the extent that indigeneity (local Aruese of local Chinese) becomes a questionable label for their practical distinction.

The chapter by Sundar also critiques the assumption within development discourse that IK is an easily identifiable body of knowledge which can be instituted as development practice, drawing attention to the differences between local knowledge and IK as represented in government programmes. Baviskar considers the various claims made for IK by locals, NGOs and government departments in the context of Indian ecodevelopment and the implications of this for our understanding of tradition, locality and indigenousness. Similarly, Li analyses the 'field of power' surrounding the concept of indigenous environmental knowledge in Indonesia and the circumstances in which it may or may not serve as a vehicle to enhance claims to resources. She does this by first examining the often contradictory position taken on IK by different agencies within the Indonesian government and the deployment of the concept by NGOs in relationship to the state and donors. This then provides the context for an analysis of the processes, both politico-historic and local-global, which provide one Indonesian group with an opportunity to articulate an identity through IK, while another must remain inarticulate. The position in non-colonized developed Asian states such as Japan is understandably different, with a less clear historic denigration of the traditional past. Nevertheless, in his chapter, John Knight examines Japanese attitudes to their own indigenous (upland) other with respect to the rediscovery of specific traditional knowledge of the forest and hunting, and explores rhetorical indigenization as part of an upland cultural revival.

A number of chapters are concerned with the ways official and native attitudes to IK change depending on the ruling development ideology, scientific evaluations and concatenation of political circumstances. Masipiqueña, Persoon and Snelder, for example, illustrate shifting attitudes by state authorities to the role of fire in resource management in the Philippines. The chapter by Dove further explores the repackaging issues by tracking the successful transfer of rubber production and management practices from its original Brazilian environment to Southeast Asia, suggesting advantages in leaving behind the cultural baggage of American folk knowledge and relying on the flexible innovative knowledge of the receiving local populations. Parkes too examines conditions of miscommunication in the representation of IK in his account of the Kalasha of northern Pakistan, but in this case the miscommunication is intentional, or at least habitually instilled through historical circumstances of 'enclavement'. He also notes the unintended and adverse political consequences of this for minority enclaves. Brosius examines the rhetoric of an international environmental campaign in support of the Penan of East Malaysia against the activities of logging companies, especially the ways in which western environmentalists have constructed Penan environmental knowledge and used and transformed (his own)

ethnographic accounts in the generation of appropriate—largely obscurantist and essentialist—rhetorical images, images which have been recycled to the Penan themselves as part of a self-definition which they find it politically expedient to project. The recycling of distorted images of knowledge is increasingly evident as information moves between different players in environmentalist debates, from local peoples, through the 'green lens' of NGOs and other organizations, and back to local peoples. It is part of the process by which groups such as the Kayapó and Penan become icons for the green movement. Finally, Kalland rounds off the volume by returning to some of the key themes opened up in this introduction, offering new critical insights in the light of the volume as a whole.

THE END OF INDIGENOUS KNOWLEDGE?

We began with a list of distinctive features of what, for the sake of convenience, we have called IK. However, IK is increasingly being criticized for its lack of organizing themes, and whatever characteristics might be used to carve out a meaningful intellectual space, the cognate terms we use and concepts against which they are matched suffer from several major epistemological weaknesses. One of these concerns the question of context and the relationship between IK and culture in its generality. A second is the extent to which IK involves practices and patterns of thought which might be described as comparable to science. A third is that it implies the existence of some overarching comparator, what we might call 'universal reason' (or science) which is always ontologically privileged. These issues are all closely related to one another, but the emphasis in each case is slightly different. Our purpose here is not to attempt a resolution of the problems so much as to highlight them as questions for further debate.

In our discussion of the effects of recording and codifying indigenous knowledge, we have drawn attention to the problem of decontextualization, in particular the separation of such knowledge from its human agents and from the situations in which it is produced, reproduced, transformed and (presumably) is at its most effective. It is important, however, to question the extent to which something called IK can ever be successfully de-coupled from the wider cultural context. Despite programmatic rhetorics to the effect that considering 'the cultural dimension' of knowledge is important, in a collection such as the eponymous *The cultural dimension of development* (Warren *et al.* 1995), the examples provided appear to have little to do with the cultural contexts in which they occur. The result is an ambiguous representation of IK as 'indigenous science', rational knowledge or empirical knowledge. Current literature on IK presents it as largely separate from the cultures in

which it originates. At best, reference is made to certain ritual and symbolic factors which should be considered, but any consideration of whether and how indigenous knowledge and culture might differ is ignored. In this way, IK is almost placed *outside* culture. Thus, in their analysis of farmer experimentation in the Andes, Rhoades and Bebbington (1995:298) present local knowledge as a sort of free-floating quasi-science based on individual creativity. In an effort to liberate small-scale farmers from previous assumptions which presented them as passive and culture-bound, the authors are concerned to show that farmer knowledge is as much a science as that of laboratory scientists and to separate what is 'useful' from what is not. This approach has the effect of redefining what is useful in a somewhat narrow and technocentric way, externalizing culture (separating it from what good farmers do) and recasting it as an impediment to successful development. Such experimental techniques are no less cultural than anything else farmers may do or believe.[8] The failure to take into account the co-existence and interconnections between both empirically and symbolically motivated criteria within any system of knowledge inevitably leads to limited understandings and perhaps even fundamental failures of understanding about how IK operates and how it is situationally successful.

Indigenous knowledge has been categorized by outside interests stemming from environmental and socio-economic influences which have more to do with the popular perceptions of 'others' than with what 'others' have themselves made clear. In this sense, 'indigenous' becomes relevant and necessary to separate an observer from an observable other. Also, this neat categorization can be seen as a direct consequence of the limited parameters of western development or scientific theories which rely on an ordered conceptual frame-work from which and in which to work. We also need to ask if it is possible to define effectively the shifting boundaries between science and folk knowledge, whether the distinction is in any way helpful, and whether there is a difference between folk knowledge and folk science. On the one hand, there is a sense in which both traditional and western knowledge are anchored in their own particular socio-economic milieux: they are all indigenous to a particular context. This is reflected in the failure of scientific solutions due to ignorance concerning particular cultural circumstances (Agrawal 1995:4). But is there just good and bad science, or is science qualitatively different in its underlying cognitive organization? Is it all applied common sense, the only difference being that one is practised by the folk and the other by professionals, in other words an outcome of some division of intellectual labour? Alternatively, is folk knowledge hopelessly embedded in particular symbolic patterns of thought, while *real* science is a distinctive kind of uncommon sense, driven by a logic which often results in demonstrating its counter intuitive character

(Wolpert 1992)? Such an approach constructs science as reductive, generalizable, universalist, disinterested, open, cumulative and reliant on an explicit methodology legitimated by the generation of results. If so, to what extent can we say that 'science' ever existed in Asiatic traditions prior to western borrowings—a position which many commentators would find quite indefensible in the light of the revolution in our understanding of Asian science initiated by Joesph Needham (see, for example, Staal 1993)? At this point, of course, the trail leads us into the familiar anthropological thicket of the rationality and relativism debate (Hollis and Lukes 1982, Horton and Finnegan 1973, Overing 1985, Wilson 1970), of 'the great cognitive divide' and the highly-charged confrontations between defenders of a philosophically narrow definition of how science works, the more broad-minded pragmatists and cultural studies theorists.

Arguments about the existence of an overarching comparator in the constitution of the subject matter of IK parallel those disaggregating the concept of nature (Ingold 1992). If recognizing separate local cultural constructions *of nature* necessarily implies the existence of NATURE as a philosophical point of departure from which particular cultural deviations might be measured (Ellen 1996), the same applies to the recognition of local knowledges. This should not surprise us, since the cultural construction of nature is the necessary condition for establishing knowledge (Strathern 1992: 194). Each indigenous knowledge is necessarily locally situated and the emanation of a particular world view (it parallels 'perceived nature'). Now, in this model, there may be many indigenous knowledges (Ingold 1997), each of which access *the real world* to various degrees of imperfection and subjectiveness. From these partial, imperfect knowledges can be distilled 'universal reason' by eliminating what is incorrect, subjective, vague or local through the application of agreed tests of authoritative validation. Thus, universal reason is a superior understanding of the real world. An alternative view, that of post-modernism, cultural studies and the sociology of science, is one of extreme relativism, claiming that indigenous knowledge and science are epistemologically equivalent and equal. Our position is slightly different: that a baseline of universal reason exists and that in all traditions it is driven by shared human economic needs and cognitive processes, but also that they are activated and expressed in different cultural contexts.

A final problem we must face is what some recent writers have called 'time-space compression'. What, for example, does the implicit distinction between West and 'other'—used throughout this introduction—encode? More particularly, global-local distinctions are now blurring and we are told that we inhabit a world of 'transcultural discourse' (Milton 1996:170). However sloppy some of us may find the conceptual apparatus that is being offered to cope with these issues, they do directly address the question as to

whether it is still possible to regard local knowledges as something discrete, even less pristine, or whether we are trapped by the representations of such in global (western) media and their reformulation by indigenous people who learn it from, and who raise their consciousness of it through, western sources. Should we continue to try to separate local knowledge from global knowledge on the assumption that one or other is superior in a particular context, or should we give preference to the mixture of local and global which most indigenous peoples now rely on? It is this blurring which results in neologisms such as 'glocal' (Robertson 1996) and a new analytical emphasis on how people shift the geographical context of their knowledge (Strathern 1995). For Vitebsky (1995:183) the problem is encapsulated in the historical simultaneity of shamanism expiring on the tundra just at that moment that it is taken up by new agents. Can indigenous knowledge survive such appropriations? However, we believe that IK, in the sense of tacit, intuitive, experiential, informal, uncodified knowledge, will always be necessary and will always be generated, since, however much we come to rely on literate knowledge which has authority, the validation of technical experts and is systematically available, there will always be an interface between this kind of expert knowledge and real-world situations. It will always have to be translated and adapted to local situations and will still depend on what individuals know and reconfigure culturally independently of formal and book knowledge. Indigenous knowledge is dead. Long live indigenous knowledge.

NOTES

1. In this context it is perhaps important to stress that by IK we have in mind local *environmental* knowledge (knowledge of plants, animals, soils and other natural components) with *practical* applications, rather than the more encompassing sense of IK associated with environmental philosophies or world views, or even ITK (indigenous technical knowledge) in its wider sense. However, we accept that such practical, technical and empirical knowledge is characteristically embedded in, linked to and informed by these broader understandings.
2. On definitions, see also Berkes 1992; Chambers, 1983:82–3; Johnson 1992:4; Warren *et al.* 1995.
3. Published in English as *Colloquies on the simples and drugs of India by Garcia da Orta,* transl. Sir Clements Markham (London: Henry Southern 1913).
4. See *An account of the diseases, natural history and medicine of the East Indies, translated from the Latin of James Bontius, Physician to the Dutch settlement at Batavia, to which are added annotations by a physician* (London: T.Noteman 1769).

5. *Continans Regioni Malabarici apud Indos celeberrimos omnus generis Plantas rariores,* 12 vols. Amsterdam, 1678–1693.
6. Most of the details presented in this paragraph are derived from Grove (1996:125–34), but see also the important work of Zimmerman (1989).
7. One cannot avoid noting the comparison here between nineteenth-century field science and modernist (functionalist) anthropology in the tradition of Malinowski.
8. The difficulties of separating rational empirical knowledge from religious, moral or symbolic knowledge are well illustrated in an analysis by Lemonnier (1993) of Ankave-Anga eel-trapping.

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Chapter 1
ETHNOBIOLOGY AND ETHNOECOLOGY IN THE CONTEXT OF NATIONAL LAWS AND INTERNATIONAL AGREEMENTS AFFECTING INDIGENOUS AND LOCAL KNOWLEDGE, TRADITIONAL RESOURCES AND INTELLECTUAL PROPERTY RIGHTS

Darrell Addison Posey

Over the past twenty years, indigenous peoples—together with their languages, cultures, and knowledge systems—have become the focus of increasing international attention. In part this is the result of growing interest in the use of traditional knowledge held by local communities on the utilization of flora and fauna, and in the genetic resources, such as agricultural landraces and medicinal plants, held by indigenous peoples, with a potential for the biotechnology development of new products by the pharmaceutical, agrochemical, seed, cosmetics and nutraceutical industries.[1] Frequently cited figures indicating the enormous market potential of bioprospecting[2] —such as US$ 43 billion per year for sales of natural-product based pharmaceuticals (Principe 1989), US$ 50 billion per year for seeds derived from traditional crop varieties (RAFI 1994: 19), and similar figures for other natural compounds—have increasingly led countries rich in biological and cultural diversity to treat their flora, fauna and traditional knowledge as valuable national resources that must be protected from unauthorized exploitation, being 'developed' instead to benefit the country and its citizens.

INDIGENOUS AND LOCAL COMMUNITIES' KNOWLEDGE IN CONSERVATION AND SCIENCE

Science has increasingly recognized the importance of Indigenous Knowledge (IK, as used in this volume) in advancing hypotheses and enriching scientific knowledge in such disciplines as botany, ecology, zoology, entomology, forestry and agriculture (Posey 1986). Local and indigenous knowledge has also become central to conservation and development projects, along with a philosophical shift from implementing top-down management to community-based participation (Kalland, this volume). IK has been shown to be extraordinarily successful in the sustainable utilization of natural

resources. Indeed, the concept of *sustainability* is embodied in indigenous and traditional livelihood systems (Posey and Dutfield 1996). Historical evidence exists of the sustained productivity of indigenous systems, applied in some cases for thousands of years on the same land.[3] Indigenous peoples and traditional communities often possess a 'conservation ethic'[4] developed from living in particular ecosystems (Bierhorst 1994; Callicott 1989). This ethic cannot be regarded as universal, but indigenous systems do tend to emphasize the following specific values and features (Posey and Dutfield 1996):

- cooperation;
- family bonding and cross-generational communication, including links with ancestors;
- concern for the well-being of future generations;
- local scale, self-sufficiency, and reliance on locally available natural resources;
- rights to lands, territories and resources which tend to be collective and inalienable rather than individual and alienable;[5]
- restraint in resource exploitation and respect for nature, especially for sacred sites.

The 'traditional knowledge, innovations and practices' of 'indigenous and local communities embodying traditional lifestyles' are often referred to by scientists as Traditional Ecological Knowledge (TEK).[6] TEK is far more than a simple compilation of facts: it is the basis for local-level decision-making in areas of contemporary life, including natural resource management, nutrition, food preparation, health, education, and community and social organization. TEK is holistic, inherently dynamic, and constantly evolving through experimentation and innovation, fresh insight, and external stimuli. Scientists are becoming increasingly aware of the sophistication of TEK among many indigenous and local communities. For example, the Shuar people of the Amazonian lowlands of Ecuador use eight hundred species of plants for medicine, food, animal fodder, fuel, construction, fishing and hunting supplies. Traditional healers may rely on thousands of medicinal plants, and shifting cultivators throughout the tropics frequently sow more than a hundred varieties of crops in their forest farms (ibid.).

A failure to understand the human-modified nature of 'wild' landscapes, including those which are sparsely populated at the present time, has blinded outsiders to the management practices of indigenous peoples and local communities (Gomez-Pompa and Kaus 1992). Many so-called 'pristine' landscapes are in fact cultural landscapes, either created by humans or modified by human activity, such as natural forest management, cultivation and the use of fire (Balée 1996; Denevan 1992). Indigenous peoples, and a

growing number of scientists, believe that it is no longer acceptable simply to assume that just because landscapes and species appear to outsiders (no matter how competent or famous they may be as scientific specialists) to be 'natural', they are therefore 'wild'. According to a resolution sponsored by Aboriginal peoples at the 1995 Ecopolitics IX Conference in Darwin, Australia NLC 1996: 166):

> The term 'wilderness' as it is popularly used, and related concepts as 'wild resources', 'wild foods', etc., [are unacceptable]. These terms have connotations of terra nullius [empty or unowned land and resources] and, as such, all concerned people and organizations should look for alternative terminology which does not exclude indigenous history and meaning.

For indigenous peoples, forests are far more than just a source of timber. Most traditional peoples who inhabit forests, or areas close to forests, rely extensively upon hunted, collected or gathered foods and resources, a significant portion of which are, or have been, manipulated by humans to meet their needs. These non-domesticated resources (NDRs)—sometimes also known as 'semi-domesticates' or 'human modified species' (Posey 1994a, 1997)—form the basis for a vast treasury of useful species that science has systematically undervalued and overlooked, yet they provide food and medicinal security for local communities around the world.[7] For example, their children often supplement vitamin requirements by gathering fruits and seeds in the forests. In many countries, there are ancient forest groves which are sacred places dedicated for rituals. These may also have great conservation importance for the communities for their use as burial sites or as sources of valued medicinal plants (Posey and Dutfield 1997). Indigenous peoples also plant forest gardens and manage the regeneration of bush fallows in ways which take advantage of natural processes and mimic the biodiversity of natural forests.[8]

Much of the world's crop diversity is in the custody of farmers who still follow age-old farming and land-use practices that conserve biodiversity and provide other local benefits. Among such benefits are the promotion of indigenous diet diversity, income generation, production stability, minimization of risk, reduced insect and disease incidence, efficient use of labour, intensification of production with limited resources, and maximization of returns under low levels of technology. These ecologically-complex agricultural systems, often associated with centres of crop genetic diversity, utilize traditional cultivars or 'landraces' that constitute an essential part of our world crop genetic heritage, as well as non-domesticated plant and animal species that serve humanity as

biological resources. There are numerous categories of traditional knowledge among indigenous peoples which clearly have great potential for application in a wide range of sustainability strategies. Indigenous peoples conserve biological diversity, and in some cases provide other environmental benefits, for example, soil and water conservation, soil fertility enhancement, and management of game and fisheries (Posey and Dutfield 1997).

Globally, there is a growing recognition of the 'inextricable link'[9] between biological and cultural diversity that has stimulated a process of re-evaluation of the importance of indigenous peoples in the international community. The United Nations has become the primary forum for this process through discussions on indigenous rights by ECOSOC's Working Group on Indigenous Populations, which has developed the Draft Declaration on the Rights of Indigenous Peoples (DDRIP, see Appendix 1). The DDRIP is the result of over a decade of negotiations by indigenous peoples in the Working Group. It is now considered the principle UN document guiding debates on indigenous issues and places considerable emphasis on the importance of indigenous and local knowledge systems, which are seen as central to the integrity and well-being of indigenous societies.

The importance of traditional and local knowledge also figures prominently in the Earth Charter, Agenda 21, the Convention to Combat Desertification, and the Convention on Biological Diversity (CBD) (see Posey 1996). The CBD was opened for signature during the United Nations Conference on Conservation and Development (UNCED) in Rio de Janeiro in 1992. It has now been ratified by over 177 countries, making it the most broadly supported legally binding international agreement in global history. The majority of indigenous peoples regard it as little more than a sovereignty grab by nation states, who want to take over all biological and ecological resources existing on their lands and territories.

The objectives of the Biodiversity Convention, as stated in Article 1 are:

> the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

'Rights' here refers to the sovereign rights of states. Similarly the beneficiaries of equitable sharing are apparently the contracting parties, i.e. the nation states that ratify the CBD, not individuals, indigenous groups or communities. It is important to note that

'relevant technologies' can be interpreted to mean either 'indigenous and traditional technologies', with reference to the language of Article 18.4, 'Technical and Scientific Cooperation', or those based upon traditional 'knowledge, innovations and practices', with reference to language used in Article 8.j. The latter article states that each Contracting Party shall:

> Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

While indigenous peoples might be flattered by the recognition of their relevance to *in situ* conservation, they are hardly convinced that the governments that have so often tried to annihilate them, take away their lands and destroy their habitats are now suddenly going to defend their rights. They are also not convinced that—given their suffering and decimation in the past—any 'equitable sharing' will ever trickle down to them and their communities, even though they are the sources of both the knowledge and genetic resources that governments are seeking. Thus many indigenous leaders are both frustrated and angry that the very countries which are unwilling to guarantee even their most basic rights (to their lands, their territories, and to the expression and practice of their own languages and customs) are now zealously claiming sovereignty over the plants, animals and resources indigenous peoples have managed, protected and defended, and, indeed, even over the very knowledge that defines and sustains the souls of their peoples and the identities of their cultural systems.

This irony is no better expressed than in the CBD itself, in which intellectual property rights (IPRs) are provided as the only principal mechanism for 'equitable sharing' and protection. But IPRs are problematic for developing countries in general, and indigenous, traditional and local communities in particular, for the following reasons:

1. IPRs undermine the free exchange of commonly held resources, while stripping communities of their control over IK, cultural and genetic materials.[10]
2. They are intended to benefit society through the granting of exclusive rights to 'natural' and 'juridical' persons or 'creative individuals', not collective entities such as indigenous peoples

(cf. the Bellagio Declaration, reproduced in Appendix 3 [after Boyle 1996]).

3. They cannot protect information that does not result from a specific historic act of 'discovery'. Indigenous knowledge is transgenerational and communally shared. Knowledge may come from ancestor spirits, vision quests, or orally transmission by lineage groups. It is considered to be in the 'public domain' and, therefore, unprotectable.
4. They cannot accommodate complex non-western systems of ownership, tenure and access. IPR law assigns authorship of a song to a writer or publishing company that can record or publish it as it sees fit. Indigenous singers, however, may attribute songs to the creator spirit, and elders may reserve the right to prohibit its performance, or to limit it to certain occasions and to restricted audiences.
5. They serve to stimulate commercialization and distribution, whereas indigenous concerns may be primarily to prohibit commercialization and to restrict use and distribution. As a statement from COICA (The Coordinating Group of the Indigenous Peoples of the Amazon Basin), made in 1994, put it:

   > For members of indigenous peoples, knowledge and determination of the use of resources are collective and inter-generational. No indigenous population, whether of individuals or communities, nor the government, can sell or transfer ownership of resources which are the property of the people and which each generation has an obligation to safeguard for the next.

6. They recognize only market economic values, failing to consider spiritual, aesthetic or cultural—or even local economic—values. Information or objects may have their greatest value to indigenous peoples because of their ties with cultural identity and symbolic unity.
7. They are subject to manipulation by economic interests that wield political power. *Sui generis* protection has been obtained for semi-conductor chips and 'literary works' generated by computers (Cornish 1993), whereas indigenous peoples have insufficient power to protect even their most sacred plants, places, or artefacts.
8. They are expensive, complicated and time-consuming to obtain, and even more difficult to defend.
9. IPRs are intended to benefit society through the granting of exclusive rights to 'natural' and 'juridical' persons or 'creative individuals', not collective entities such as indigenous peoples.

10. Contemporary intellectual property law is constructed around the notion of the author as an individual, solitary and original creator, and it is for this figure that its protections are reserved. Those who do not fit this model—custodians of tribal culture and medical knowledge, collectives practising traditional artistic and musical forms, or peasant cultivators of valuable seed varieties—have no such protection.

Universities and scientific research institutions increasingly utilize IPRs to protect the results of their research that, in turn, provide much of the intellectual and informational underpinnings of international trade and development. This has led many indigenous peoples to become suspicious of scientists who study traditional knowledge, regarding them as little more than 'bioprospectors' for industry. To be more succinct, many indigenous groups view anthropologists, ethnobotanists, ethnobiologists, ethnoecologists and the like more as instruments of exploitation than objective seekers of knowledge. As a result, research into IK systems has become anything but the 'dispassionate yet critical' activity that Ellen and Harris envision for this volume (see Introduction). On the contrary, such a view is naïve and misleading. This paper argues that those who are interested in IK must recognize the sensitive political contexts in which research, development, planning and conservation activities utilizing traditional resources now occur. It further argues that equitable partnerships (including IPR agreements) with indigenous and local communities are necessary to advance studies in IK, but that existing legal and non-legal mechanisms are inadequate means of guaranteeing such collaboration. This points to the necessity of developing additional and alternative strategies, built more upon human rights and environmental concerns than upon economic considerations. The negotiations of the terms of—and the mechanisms and methodologies for—this dialogue will dominate debates on IK until sufficient consensus can be obtained to insure trust from all partners. Those who study IK should take the lead in promoting this dialogue.

CONCLUSIONS

Studies of IK are now invariably bound up with concerns over the unauthorized use and exploitation of knowledge and genetic resources, and are increasingly guided by national laws that provide for criminal penalties for infringement. At the least, the use and collection of IK raises questions of intellectual property rights. Since the CBD was signed in 1992, IPRs have become important to those working with indigenous and local knowledge systems because the data from such research are often expropriated by global economic

and commercial interests in order drastically to cut research and development costs. The resulting bioprospecting frenzy may attenuate when, as many experts predict, the highly exaggerated hype converts itself into disappointing profits. In the meantime, however, economic expectations are heightened, and IPRs have become code for the unethical and unsustainable exploitation of local communities and their resources.

Scientists and scientific institutions studying IK are affected by this situation as soon as they become involved, whether actively or passively, with the private sector. Plant, animal and cultural material collected with public funds for scientific, non-profit purposes are now open for commercial exploitation. Research, even in universities and museums, is increasingly funded by corporations and subject to IPR protection, raising questions of who controls the resulting data. 'Purely scientific' data banks have become 'mines' for 'biodiversity prospecting'. The publishing of information, traditionally the hallmark of academic success, has become a superhighway for transporting restricted (and even sacred) information into the unprotectable 'public domain'.

Nation states find themselves proclaiming major expansions of sovereignty over traditional resources, but have no means to implement or exercise the responsibility that increased sovereignty demands. Frequently, neither technical capacity nor capital potential are adequate to develop the knowledge or genetic materials that are claimed.

International law hardly exists, and where it does, as in the case of IPRs, it favours industrialized nations rather than bioculturally rich nations. There is little evidence that existing western legal structures can be adapted to enhance either the conservation of biological diversity or the empowerment of indigenous, traditional, local communities. Any attempts will need to combine 'bundles of rights' from a wide range of agreements to guide a newly emerging system of international law.

The Convention on Biological Diversity and related UNCED agreements call for access to and protection of traditional technologies and benefit-sharing in respect of their use and wider application. However, enforcement mechanisms—or, indeed, even the general basis of agreement as to what to enforce—are far from appearing on the international scene. The fundamental question of what constitute legal requirements versus moral and ethical responsibilities portends many difficulties for all 'stakeholders'.

Rather than looking hopelessly on, one hopes that the situation will provide opportunities for new dialogue; increased recognition of indigenous peoples and their knowledge; new codes of ethics and standards of conduct; socially and ecologically responsible business practices; holistic approaches to sustainability; and alternative concepts of property, ownership and value. IPRs, once replaced by a rights-based Traditional Resource Rights concept,[11] can serve to

catalyse this dialogue and, indeed, transform conflict into conciliation. But however this process evolves, it seems clear that those who study and work with IK will be at the centre of this process—hardly aloof in the 'dispassionate yet critical' world of 'objective' science.

NOTES

1. See Gray 1991; Reid *et al.* 1993; RAFI 1994; Chadwick and Marsh 1994; Posey 1995; Posey and Outfield 1996; Balick *et al.* (eds.) 1996.
2. The search for commercially valuable genetic and biochemical resources, with particular reference to the pharmaceutical, biotechnological and agricultural industries (Posey and Dutfield 1996:14).
3. For examples, see Posey and Balée 1989; Warren *et al.* 1995; Brokensha *et al.* 1980; Posey and Dutfield 1997.
4. Johannes and Ruddle (1993). define 'conservation ethic' as 'an awareness of people's ability to deplete or otherwise damage natural resources, coupled with a commitment to reduce or eliminate the consequences.'
5. According to Gray (1994): 'Indigenous land rights are based on a people's prior occupation of an area, usually before a state was even formed. In this sense, Indigenous peoples have a claim to "eminent domain" (inalienability) which a state usually considers to be its own exclusive right.... Connected with the concept of inalienability is the collective responsibility which a people has for its territory. This does not mean that individual persons cannot hold lands and resources for their own use, but that personal ownership is based on collective consent. The collective rights to lands and resources of Indigenous peoples have been acknowledged by many governments of the world in their constitutions and in international provisions.'
6. Defined by Gadgil *et al.* (1993:151) as 'A cumulative body of knowledge and beliefs handed down through generations by cultural transmission about the relationship of living beings (including humans) with one another and with their environment.'
7. Such useful species provide most of the foods, medicines, oils, essences, dyes, colours, repellents, insecticides, building materials and clothes needed by a local community.
8. For examples, see Anderson (ed.) 1990.
9. Belem Declaration: see Appendix 2.
10. Significantly, some indigenous groups already have their own policies and regulations addressing the need to control access to their territories, monitor the activities of plant collectors and researchers and become the beneficiaries of plant collections and research. Examples in Latin America are the Kuna of Panama and the Awa of Ecuador (see Posey and Dutfield 1996).
11. See Posey 1994b, 1995.

APPENDIX I
UN *Draft Declaration on the Rights of Indigenous Peoples*
As Agreed Upon By Members Of The Working Group on Indigenous Populations At Its Eleventh Session—1993

Affirming that indigenous peoples are equal in dignity and rights to all other peoples, while recognizing the right of all peoples to be different, to consider themselves different, and to be respected as such,

Affirming also that all peoples contribute to the diversity and richness of civilizations and cultures, which constitute the common heritage of humankind,

Affirming further that all doctrines, policies and practices based on or advocating superiority of peoples or individuals on the basis of national origin, racial, religious, ethnic or cultural differences are racist, scientifically false, legally invalid, morally condemnable and socially unjust,

Reaffirming also that indigenous peoples, in the exercise of their rights, should be free from discrimination of any kind,

Concerned that indigenous peoples have been deprived of their human rights and fundamental freedoms, resulting, inter alia, in their colonization and dispossession of their lands, territories and resources, thus preventing them from exercising, in particular, their right to development in accordance with their own needs and interests,

Recognizing the urgent need to respect and promote the inherent rights and characteristics of indigenous peoples, especially their rights to their lands, territories and resources, which derive from their political, economic and social structures, and from their cultures, spiritual traditions, histories and philosophies,

Welcoming the fact that indigenous peoples are organizing themselves for political, economic, social and cultural enhancement and in order to bring an end to all forms of discrimination and oppression wherever they occur,

Convinced that control by indigenous peoples over developments affecting them and their lands, territories and resources will enable them to maintain and strengthen their institutions, cultures and traditions, and to promote their development in accordance with their institutions, cultures and traditions, and to promote their development in accordance with their aspirations and needs,

Recognizing also that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment,

Emphasizing the need for demilitarization of the lands and territories of indigenous peoples, which will contribute to peace,

economic and social progress and development, understanding and friendly relations among the nations and peoples of the world,

Recognizing in particular the right of indigenous families and communities to retain shared responsibility for the upbringing, training, education and well-being of their children,

Recognizing also that indigenous peoples have the right freely to determine their relaionships with States in a spirit of coexistence, mutual benefit and full respect,

Considering that treaties, agreements and other arrangements between States and indigenous peoples are properly matters of international concern and responsibility,

Acknowledging that the Charter of the United Nations, the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights affirm the fundamental importance of the right of self-determination of all peoples, by virtue of which they freely determine their political status and freely pursue their economic, social and cultural development,

Bearing in mind that nothing in this Declaration may be used to deny any peoples their right of self-determination,

Encouraging States to comply with and effectively implement all international instruments, in particular those related to human rights, as they apply to indigenous peoples, in consultation and cooperation with the peoples concerned

Emphasizing that the United Nations has an important and continuing role to play in promoting and protecting the rights of indigenous peoples,

Believing that this Declaration is a further important step forward for the recognition, promotion and protection of the rights and freedoms of indigenous peoples and in the development of relevant activities of the United Nations system in this field,

Solemnly proclaims the following United Nations Declaration on the Rights of Indigenous Peoples:

ARTICLES

PART I

1. Indigenous peoples have the right to the full and effective enjoyment of all human rights and fundamental freedoms recognized in the Charter of the United Nations, the Universal Declaration of Human Rights and international human rights law.
2. Indigenous individuals and peoples are free and equal to other individuals and peoples in dignity and rights, and have the

right to be free from any kind of adverse discrimination, in partiular that based on their indigenous origin or identity.

3. Indigenous peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.
4. Indigenous peoples have the right to maintain and strengthen their distinct political, economic, social and cultural characteristics, as well as their legal systems, while retaining their rights to participate fully, if they so choose, in the political, economic, social and cultural life of the State.
5. Every indigenous individual has the right to a nationality.

PART II

6. Indigenous peoples have the collective right to live in freedom, peace and security as distinct peoples and to full guarantees against genocide or any other act of violence, including the removal of indigenous children from their families and communities under any pretext. In addition, they have the individual rights to life, physical and mental integrity, liberty and security of person.
7. Indigenous peoples have the collective and individual right not to be subjected to ethnocide and cultural genocide, including prevention of and redress for:

(a) Any action which has the aim or effect of depriving them of their integrity as distinct peoples, or of their cultural values or ethnic identities;
(b) Any action which has the aim or effect of dispossessing them of their lands, territories or resources;
(c) Any form of population transfer which has the aim or effect of violating or undermining any of their rights;
(d) Any form of assimilation or integration by other cultures or ways of life imposed on them by legislative, administrative or other measures;
(e) Any form of propaganda directed against them.

8. Indigenous peoples have the collective and individual right to maintain and develop their distinctive identities and characteristics, including the right to identify themselves as indigenous and to be recognized as such.
9. Indigenous peoples and individuals have the right to belong to an indigenous community or nation, in accordance with the traditions and customs of the community or nation concerned. No disadvantage of any kind may arise from the exercise of such a right.

10. Indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return.
11. Indigenous peoples have the right to special protection and security in periods of armed conflict. States shall observe international standards, in particular the Fourth Geneva Convention of 1949, for the protection of civilian populations in circumstances of emergency and armed conflict, and shall not:

    (a) Recruit indigenous individuals against their will into the armed forces and, in particular, for use against other indigenous peoples;
    (b) Recruit indigenous children into the armed forces under any circumstances;
    (c) Force indigenous individuals to abandon their lands, territories or means of subsistence, or relocate them in special centres for military purposes;
    (d) Force indigenous individuals to work for military purposes under any discriminatory purposes.

PART III

12. Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artifacts, designs, ceremonies, technologies and visual and performing arts and literature, as well as the right to the restitution of cultural, intellectual, religious and spiritual property taken without their free and informed consent or in violation of their laws, traditions and customs.
13. Indigenous peoples have the right to manifest, practice, develop and teach their spiritual and religious traditions, customs and ceremonies; the right to maintain, protect, and have access in privacy to their religious and cultural sites; the right to the use and control of ceremonial objects; and the right to the repatriation of human remains. States shall take effective measures, in conjunction with the indigenous peoples concerned, to ensure that indigenous sacred places, including burial sites, be preserved, respected and protected.
14. Indigenous peoples have the right to revitalize, use, develop and transmit to future generation their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities,

places and persons. States shall take effective measures, whenever any right of indigenous peoples may be threatened, to ensure this right is protected and also to ensure that they can understand and be understood in political, legal and administrative proceedings, where necessary through the provision of interpretation or by any other appropriate means.

PART IV

15. Indigenous children have the right to all levels and forms of education of the State. All indigenous peoples also have this right and the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning. Indigenous children living outside their communities have the right to be provided access to education in their own culture and language. States shall take effective measures to provide appropriate resources for these puposes.
16. Indigenous peoples have the right to have the dignity and diversity of their cultures, traditions, histories and aspirations appropriately reflected in all forms of education and public information.

    States shall take effective measure, in consultation with the indigenous peoples concerned, to eliminate prejudice and discimination and to promote tolerance, understanding and good relations among indigenous peoples and all segments of society.
17. Indigenous peoples have the right to establish their own media in their own languages. They also have the right to equal access to all forms of non-indigenous media. States shall take effective measures to ensure that State-owned media duly reflect indigenous cultural diversity.
18. Indigenous peoples have the right to enjoy fully all rights established under international labour law and national labour legislation. Indigenous peoples have the right not to be subjected to any discriminatory conditions of labour, employment or salary.

PART V

19. Indigenous peoples have the right to participate fully, if they so choose, at all levels of decision-making in matters which may affect their rights, lives and destinies through representatives chosen by themselves in accordance with their own

procedures, as well as to maintain and develop their own indigenous decision-making institutions.

20. Indigenous peoples have the right to participate fully, if they so choose, through procedures determined by them, in devising legislative or administrative measures that may affect them. States shall obtain the free and informed consent of the peoples concerned before adopting and implementing such measures.
21. Indigenous peoples have the right to maintain and develop their political, economic and social systems, to be secure in the enjoyment of their own means of subsistence and development, and to engage freely in all their traditional and other economic activities. Indigenous peoples who have been deprived of their means of subsistence and development are entitled to just and fair compensation.
22. Indigenous peoples have the right to special measures for the immediate, effective and continuing improvement of their economic and social conditions, including in the areas of employment, vocational training and retraining, housing, sanitation, health and social security.

    Particular attention shall be paid to the rights and special needs of indigenous elders, women, youth, children and disabled persons.
23. Indigenous peoples have the right to determine and develop priorities and strategies for exercising their right to development. In particular, indigenous peoples have the right to determine and develop all health, housing and other economic and social programmes affecting them and, as far as possible, to administer such programmes through their own institutions.
24. Indigenous peoples have the right to their traditional medicines and health practices, including the right to the protection of vital medicinal plants, animals and minerals. They also have the right of access, without any discrimination, to all medical institutions, health services and medical care.

PART VI

25. Indigenous peoples have the right to maintain and strengthen their distinctive spiritual and material relationships with the lands, territories, waters and coastal seas and other resources which they have traditionally owned or otherwise occupied or used, and to uphold their responsibilities to future generations in this regard.
26. Indigenous peoples have the right to own, develop, control and use the lands and territories, including the total environment of the lands, air, waters, coastal seas, sea-ice, flora and fauna

and other resources which they have traditionally owned or otherwise occupied or used. This includes the right to the full recognition of their laws, traditions and customs, land-tenure systems and institutions for the development and management of resources, and the right to effective measures by States to prevent any interference with, alienation of or encroachment upon these rights.

27. Indigenous peoples have the right to the restitution of the lands, territories and resources which they have traditionally owned or otherwise occupied or used; and which have been confiscated, occupied, used or damaged without their free and informed consent. Where this is not possible, they have the right to just and fair compensation. Unless otherwise freely agreed upon by the peoples concerned, compensation shall take the form of lands, territories and resources equal in quality, size and legal status.
28. Indigenous peoples have the right to the conservation, restoration and protection of the total environment and the productive capacity of their lands, territories and resources, as well as to assistance for this purpose from States and through international cooperation. Military activities shall not take place in the lands and territories of indigenous peoples, unless otherwise freely agreed upon by the peoples concerned.

    States shall take effective measures to ensure that no storage of hazardous materials shall take place in the lands and territories of indigenous peoples. States shall also take effective measures to ensure, as needed, that programmes for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented.
29. Indigenous peoples are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property. They have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts.
30. Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands, territories and other resources, including the right to require that States obtain their free and informed consent prior to the approval of any project affecting their lands, territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources. Pursuant to agreement with the indigenous peoples concerned, just and fair compensation shall be provided for any such activities and measures taken to

mitigate adverse environmental, economic, social, cultural or spiritual impact.

PART VII

31. Indigenous peoples, as a specific form of exercising their right to self-determination, have the right to autonomy or self-government in matters relating to their internal and local affairs, including culture, religion, education, information, media, health, housing, employment, social welfare, economic activities, land and resources management, environment and entry by non-members, as well as ways and means for financing these autonomous functions.
32. Indigenous peoples have the collective right to determine their own citizenship in accordance with their customs and traditions. Indigenous citizenship does not impair the right of indigenous individuals to obtain citizenship of the States in which they live. Indigenous peoples have the right to determine the structures and to select the membership of their institutions in accordance with their own procedures.
33. Indigenous peoples have the right to promote, develop and maintain their institutional structures and their distinctive juridical customs, traditions, procedures and practices, in accordance with internationally recognized human rights standards.
34. Indigenous peoples have the collective right to determine the responsibilities of individuals to their communities.
35. Indigenous peoples, in particular those divided by international borders, have the right to maintain and develop contacts, relations and cooperation, including activities for spiritual, cultural, political, economic and social purposes, with other peoples across borders. States shall take effective measures to ensure the exercise and implementation of this right.
36. Indigenous peoples have the right to the recognition, observance and enforcement of treaties, agreements and other constructive arrangements concluded with States or their successors, according to their original spirit and intent, and to have States honour and respect such treaties, agreements and other constructive arrangements. Conflicts and disputes which cannot otherwise be settled should be submitted to competent international bodies agreed to by all parties concerned.

PART VIII

37. States shall take effective and appropriate measures, in consultation with the indigenous peoples concerned, to give

full effect to the provisions of this Declaration. The rights recognized herein shall be adopted and included in national legislation in such a manner that indigenous peoples can avail themselves of such rights in practice.

38. Indigenous peoples have the right to have access to adequate financial and technical assistance, from States and through international cooperation, to pursue freely their political, economic, social, cultural and spiritual development and for the enjoyment of the rights and freedoms recognized in this Declaration.
39. Indigenous peoples have the right to have access to and prompt decision through mutually acceptable and fair procedures for the resolution of conflicts and disputes with States, as well as to effective remedies for all infringements of their individual and collective rights. Such a decision shall take into consideration the customs, traditions, rules and legal systems of the indigenous peoples concerned.
40. The organs and specialized agencies of the United Nations system and other intergovernmental organizations shall contribute to the full realization of the provisions of this Declaration through the mobilization, *inter alia,* of financial cooperation and technical assistance. Ways and means of ensuring participation of indigenous peoples on issues affecting them shall be established.
41. The United Nations shall take the necessary steps to ensure the implementation of this Declaration including the creation of a body at the highest level with special competence in this field and with the direct participation of indigenous peoples. All United Nations bodies shall promote respect for and full application of the provisions of this Declaration.

PART IX

42. The rights recognized herein constitute the minimum standards for the survival, dignity and well-being of the indigenous peoples of the world.
43. All the rights and freedoms recognized herein are equally guaranteed to male and female indigenous individuals.
44. Nothing in this Declaration may be construed as diminishing or extinguishing existing or future rights indigenous peoples may have or acquire.
45. Nothing in this Declaration may be interpreted as implying for any State, group or person any right to engage in any activity or to perform any act contrary to the Charter of the United Nations.

APPENDIX 2

The Declaration of Belém

[The Declaration of Belém, the founding set of principles of the International Society for Ethnobiology, refers to traditional knowledge as the basis for the 'inextricable link' between biological and cultural diversity. See Posey and Dutfield 1996.]

This Declaration was adopted at the First International Congress of Ethnobiology in Belém, Brazil, in 1988.

As ethnobiologists, we are alarmed that:

SINCE

> tropical forests and other fragile ecosystems are disappearing, many species, both plant and animal, are threatened with extinction, indigenous cultures around the world are being disrupted and destroyed;

and GIVEN

> that economic, agricultural, and health conditions of people are dependent on these resources, that native peoples have been stewards of 99% of the world's genetic resources, and that there is an inextricable link between cultural and biological diversity

We, members of the International Society of Ethnobiology, strongly urge action as follows:

1) henceforth, a substantial proportion of development aid be devoted to efforts aimed at ethno-biological inventory, conservation, and management programs;
2) mechanisms be established by which indigenous specialists are recognized as proper authorities and are consulted in all programs affecting them, their resources, and their environment;
3) all other inalienable human rights be recognized and guaranteed, including cultural and linguistic identity;
4) procedures be developed to compensate native peoples for the utilization of their knowledge and their biological resources;
5) educational programs be implemented to alert the global community to the value of ethnobiological knowledge for human well-being;
6) all medical programs include the recognition of and respect for traditional healers and the incorporation of traditional health practices that enhance the health status of these populations;
7) ethnobiologists make available the results of their research to the native peoples with whom they have worked, especially including dissemination in the native language;

8) exchange of information be promoted among indigenous and peasant peoples regarding conservation, management, and sustained utilization of resources.

APPENDIX 3

The Bellagio Declaration

We the participants at the Bellagio Conference on intellectual property, come from many nations, professions and disciplines. We are lawyers and literary critics, computer scientists and publishers, teachers and writers, environmentalists and scholars of cultural heritage.

Sharing a common concern: the effects of the international regime of intellectual property law on our communities, on scientific progress and international development, on our environment, on the culture of indigenous peoples. In particular,

Applauding the increasing attention by the world community to such previously ignored issues as the preservation of the environment, of cultural heritage, and biodiversity. But

Convinced that the role of intellectual property in these areas has been neglected for too long, we therefore convened a conference of academics, activists and practitioners diverse in geographical and cultural background as well as professional area of interest.

Discovering that many of the different concerns faced in each of these diverse areas could be traced back to the same oversights and injustices in the current international intellectual property system, we hereby

Declare the following:

First, Intellectual property laws have profound effects on issues as disparate as scientific and artistic progress, biodiversity, access to information, and the cultures of indigenous and tribal peoples. Yet all too often those laws are constructed without taking such effects into account, constructed around a paradigm that is selectively blind to the scientific and artistic contributions of many of the world's cultures and constructed in fora where those who will be most directly affected have no representation.

Second, many of these problems are built into the basic structure and assumptions of intellectual property. Contemporary intellectual property law is constructed around the notion of the author, the individual, solitary and original creator, and it is for this figure that its protections are reserved. Those who do not fit this model—custodians of tribal culture and medical knowledge, collectives practicing traditional artistic and musical forms, or peasant cultivators of valuable seed varieties, for example—are denied intellectual property protection.

Third, such a system has strongly negative consequences. Increasingly, traditional knowledge, folklore, genetic material and

native medical knowledge flow out of their countries of origin unprotected by intellectual property, while works from developed countries flow in, well protected by international intellectual property agreements, backed by the threat of trade sanctions.

Fourth, in general, systems built around the author paradigm tend to obscure or undervalue the importance of 'the public domain', the intellectual and cultural commons from which future works will be constructed. Each intellectual property right, in effect, fences off some portion of the public domain, making it unavailable to future creators. In striking respects, the current situation raises the same concerns raised twenty years ago by the impending privatization of the deep-sea bed. The aggressive expansion of intellectual property rights has the potential to inhibit development and future creation by fencing off 'the commons', and yet—in striking contrast to the reaction over the deep sea bed—the international community seems unaware of the fact.

Fifth, we deplore these tendencies, deplore them as not merely unjust but unwise, and entreat the international community to reconsider the assumptions on which and the procedures by which the international intellectual property regime is shaped.

In general, we favor an increased recognition and protection of the public domain. We call on the international community to expand the public domain through expansive application of concepts of 'fair use', compulsory licensing, and narrower initial coverage of property rights in the first place. But since existing author-focused regimes are blind both to the importance of the commons and to the interests of non-authorial producers, the main exception to this expansion of the public domain should be in favor of those who have been excluded by the authorial biases of current law.

Specifically, we advocate consideration of special regimes, possibly in the form of 'neighboring' or 'related' rights regimes, for the following areas:

The protection of folkloric works.

The protection of works of cultural heritage.

The protection of the biological and ecological 'know-how' of traditional peoples.

In addition, we support systematic reconsideration of the basis on which new kinds of works related to digital technology, such as computer programs and electronic data bases, are protected under national and international intellectual property regimes. We recognize the economic importance of works falling into these categories, and the significant investments made in their production. Nevertheless, given the importance of the various concerns raised by such a regime—concerns about public access, international development and technological innovation—we believe that choices about how and how much to protect databases should be made with a view to the specific policy objectives such protection

is designed to achieve, rather than as a reflexive response to their categorization as 'works of authorship'.

On a systemic level, we call upon states and non-governmental organizations to move towards the democratization of the fora in which the international intellectual property regime is debated and decided.

In conclusion, we declare that in an era where information is among the most precious of all resources, intellectual property rights cannot be framed by the few to be applied to the many. They cannot be framed on assumptions that disproportionately exclude the contributions of much of the world community. They can no longer be constructed without reference to their ecological, cultural and scientific effects. We must reimagine the international regime of intellectual property. It is to that task that this Declaration calls its readers.

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Chapter 2
'WE WANDER IN OUR ANCESTORS' YARD': SEA CUCUMBER GATHERING IN ARU, EASTERN INDONESIA

Manon Osseweijer

Local Environmental Knowledge

This chapter describes local knowledge of Aruese sea cucumber harvesting practices, including their significance for more sustainable exploitation.[1] It is based on the following assumptions. First, I draw upon Geertz's understanding of local knowledge: 'local not just as to place, time, class, and variety of issues, but as to accent-vernacular characterizations of what happens connected to vernacular imaginings of what can' (Geertz 1983:215). The pertinence of this way of regarding local knowledge is 'in drawing attention to the need to treat what happens contextually in terms of ideas and beliefs in the culture in question' (Hobart 1993:18). It implies that local knowledge need not be identical with indigenous knowledge, but rather entails a dialogue of *indigenous knowledge interlocked with exogenous knowledge.* Indigenous knowledge can rarely be treated as an insulated domain, especially where local subsistence interacts with commercial markets and preferences, whose 'exogenous knowledge' therefore needs to be apprehended within indigenous knowledge. Secondly, I draw upon Ingold's (1992) heuristic distinction between perception and understanding: respectively, between the way people practically conceive of the natural environment and what it 'affords' them, and the more metaphysical or non-apparent interpretation of such empirical observations, including cosmological ideas of the natural environment and its social reciprocities. In everyday life, such perceptions and under-standings—or practical and metaphysical kinds of knowledge—are, of course, likely to be interconnected and mutually influential. Yet Ingold's analytical distinction proves useful in understanding observed discrepancies between people's practical perceptions and their imaginative understandings of

natural resources, as appears to be the case in Aruese *trepang* harvesting.

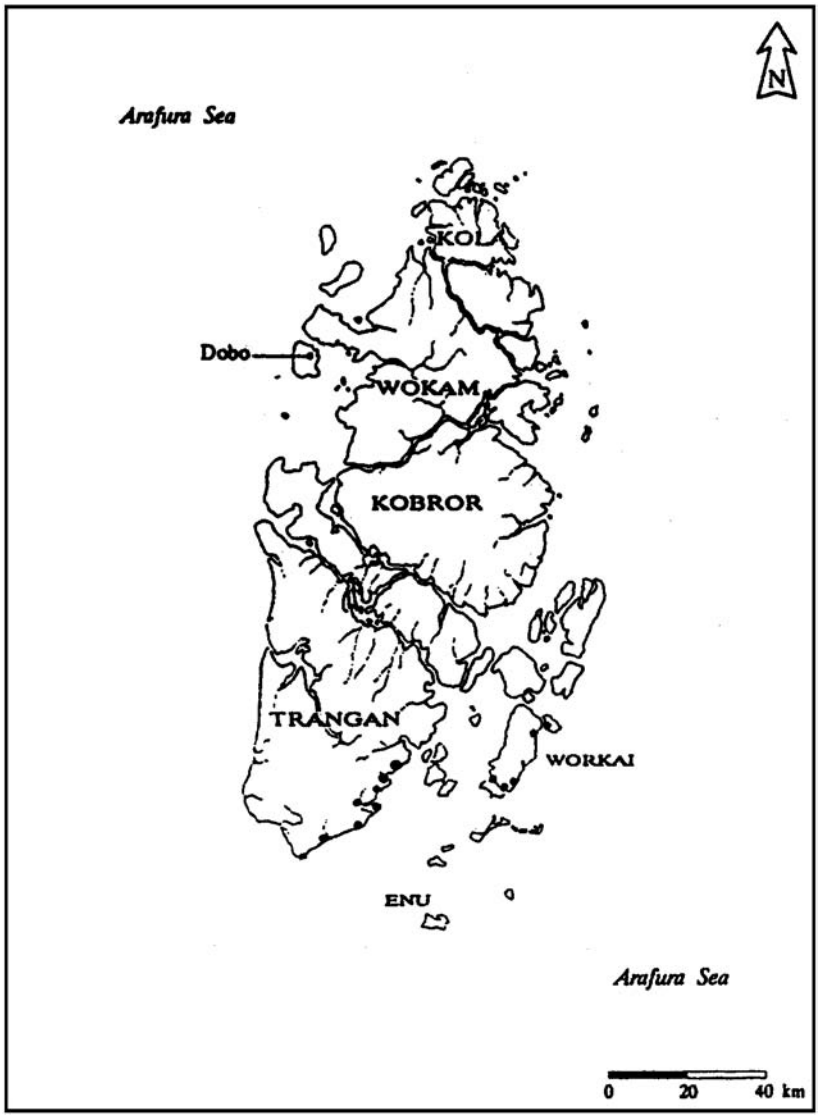
The following is an account of my personal experience of 'being-in-the-world' of an Aruese village. This was Beltubur, a village of approximately 500 inhabitants in the Southeast of the archipelago. My narrative concerns sea cucumber harvesting on the tidal flats and in the deeper waters near the coast and between the islands, which are the main source of local income. The Aruese appear to be grossly over-harvesting sea cucumbers, to the point of extinction. They seem to be aware of this predicament, yet they seem to be unable to do much collectively about it.

Sea Cucumber Trade in the Aru Islands

The Aru Islands are situated in Southeast Maluku Province, Indonesia. The archipelago consists of five main islands, of which Wokam, Kobroor and Trangan are the largest, with many smaller islands along the east coast, amounting to a total land area of 8,225 sq.km. A population of approximately 55,000 people is distributed over 125 small villages and two towns, Dobo, the administrative centre of the sub-region *(kecamatan),* and Benjina, an important fisheries harbour (see Map 2.1). The Aru Islands are geologically part of the Sahul shelf and thus connected to New Guinea and Australia.

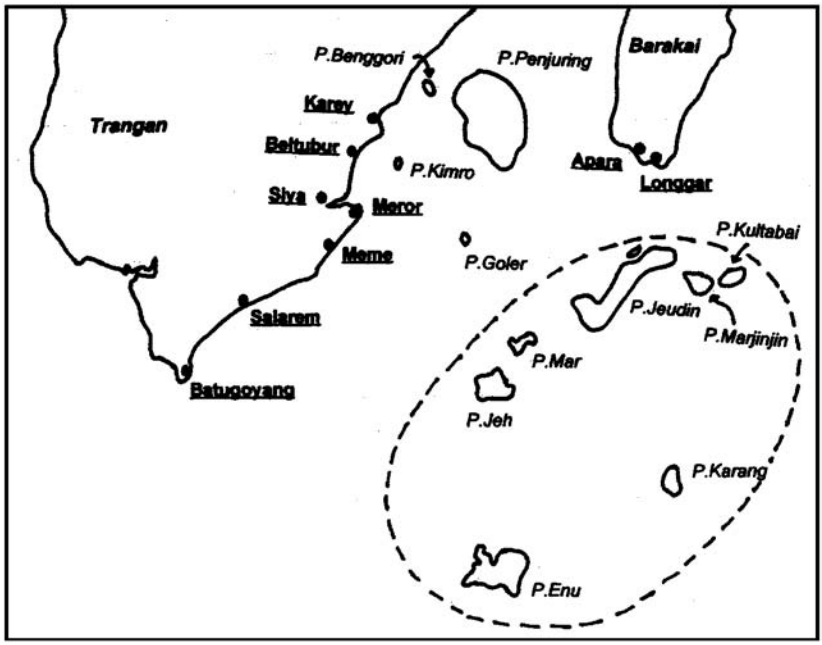
The sea between the three land masses has an average depth of only forty metres, so the landscape near the islands comprises a vast expanse of tidal flats consisting of sandbanks, coral reefs and sea grass beds. Aruese people are sedentary hunters and foragers, and also engage in wild plant-food subsistence. They are therefore seasonally dependent upon the two monsoons for their economic activities. The east monsoon (May to October) allows people to collect sea cucumbers on the tidal flats and sandbanks, fish, work in their gardens, make sago starch, collect many kinds of molluscs and crabs on the beaches and in the mangroves, and hunt deer or wild pig in the savannas and forests. During the west monsoon (November to April), people focus more exclusively on marine resources, such as pearl-diving, collecting sea cucumbers (on the tidal flats as well as in deeper areas) and occasionally shark fishing.[2] Yet Aruese do not collect just for their own subsistence: they are collectors for trade and have exchange or barter relations with Indonesian and Chinese middlemen and shopkeepers, who have lived in their villages for several generations. These shopkeepers have specialized in the trade of such marine resources as sharks' fins, sea cucumbers and pearl oysters. Migrant Bugis and Buton fishermen also engage in large-scale shark fisheries.

Edible sea cucumbers, also known as sea slugs, *bêche-de-mer* or *trepang* (Malay), are invertebrates inhabiting all seas and depths,



MAP 2.1 THE ARU ARCHIPELAGO (AFTER: ENVIRONMENTAL PROGRAMME MALUKU/PSL UNPATTI, 1994)

which have a distinct commercial niche in the commodity market of Southeast Asia. *Trepang* is exported dried or smoked to Hong Kong, Singapore, China, Malaysia, Taiwan and Japan, where it is used as a delicacy in Chinese and Japanese cooking. *Trepang* (Chinese *hai-shên* or 'sea ginseng') is valued as a 'fortifying food' (Chinese *pu*), high in protein and calories, having a jelly-like texture which gives



MAP 2.2 SOUTHEAST ARU AND THE ARU TENGCARA MARINE RESERVE (AFTER: ENVIRONMENTAL PROGRAMME MALUKU/PSL UNPATTI, 1994).

the right substance to the dish. It takes on and accentuates the flavours of other ingredients used for the dish and it is reputed to stimulate sexual appetite. Parts of the *trepang* are also considered to have medicinal value.[3]

In Aru, sea cucumbers have been collected by local people ever since traders from Makassar and Bugis visited the islands at the beginning of the nineteenth century. Traders from Gorom bartered sago with Aruese of the hinterland for pearl oysters, *trepang* and turtles, which they sold to traders in Dobo. From the 1840s, Hokien Chinese coming from Singapore through Makassar also entered the trade network in Aru, ending the Bugis and Makassan monopolies (and notoriously harsh practices). Chinese traders or *anakodas* came to Dobo at the start of the west monsoon, temporarily settling there and buying *trepang* and other valuable commodities like pearl oysters, sharks' fins and birds' nests from Aruese coming to the main town; or else these traders would send commissionaires *(toekang petak)* into the Aruese hinterland *(belakang tanah)* to stay for a couple of months (March-August) in local settlements and run their businesses. Aruese bought their imports on credit and afterwards paid with maritime resources. Most Aruese thereby acquired enormous debts which could not easily be settled. Annual

interest on debts would thus double, with repayments postponed to the next west monsoon. But often extensions of payment were not granted, and traders 'passed on' the cost of an expected default through the high price of their own products. There were then no agreed price regulations with respect to the size of *trepang*, although prices did correspond to distinctions in species.[4] In an 1854 report, Bosscher already remarked strikingly that Aruese myopically gathered *trepang* on the same sand bank until the stock seemed to be depleted (1854:349). But in this particular region people then used to collect just one species. Only after 1994–5, when a pearl-oyster virus and low prices of seaweed diminished income from alternative products, did traders encourage local people to collect other species of *trepang.* Moreover, with the exception of Karey and Batugoyang, Aruese villages were earlier located further inland, with less immediate access to maritime resources. Only at the beginning of this century, under administrative pressure from the Dutch colonial government, were villages moved closer to the coast.

Indonesian-Chinese traders who buy *trepang* from the Aruese nowadays live permanently in this region. The two traders in Beltubur village, for example, have lived there for over thirty years. One was born in the village, having a Chinese father and an Aruese mother, and she had only recently established a shop there. The other trader was born in a village further north, also with a Chinese father and an Aruese mother, and had come to this village as a pioneer with his young family. He had started buying and selling on his boat, with which he would visit the villages of east Trangan Island and Barakai Island, otherwise subsisting like local Aruese by hunting and gardening.

The preparation of sea cucumbers for sale requires much energy and effort. The fresh animals are cleaned, gutted and boiled to cause them to eviscerate as well as to shorten and thicken. Then they are dried, either in the sun or by smoking over a fire, when sometimes the body ossicles are removed (see Plate 2.1). Aruese today collect some eight species of sea cucumber, which are highly prized commodities: depending on the species, one kilogram of smoked and dried *trepang* yields Rp. 7,500 to 160,000 (April 1998) when sold in the local store. From there it is shipped to Dobo, and via Surabaya or Ujung Pandang it will finally reach dried seafood shops in Hong Kong and Singapore. Considering the already high price of *trepang* in the village, one can imagine its exorbitant price when it reaches the Chinese markets. In 1989, the amount of *trepang* exported from Indonesia to Hong Kong (the major centre of the world-wide sea-cucumber trade) was 1,785,60 tons, a 40% share of the Hong Kong *trepang* market (van Eys 1986: 41–4; Sant 1995:66).

At the time I was living in Beltubur village, sea-cucumber collecting had become one of the main income-generating activities in the coastal zone of the Aru Islands. Due to a price collapse for pearl oysters, which were temporarily no longer being bought from

Aruese divers by the end of 1996, local people had lost a substantial part of their traditional income (although since then pearl oysters are again being bought at the same earlier low price of Rp. 15,000). Consequently, *trepang*-collecting by men, women and children was intensified to substitute for this lost income.

THE PRACTICE OF HARVESTING TREPANG

Information on *trepang* harvesting was gathered in several different ways. Aruese were individually interviewed, as were some shop-

PLATE 2.1 ARUESE WOMAN CLEANING BOILED *TREPANG* AND REMOVING ITS OSSICLES

keepers, but most of the time I asked groups of people—men and women separately—freely to discuss sea-cucumber collecting, also gathering information on the species found and places visited through self-drawn maps. Most such data was collected in the appropriate context of actual gathering trips. I thus had informal conversations with the participants on the way out to a reef or while out collecting *trepang,* and afterwards, back in the village, it was easy to pursue such enquiries with reference to our shared experiences. But sometimes specific knowledge, whether practical or metaphysical, was not easily shared. Having privileged knowledge of something gives a person power over those who do not have that knowledge, which can be a good reason for not telling everything; also, recalling one's knowledge of a marine resource like *trepang* takes time, gradually accumulating through fragmentary bits and pieces of information. The practice of *trepang*-collecting is therefore

described with the help of three such experiential fragments, based on my own field notebook and diary, which appropriately narrate such cumulative and fragmentary knowledge, as well as conveying the contextual atmosphere of this practical activity.

Durel (30 September 1996)

> It was 7.00 a.m., the agreed time to meet the other women in Edo's shop [Edo is one of the two Indonesian-Chinese shopkeepers or middlemen in Beltubur village]. Today we are to go on a trip to some islands and tidal flats to collect sea cucumbers. Edo will take us and we promised, in exchange, to sell the 'harvest' to him. Fuel was free, but food and drinks had to be paid for. In the kitchen Mui, Edo's sister, was busy preparing some snacks, as well as forewarning me of the heat, the vicious rays that sting the ankles, the slimy *trepang* themselves, the weariness on board, the basic meals of sago or rice with (salted) fish we might expect, the cramped sleeping facilities, and so on. But she could not change my mind. By 10. 00 a.m. Edo, the four women and I departed, and after about an hour's sailing eastwards from Beltubur we arrived at Durel. There we had to wait another hour for low tide.
>
> After lunch we changed into long-sleeved shirts, headgear and rubber boots or canvas shoes. We descended into the water: the view was vast: all around us was ocean, with a single coral reef ahead. It was exhausting to walk over this flat, and besides spotting some other interesting animals—red and black spotted sea stars, rays and crabs—we did not encounter as many sea cucumbers as I had imagined. We wandered for about two hours, peering vainly through the glittering water surface. The tide came in fast, and with just one or two sea cucumbers we all walked back to Edo's boat. The harvest was disappointing: a bare fifteen *trepang* of different species.

When sailing out on a collecting trip, Aruese take either a fellow villager's boat or an Indonesian-Chinese shopkeeper's craft. All have a barter relationship with a shopkeeper, in Beltubur, or in neighbouring villages, or else in the small trading settlement of Meror. Goods can be taken from the shop in advance and the amount settled afterwards when selling the *trepang.* Most villagers on a collecting trip take products (including fuel) on credit from the store first, and many times they end up in debt; but sometimes, when the sea cucumbers offered are worth more than the articles bought on credit, no cash money will be given, so villagers are effectively forced to spend their profits in the same store, or leave it chalked up for another occasion.

The barter relation is similar in the collecting trips on shopkeepers' boats. Both Indonesian-Chinese shopkeepers in

Beltubur regularly take their own group of Aruese women on trips of one to five days. The boat owner then brings the consumption goods (rice, sago, instant noodles, coffee, tea, cigarettes and tobacco), in exchange for which the participating women will sell their harvest of *trepang* or valuable molluscs. The consumed food and the fuel are evenly shared by the party and settled up according to each member's harvest. But although all Aruese have individual accounts with particular shopkeepers and try to spread their debts in hard times by buying consumption goods in shop A and sell *trepang* in shop B, those who belong to a shopkeeper's boat team of women are less independent, for they risk losing their regular means of transport if they try to sell elsewhere. This barter relationship between Indonesian—Chinese shopkeepers and Aruese villagers—more or less unchanged since Wallace's (1869) observations—remains the basis of socio-economic life throughout the Aru Islands.[5]

Gathering on Gorijahihahuai (31 October 1996)

Today Jahari (the local kiosk owner) and I decided on impulse to join the women who had planned to collect sea cucumbers on the flat called Gorijawahahai, the 'small island'. It was drizzling and the sky was cloudy: 'perfect for going on a sea cucumber trip', Jahari explained, 'because sea cucumbers show up when it is less hot.'

About 9.15 am, fully dressed and equipped, we boarded Laibu's boat and were greeted by some twenty passengers. We were soaking wet, since it was *taijugir* (spring tide), and dirty because of the muddy area in the mangroves where the boat was. The boat docked at Meror, where we delivered a couple of people who wanted to help a Beltubur family clear a garden plot. Naturally, we visited this family too: it was not yet low tide, so why not have a coffee there first; besides, some women wanted to shop in the two Chinese-owned stores.

10.30 a.m. We—ten women and two men—left for Gorijawahahai, not far from the coast. The reason for going to that location, besides its being known for its red and black sea cucumbers (*sem merah* and *sem hitam*), was that yesterday and the day before the villagers had been lucky and brought back full bags. Everyone was excited that this trip would definitely be a success. After forty minutes, we arrived at the spot and the men made explorative dives to confirm the presence of sea cucumbers.

12.15 p.m., and the water level was low enough (at calf-height) to start searching. Enthusiastically we all jumped in the water, some of us armed with spears in case we spotted a crab or fish to bring home for dinner. For two and a half hours we roamed the 'small island' for those red and black slugs. My

> huge 25 kg rice bag was slowly filled as I was wondering how exactly these animals lived and reproduced. When the water level rose you could see black sea cucumbers emerging from the sand a little.
>
> I found myself greedily picking up every single *trepang* I spotted, both small (4 cm) and large (30 cm). I suppose I had the urge to prove that I was able to collect as many as the others. Even though other women were gossiping and laughing during the collecting, there was a slight tension to be felt—a sense of keen competition. Finally, when the tide turned and water was at waist height, we climbed aboard and laid our sacks proudly on the deck. The average harvest was one sack per person, equivalent to two kilograms of dry or smoked sea cucumbers for sale. The deck was piled up with wet and heavy bags, and we all felt satisfied and thoroughly musty from strolling on the sandy seagrass beds. After a stop in Meror we returned home, where the rest of the processing started at once.

Aruese thus still collect sea cucumbers by going to a reef where someone has found a good supply the previous day or night. Subsequently, people return to that same location for up to a week, until they come back with no harvest at all. With few exceptions—notably the Imam of Beltubur, who says it is ridiculous to make a long and expensive trip when you know that the sea cucumbers are nearly depleted—most Aruese villagers still adhere to this habit of recurrent harvesting in one site to the point of resource exhaustion.

The timing of *trepang* collection is correlated with the seasons and the tides, which define the amount and species of *trepang* available. The length of the tides in the east monsoon or *enan somar* differs from that of the west monsoon or *enan ahuar,* as is also the case with spring tide *(tai jugir),* at full and new moon, and neap tide *(ermule),* at the moon's first and third quarters. At neap tide the low waters cover a longer period and are more visible than during the spring tide. Due to the complex semi-diurnal mixed tidal system on the Aru Islands, with daily two high and two low tides, each of different heights, many people actually distinguish only one low tide a day when it is spring tide. Like other women in the village who only rarely go to sea, the wife of a shop owner thus explained that it was only 'briefly low tide during the day at springtide,' when it was therefore less efficient to go on a gathering trip.

In comparing the two seasons, everyone agreed that during the east monsoon the tidal flats at sea are larger at night, requiring nocturnal gathering trips using electric torches. Men and women often leave the village for a week at such times (during neap tide) to collect and prepare *trepang,* while camping on the islands of Jeh and Mar, or in the trade settlement of Meror. During the west

monsoon, the vast tidal flats occur around noon. Those having their own boat then usually come and go every day, while those participating in Indonesian-Chinese boat trips may stay at sea for a couple of days. *Trepang* collectors often used to be involved in alternative activities during the spring tides, such as fishing, gardening and strand gathering; but when money is urgently needed, or when places appear unusually full of *trepang,* they may give its harvest a try during spring tides as well as neap tides. Even though people admit that neap tide (especially in the east monsoon) is the proper time to collect sea cucumbers, in practice it is now a year-round, everyday activity, whenever the weather permits. Even during the west monsoon men would thus dive for sea cucumbers at neap tide, while women would go to the tidal flats in the day at spring tide.

When asked about the regeneration of sea cucumbers, only a couple of men, including the Chinese-Indonesian trader in the village, reported that the *sent putih* and *matahui* species reproduce in April. You can then see the semen coming out of their bodies when boiling *trepang,* orange thick and slimy for the *matahui* and peculiarly white thin threads for the *sem putih.* People did not know exactly how long it took for a sea cucumber to reach full maturity, but length is taken as an obvious standard of age. *Sem* species smaller than 10 cm are considered immature. Recently, a party of Moslem youth collecting *sem* in a so called *bakti* general-purpose trip for the local mosque even specifically brought these small ones to the Haji's sea nursery to cultivate them there.

Aruese men as well as women are involved in sea-cucumber harvesting. Men dive during the west monsoon and collect by walking and wading during the east monsoon. Women always roam the tidal flats and coral reefs, at daytime during the west monsoon, at night during the east monsoon, sometimes together with the men, using electric torches and gas lamps. Knowledge of sea cucumber species and locations differs according to gender and relative experience. Women only visit the tidal flats and collect four species, *sem putih* and *matahui* during the east monsoon at night, while during the west monsoon black and red variants, *sem hitam* and *sem merah,* are collected. Male divers find the last three species all the year round, together with several others which only occur at depth. Different *trepang* species are also tied to specific locations, depending on seabed quality.

Night harvesting on Durel (28–29 April 1998)

This afternoon I joined Jahari's family on a trip to *senter sem* (literally 'flashlight sea cucumbers', i.e. using torches to find sea cucumbers) on Durel reef. We left Beltubur around 17.30 p.m. On our way to Meror, Jemy (Jahari's 13-year-old son) had explained me that it was *taibaiboi* or extreme high tide and

that we could step from the boat right on to the wooden pier, whereas usually we would have climbed out on to a rubber tyre. An hour later, after shopping in Meror, we sailed to Durel; it was new moon and very dark. Some were cooking at the rear end of the boat; but Jahari, her husband Husin (the captain for our trip), Jemy and I sat on the roof of the cabin, talking and watching the stars. Suddenly we stopped, and I asked Taha, Jahari's son-in-law, how one knows one has reached the right spot on Durel. 'Do you see those two stars, one of which is the morning star? Right beneath those stars is the island of Jeh, and just in front is Durel, where we are now. Then you have to estimate where to wait with your boat for low tide in order to arrive at the right spot and be able to start collecting right away without walking a great distance first.'

While having our meal, we talked about harvesting sea cucumbers. Husin said: 'Nowadays we dive and roam the reefs in both the west and east monsoons, during neap and spring tides; it is like planting something today, but then tomorrow someone else harvests it (prematurely). It is because of the price increase of *sem.* In the old days only adult men would collect, but nowadays women and children all come along to the tidal flats. The price goes up and up, but each day the amount of sea cucumbers is less and less.' Husin almost lyrically described harvesting *trepang* in front of the old village of Beltubur in 1994, when they built a raft to take the many *trepang* they had found. Five 25-kg rice bags full of sea cucumbers per person was unexceptional in those days. When I raised the possibility of total depletion, Husin answered, 'No, the maritime resources may decrease but they will not become extinct. What we might do is to stop harvesting a particular species temporarily, just as we used to do with *sir* [a kind of *sasi* or traditional harvest restriction].'

We went to Durel because other people had found many *trepang* there the night before. From 9.30 p.m.until 12.30 a.m. Jemy and I walked around in circles and collected altogether half a bag of *sem putih* and some eight big *matahui* (sandfish). We left the small sea cucumbers 'in order for them to grow,' taking only those larger than 10–12 cm.

It is intriguing to understand how people decide exactly where they should be for which species of *trepang.* At high tide, people need to navigate close to the location where they intend to gather *trepang* when it is low tide. At daybreak one can see the sandbank or reef and can check whether there are sea cucumbers by diving, but at night one has to know precisely the right spot in order to avoid a long wade out from the boat to the location at low tide. The main sites for gathering are Golir, Benggori, Durel, Jeh, Mar, Hanase and

TABLE 2.1 LOCATIONS AND THE *TREPANG SPECIES* FOUND, ACCORDING TO WOMEN IN BELTUBUR

LOCATION (TIDAL FLAT / CORAL REEF)	*TREPANG* SPECIES
SAND AND SEAGRASS	
GORIJAHIHAHUAI, MANGLENGAR	SEM PUTIH
CORAL / STONE	
BENGGORI, KALEWEL, KOLSIIJIN, ERIN, DUREL, JEH, MAR, GUALORGULTABIR	SEM SPECIES, MATAHUI TALNGOL SPECIES,
MIXED SAND AND CORAL	
TARBAWEL, TANIN, KOLHUHINABIL, JILJALU, JERUA, HANAI, HANASE, KORTABIR, GOLIR	SEM PUTIH, MATAHUI, (BIA MATA TUJUH / ABALONE)

Gorhijahihahuai, and for diving, Kolsijin, Hahatolda, Loinsi, Hanase, near Gorijahihahuai and beneath the old village of Beltubur. During group discussions, walking or diving locations for *trepang* were distinguished by men and women, of which the latter only mentioned the places they visited themselves, deferring to male knowledge about diving sites. Women distinguished between sand and seagrass, coral or stone, and mixed sand and coral locations, indicating the different species to be found in these various habitats (Table 2.1). Men distinguished many more locations, as expected, including the tidal flats and reefs where they walk together with the women, as well as their own diving locations.[6]

While women generally only collect four species, they could name others, including those 'dived for by men' or 'not having a price yet' *(belum punya harga).* The shopkeepers, however, only mentioned species which they bought from local people and sold in Dobo. The names for *trepang* species, used by both Aruese and Indonesian-Chinese shopkeepers, are mostly in the local (East Trangan) language, with terms sometimes differing between villages; but *trepang* are also known by their common Indonesian names (Table 2.2).

The dried *trepang* are sold by both men and women. Women sell their own harvests, while men sometimes sell their harvests themselves, or they may give them to their wives. All people involved in *trepang* collection know the current prices for each species, which vary from season to season. Species 'with no price yet' are in fact sold indiscriminately with other cheap species.

TABLE 2.2 TREPANG SPECIES DISTINGUISHED BY ARUESE COLLECTORS AS WELL AS INDONESIAN-CHINESE SHOPKEEPERS

TREPANG SPECIES COLLECTED AND SOLD*	ENGLISH NAME**	SCIENTIFIC NAME**
MATAHUI—TERIPANG GOSOK (H)	SANDFISH	*HOLOTHURIA SCABRA*
SEM PUTIH—TERIPANG CERAK/ BENANG (M)	WHITE TEATFISH	*H. FUSCOGILVA*
SEM MERAH—TERIPANG BENANG (M)	BROWN SANDFISH	*BOHADSCHIA MARMORATA*
SEM HITAM—TERIPANG BENANG (L)	BLACK TEATFISH	*H. NOBILIS*
TALNGOL (3 SPECIES)—TERIPANG BATU (H)	STONEFISH	*ACTINOPYGA LECANORA*
TERIPANG KOPRA / BOLA (H)	BLACKFISH	*ACTINOPYGA MILIARIS*
KARIRU—TERIPANG NAMET (H)	CURRYFISH	*STICHOPUS VARIEGATUS*
	AMBERFISH	*THELENOTA ANAX*
TERIPANG PONGKI-PONGKI / PELANGIT (L)		
TREPANG SPECIES 'NOT HAVING A PRICE YET'		
LANTU	GREENFISH	*STICHOPUS CHLORONOTUS*
ORLAKILKOL		
MATAHUI KAGIN—TERIPANG NENAS	PRICKLY REDFISH	*THELENOTA ANANAS*
MATAHUI GWOL	ELEPHANT'S TRUNKFISH	*H. FUSCOPUNCTATA*
SEM GUARDOK	PINKFISH	*H. EDULIS*

*=NAMES GIVEN BY FEMALE AND MALE INFORMANTS; **=EITHER FROM LITERATURE (SEE CANNON & SILVER 1996, SOUTH PACIFIC COMMISSION 1994 MARKET PRICES:) OR IDENTIFICATION BY INFORMANTS USING PHOTOS FROM THE LATTER REFERENCE. H=>RP. 50,000/KG; M=RP. 20,000–50,000/KG; L=<RP. 20,000/KG

UNDERSTANDING THE MARITIME ENVIRONMENT

With regard to the origins of marine resources, all Aruese villagers, whether Protestant, Catholic or Muslim, agree on the ultimate responsibility of God as Creator. Beneath God is a sea goddess, *Tai dugai* or Ruler of the Sea, and ancestors (including those who could not flee the island of Enu during a primordial deluge) who serve as proximate guardians or 'keepers' of marine resources.[7] Every marine species has its own specific guardian, who grants the resource to human beings. In order to obtain access to these resources, one should offer this guardian ritual gifts. One's chances of finding resources are also believed to be influenced by respecting customary rules when gathering at the reefs, as well as living in peace and harmony in the village and at sea. Unlike the people in the first two diary fragments (Protestant and Catholic women going with Edo, and Muslim women going with Laibu's boat), there are several women who still conform to ancestral rules, making tobacco ritual offerings at sea or when foraging. In their rites they use general proper names—even of those of Biblical prophets—to address their requests; or they may use the secret name of a particular ancestor who rested and left his or her footprint on a particular tidal flat. Knowing an ancestor's personal name gives them the power to ask for sea cucumbers or other marine resources,

which the ancestor may manifest from another spiritual or hidden world. After making the offering, one must search for sea cucumbers quietly, without talking too much or laughing or yelling. The topic of romantic love should not be discussed, and the worst ritual infringement would be to arrange a lover's tryst or engage in sexual intercourse on the tidal flat or the boat. Furthermore, one should not be greedy or over-zealous in harvesting.

Two of my key informants, Jahari and Mama Ida, still practised this traditional way of asking from the ancestors. Mama Ida explained:

> You have to be aware that the sea is not yours, you see, you are wandering in the ancestors' yard. The sea is to the ancestors what the backyard in a village is to the people. When children are making too much noise, playing in your backyard, you will probably send them away. The same is true of the ancestors. So it is possible that you leave in the morning and the weather conditions are perfect, while in the afternoon, when returning to the coast, there are enormous waves and strong winds (which are the ancestors' grandchildren).

These two women also practise traditional healing and are in many other respects unlike most Aruese villagers in their devotion to tradition. I have experienced many trips without any ritual offerings, where people are noisy, where lovers meet up together and where people were invariably greedy, taking young as well as mature sea cucumbers. Many people therefore do not behave according 'proper' Aruese rules concerning behaviour at sea. 'They just go and see whether they are lucky in bringing back a good catch; they never tell you that bad behaviour, on the tidal flats and in the village, is sanctioned by the ancestors in the form of a disappointing harvest, sudden bad weather, encounters with ancestral sharks (e.g. hammerhead sharks) or getting stung by a ray.' Still, as Jahari also made clear during our many long conversations, 'different people have different ideas', and there are indeed some young men who still use ancestral names while collecting sea cucmbers, as do almost all men with regard to pearl-diving. Some even use magical charms. But this ritual practice and knowledge is kept secret: it is not a topic to talk about openly with other people. Only when discussing tidal flats in the region and their local history, for instance, did Wau, a woman in her thirties, explain that she knew the name of a particular reefs's ancestor, which she also uses in private rituals when gathering *trepang.* But although many Aruese subscribe to this cosmological belief, which may thus influence their harvesting behaviour, at the same time they are aware of the 'natural' reproduction cycle of *trepang,* as well as the fact that they evidently over-exploit the flats and reefs.

INDIGENOUS AND EXOGENOUS KNOWLEDGE

Indonesian—Chinese traders' knowledge, on the other hand, refers primarily to commercial distribution and consumption. As Pannell described in the case of *trochus* shell collection by Damer Islanders (also Southeast Moluccas), so with Aruese *trepang* harvesting:

> understanding of the species habits and habitat is largely confined to the technicalities which facilitate its collection. Thus, little is known about the reproductive cycle of the species, its longevity or its role within the reef ecosystem. (Pannell 1993:63)

Local Aruese collectors thus tend to have more knowledge of the 'production' side of *trepang,* while Indonesian—Chinese traders know more about the 'distribution' and 'consumption' aspects. But these traders often process the *trepang* a second time themselves in order to get a better processed and more marketable product. Yet fine quality distinctions between species, the likely prices in the end-market and sometimes even where this end-market might be are not usually known by local traders.They simply buy the *trepang* and sell it in Dobo to other Indonesian-Chinese traders, usually through their own family connections. The precise route *trepang* follows from the Aruese hinterland to Singapore and Hong Kong is also unclear to them. When asked why *trepang* should be a delicacy, younger traders rarely have an answer; for they are not much interested in traditional Chinese culture and hardly speak Chinese themselves. But being in the business makes their wives know how to prepare *trepang,* which is eaten at wedding banquets and at the Chinese New Year festival, whereas an average Hong Kong woman is unlikely to know recipes for *trepang* dishes and may never cook it at home (Conttia Lai, Hong Kong, personal communication).

Indigenous Aruese knowledge is thus necessarily intertwined with the 'exogenous knowledge' of the Indonesian—Chinese traders, just as their local subsistence has long been located within a regional nexus of international trade. The Aruese learn from the traders how to process *trepang* for market sale, which species are in current demand and how much they are worth. When the trader enquires about a new species, being given market knowledge by his own ethnic networks, the villagers will try to collect it specifically and inform the trader of its local availability. Some Aruese say that they simply follow the Indonesian-Chinese shopkeepers' shifting demands. Thus when one resource becomes depleted or drastically decreases in price (like sea weed at the beginning of the 1990s), they simply collect another resource indicated by the trader as marketable.

BREAKDOWN OF COLLECTIVE MANAGEMENT

Common-property Management

In the Southeast Trangan region, sea cucumbers and all other maritime resources are commonly owned property where villages all have equal access to the reefs and flats. *Tahoran tamnam* or 'we eat together' is what people refer to in discussing such collective resource management. According to a myth about two divine and rival brothers, Ursia and Urlim, the Aru Islands were divided into two regions: the southern part was owned by Urlim (the whale), the northern part by Ursia (the shark). The villages of Trangan thus belong to the same quasi-totemic region and 'eat together' from the resources in the sea of Urlim (Urlim*gualor*). The reefs, tidal flats and islands, however, have been owned by separate clans ever since their respective ancestors left the island of Enu and travelled to these places, where they left their footprints as mnemonic traces of ownership. When one wants to gather sea cucumbers on another clan's reef, permission therefore has to be asked from the clan's elders.

As we have seen, however, sea cucumbers of all sizes are now collected, and traditional seasonal harvest restrictions are no longer adhered to. These harvest restrictions or *sir* (known as *sasi* in the rest of Maluku; cf. von Benda-Beckman *et al.* 1992; Zerner 1994) used to be practised by village clusters. Beltubur forms such a cluster with two neighbouring villages, Karey and Jorang, with which it held communal rituals, including those temporarily closing off a particular area of sea as *sir.* When *sir* was closed, it meant that during a period of three to five years it was forbidden to collect *trepang,* breaches being sanctioned by fines. After that period the area was ceremonially opened up again and people would gather sea cucumbers *en masse.* One of the older women in Beltubur had herself witnessed *sasi teripang* in another northern village: when the area was closed and opened again, an offering was brought to a location where the ancestor or guardian of the sea cucumber supposedly lives.

Under the influence of Christianity and Islam, such traditional ideas of the cosmos and the natural environment have rapidly waned. *Sasi* or *sir* is no longer practised, and even the yearly ritual for the sea goddess *(gualor kan lilil),* held at the beginning of the west monsoon (the diving season), is rarely or imperfectly observed. In 1996, Beltubur and its cluster did not conduct the ritual, while in 1997 its performance was delayed until December, when villagers had already been diving for over three months. The protocol of the ritual also deviated from tradition. The influence of the Protestant religion is especially noticeable, 'anti-tradition' being expressly advocated in church by the pastor.

Yet there are cases of Aruese villages where *sasi teripang* still occurs, as further north near the island of Baun, a nature reserve covering 55,000 hectares of virgin and secondary forest in the villages of Koba, Kobadangar and Kobaselfara. In December 1996, *sasi* was ceremonially opened after a three-year closure. It seems that the economic situation in the Southeast Trangan area is fundamentally different: unlike the Koba villages, those on Trangan form a larger area, which is less protected and more easily exploited by different outsiders. Bugis and Buton fishermen use the waters for shark-fishing; trawlers even come near the coast of South Trangan. Since 1995 there have, moreover, been serious conflicts over the ownership of land and sea, which have bitterly divided the villages. All communities are involved in these conflicts, which have already led to the mutual destruction and burning of gardens and temporary shelters on the islands; and there has even been a murder.

In 1994, the Catholic parish and the Moslems created sea nurseries *(tambak)* to cultivate *matahui* (*Holothuria scabra* or sandfish) in front of the old village of Beltubur, because the conditions for this were better than in front of the present-day village, where the sea is too shallow. There are some deeper areas where, even at low tide, the nursery is full of water, and the protection of the bay against storms was another reason. The sea cucumbers were gathered during collective trips in which everyone participated and the collective harvest was put into the nursery. But the maintenance of the stone and wooden construction of the nursery turned out to be problematic: holes appeared and were not repaired, and the stealing of sea cucumbers was a serious problem. After one year both groups therefore abandoned the nursery. A question often heard was, 'Why spend so much time on maintenance and care, which gives you only frustration, when you can harvest immediately at sea?' The postponement of the harvest and sale of *trepang* is obviously difficult in this society's 'direct-return' or hand-to-mouth economy, where everybody otherwise endorses the short-term view: 'What we find today, we sell today—and the money will also be spent today. Tomorrow we will see again.'

The erosion of traditions once adhered to by the whole community, combined with mounting economic pressure, less income from pearldiving, highly competitive demands for different species and personal debt for consumer goods—together with inter-village conflicts over property rights, have thus all contributed to a modern breakdown of traditional management regimes of marine resources, and of sea cucumbers in particular. The implicit motto seems to be, 'If I don't take it, someone else will.'

Depletion of trepang

Despite the likelihood of irreversible depletion, Indonesian-Chinese traders also seem untroubled about this alarming prospect. Only one of the traders in Meror explicitly warned villagers about a probable depletion of *trepang.* Twice he vainly tried to convince customers of an evident decrease of marine resources; but his rhetorical concern was scarcely matched by his own action, such as setting a minimal size on the sea cucumbers he would purchase.

It is conceivable that the Aruese collectors' traditional cosmology of spiritual regeneration may have contributed to such ecological optimism or fatalism concerning *trepang* harvests: i.e., that 'the social management of the species [as in respecting rules or bringing offerings to the ancestors] will somehow miraculously ensure an endless supply' (Pannell 1993:63). As local statements make clear:

> The ancestors of the sea are the keepers of the marine resources, so they can decide to take the sea cucumbers to other areas temporarily, as during the lawsuit with neighbours in Karey.
>
> If the ancestors do not want to give you sea cucumbers, then you have bad luck.
>
> The sea cucumbers have become less because the ancestors are disappointed about our social behaviour.[8]

But on the whole, Aruese people evidently know very well why the sea cucumbers are harder to find nowadays. Husin, for example, mentioned several such practical reasons in the third diary fragment reported above, namely that sea-cucumber collecting has become i) a year round activity, ii) conducted at neap tide as well as at spring tide, iii) practised by diving as well as wandering the flats and reefs, and iv) practised by men as well as women and children. Also v) traditional rules concerning the permissible size of gathered *trepang* or allowed harvest periods are no longer applicable. In short, people quite wittingly (if regretfully) over-exploit the reefs and tidal flats in ways corresponding with the personally indulgent behaviour the ancestors were supposed to abhor. Yet nobody believes marine resources will actually become extinct. They might become harder to find for ritual or other reasons of human irresponsibility, but total depletion is impossible. Such resources have always been there and they always will be there, albeit to a greater or lesser extent of human access.

THE FUTURE

Sea cucumbers and all other maritime organisms, such as sea turtles, are objects to be protected and preserved in the Southeast Aru marine reserve, established in 1991. The reserve covers 114,

000 hectares and includes many of the reefs, flats and islands the Aruese use for seacucumber collecting and pearl-diving. The reserve is not yet protected by PHPA officials (Department of Forestry and Nature Conservation), and local people do not adequately know what the reserve is intended for, or indeed, where its boundaries are.

Pannell (1996) has written critically on the establishment of this reserve and how its region is being seen as a *terra nullia* with a *homo nullius* (cf. Osseweijer 1998), further arguing that indigenous people are not natural 'conservationists' who might be expected to share the environmentalist assumptions of industrial or post-industrial westerners. These assumptions are listed as:

> 1) Things have been depleted and should be conserved; 2) there is a relationship between human action and the extent of environmental degradation; 3) humans can be instrumental in the process of replenishment and conservation; and 4) nature, when left to its own devices, will restore balance and harmony. (ibid.: 31–2)

In relation to Aruese environmental understanding, however, a culturally relative local discrepancy is only perhaps evident in the first of these 'western' assumptions: Aruese apparently do not have the same urgent desire to conserve natural resources because of escalating depletion, since they do not believe that these resources can ever become truly extinct. However, the other three 'western' assumptions do arguably apply to the way Aruese conceive of their natural environment. They know that if you gather too much of any resource it will become scarcer, and so it is aggregate human action which ultimately causes such depletion (however it may be mediated through spiritual agencies). Furthermore, Aruese did effectively leave nature to its own regenerative devices, so to speak, when they used *sasi* or *sir* harvesting bans. Restoration of 'balance and harmony' or the replenishment of the resource, if only to harvest profitably again after some time, was exactly the intended effect of *sasi.* But modern conservational ethics arguably entail more than these four basic assumptions, for conservation also implies 'non-exploitation' (however this may be conceived), which indeed Aruese do not regard as an absolute necessity or as an overriding moral imperative.

I have indicated, however, that their complex and variably distributed local knowledge may be of vital value to conservationists: for this local knowledge is where indigenous understanding responds to and mutually shapes exogenous understanding, in social and political dialogue as well as in economic cooperation with others, and in practical as well as in metaphysical conception, concerning ritual notions of marine resources like sea cucumbers and the traditional ideas behind *sasi (teripang),* together with

apprehensions of the market requirements of Indonesian-Chinese traders. Understanding such composite knowledge, compiled of locally accumulated fragments of personal experience, collective memory and inherited tradition, is indeed a necessary basis for developing a more sustainable means of resource exploitation with the Aruese together with other locally and regionally engaged indigenous actors like the Indonesian-Chinese traders; also perhaps for explaining the not entirely alien notion of a conservational reserve, an 'ancestors' yard', which might provide further for living descendants and successors.

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NOTES

1. This contribution is based on recent fieldwork on the Aru Islands, the Southeastern part of the island of Trangan, from May 1996 until February 1997 and from December 1997 until July 1998. The research was funded by NWO (Dutch Organization for Scientific Research), carried out under the auspices of the Indonesian Institute of Sciences (LIPI) and sponsored by the Pusat Studi Lingkungan, Pattimura University, Ambon.
2. See Harris 1996:444–7; Persoon *et al.* 1996:103–10. For a detailed account of pearl-diving culture on the Aru islands, see Spyer 1992, 1997.
3. See Cannon and Silver 1996 (CD-rom); MacKnight 1976:7; Simmoons 1991:25, 434–5; Stevens 1987:194; Sun Yinfu *et al.* 1983:93. Some sources mention the medicinal quality of holothurin, a toxic substance obtained from sea cucumbers with a significant anti-tumour effect (Simmoons 1991:435). Sant (1995:29) mentions that in French Polynesia the toxin from *Holothuria atra* is sometimes used in traditional medicine for soothing sea-urchin wounds.

4. See De Hollander 1898:525; van Eijbergen 1866:94, 99; Riedel 1868: 257; van Rosenberg 1878:330; Wallace 1862:131.
5. I should note that contemporary barter between shopkeepers and villagers need not be entirely one-sided. The relationship is not one of unilateral dependence, but rather of commercial interdependence, where the shopkeeper has a similar relationship with his own creditor. Nor do all Aruese invariably have huge debts with shopkeepers: it depends on the season, the payments to be made (like school fees, marriage costs, Ramadan expenses or engine investment), and of course individual self-discipline and book-keeping.
6. Cf. van den Biggelaar 1998 for locations distinguished by men during group discussion and individual interviews.
7. Aruese believe that their ancestors come from the island of origin or Enu, which used to be connected to another island, Karang. When Enu-Karang was destroyed and flooded by one of the ancestors of Trangan because of a serious quarrel of two brothers, all the ancestors had to flee the island in boats, bringing their people and clan identities with them. Those who could not flee became marine resources—fish, dolphins, sharks etc.—and promised to help the survivors whenever they were needed.
8. Stories about rare or extinct maritime animals always refer to ancestors who decided to keep such animals away from humans or send them to another place. But eventually, these animals will return. The ancestors are thus the real managers and 'keepers' of marine resources.

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Chapter 3
THE CONSTRUCTION AND DESTRUCTION OF 'INDIGENOUS' KNOWLEDGE IN INDIA'S JOINT FOREST MANAGEMENT PROGRAMME

Nandini Sundar

1908: SAN ANDRES DE SOTAVENTO THE GOVERNMENT DECIDES THAT INDIANS DON'T EXIST

> The governor, General Miguel Marino Torralvo, issues the order for the oil companies operating on the Colombian coast. The Indians do not exist, the governor certifies before a notary and witnesses. Three years ago, Law No. 1905/55, approved in Bogota by the National Congress, established that Indians did not exist in San Andres de Sotavento and other Indian communities where oil had suddenly spurted from the ground. Now the governor merely confirms the law. If Indians existed, they would be illegal. Thus they are confined to the cemetery or exile.
>
> Eduardo Galeano, *Century of the wind*

One summer afternoon, as I waited in the Jagdalpur Collectorate for an appointment with the collector, the local head of the bureaucracy in Bastar, a large tribal district in Central India, I witnessed the following exchange. Some mail had just arrived and the superintendent picked up one letter and read it aloud. It was a parliamentary question about what was being done about the rights of indigenous people in Bastar. 'Indian genius?' he wondered aloud. Then, after much discussion with the other clerks, the superintendent checked the word in the dictionary, and finding that it meant *swadeshi* or native, they decided that since *adivasis* were no less native than anyone else but also no more, the question was just not applicable to Bastar.

In recent years, predominantly tribal areas like Bastar have seen their demographics change as non-tribal immigrants have flooded into these areas, seeking their fortunes in the trade in timber and non-timber forest produce, mining, illegal tin-smelting and, of course, in that vast money-making enterprise called 'development'. Attempts by some local groups to demand an autonomous district council with pre-dominant representation for tribals has called forth indignant responses from these immigrants: 'Its all one country, we're free to settle anywhere.' The question of who is indigenous and who is not becomes, in this context, a political question, a question of representation rather than of fact. This creates a special problem. On the one hand, there is an increasing wealth of historical and ethnographic evidence which indicates the absence of any distinctly identifiable category called an indigene, or in the Indian context an *adivasi* ('original inhabitant'). On the other hand, there is the equally inescapable fact that those certified as scheduled tribes by the government of India constitute a large percentage of those displaced or destroyed by the current capitalist mode of development (Fernandes & Thukral 1989). The question of indigenous knowledge and its mobilization in government programmes, whether through participatory processes aimed at local development or straightforward extraction of local know-how to serve outside groups, must be seen in this dual context. While this section looks critically at the concept of 'indigenous' people and 'indigenous knowledge,' the following sections focus on the manner in which the rhetoric of indigenous or local knowledge is employed in development programmes.[1]

DEFINING THE 'INDIGENOUS'

Critiquing the notion that one can pigeon-hole societies into neat boxes, Eric Wolf writes:

> What of the localized Algonkin-speaking patrilineages, for example, which in the course of the fur trade moved into large nonkin villages and became known as the ethnographic Ojibwa? What of the Chipeweyans, some of whose bands gave up hunting to become fur trappers, or 'carriers,' while others continued to hunt for game as 'caribou eaters,' with people continually changing from caribou eating to carrying and back? …The more ethnohistory we know, the more clearly 'their' history and 'our' history emerge as part of the same history. Thus, there can be no 'Black history' apart from 'White history,' only a component of a common history suppressed or omitted from conventional studies for economic, political or ideological reasons (Wolf 1982:17–19).

A similar case can be made for the concept of 'tribe' in India. Historically, the construction of the tribal in India has been similar to that in Africa, drawing on evolutionary classifications based on race and anthropometry, the denial of any indigenous kingship in favor of an acephalous, kinship-bound society, and the perceived primitiveness of modes of production. However the Indian 'tribe' was further understood to be differentiated by religion and culture from the Indian 'caste.' The census records in particular contributed to this objectification,[2] an objectification which fuelled social science debates for a long time (Bailey 1961, Dumont 1962, Mandelbaum 1972). Much recent work has been directed against these hegemonic categories (Bates 1995; Clifford 1988; Cohn 1990; Sengupta 1988; Stocking 1983, 1984, 1991). Increasingly, the categories 'tribal,' 'primitive,' 'savage' or 'wild' are seen as deeply imbricated in domination and anxiety, providing both the justification for colonial rule and the means towards it (Spurr 1993, Taussig 1987, White 1978). The concept of 'indigenous' people comes partly out of one of the shifts of this image. As Taussig puts it, describing the tragedy of alliances of 'indigenous peoples' with western powers against the destruction of their habitats by their local states:

> Sustaining the realpolitik of these situations is a powerful modern mythology of good savage/bad savage by which the whites of Europe and North America purify themselves through using the good savage to purge the bad one, whether comrrmnists in Vietnam, Sandinistas in Nicaragua, supposedly corrupt and ecologically insensitive Third World government in Brazil and Panama or, most especially, the bad savage within the historic constitution of First World whiteness itself. (Taussig 1993:142–3)

In Bastar, while it is possible to distinguish local people—scheduled castes and scheduled tribes—from later immigrants, this is not on the grounds of antiquity or historicity as such. It is possible to trace tribal migrations to the region, albeit at some early and undefinable date, and we find multicaste assemblies and high Hinduism preceding tribal societies in the area. The local history of tribal kingdoms as born out of internal stratification within tribal societies, their relations with neighbouring populations which sometimes involved plunder and destruction of their environment, also gives the lie to any essentialist notion of traditional indigenous eco-friendly wisdom (Sundar 1997:47–51). To use the term 'indigenous' in the Indian context is therefore to be complicit in a history of somebody else's making, to accept the category of Hindu and tribal as defined by a century and more of colonial knowledge

creation, to deny the possibilities of common construction and common destruction by 'indigenous' and non-indigenous alike.

If it is impossible to box indigenous people neatly, defining their knowledge in bounded terms is even more difficult, given the status of knowledge as a transferable, flowing entity (Agrawal 1995:422). European science and mathematics owes much to the Indian concept of zero, to give one of the most widely known examples (see also Grove 1995 on the appropriation of Ezhava botanical and medicinal knowledge in Dutch botanical science). Attempting to get around this conundrum, Ellen and Harris (this volume) try to define indigenous knowledge as local knowledge which is found in both 'east' and 'west,' a form of 'tacit, intuitive, experiential, informal, uncodified knowledge' as opposed to 'literate' or 'expert' knowledge. There is, indeed, a form of 'local knowledge' or the knowledge of local situations that people have by virtue of their intimate acquaintance with that landscape. This holds as true for old timers in New York neighbourhoods as it does for villagers in Bastar, though the kind of knowledge they need to negotiate their surroundings may be different. It holds as true of academics who learn not just 'facts' but also techniques such as writing papers in a suitably sonorous style as it does for pastoralists who learn how to control their herds from straying. These techniques cannot be transmitted in any systematic coherent way but come from long experience.

While this definition may avoid ethnocentrism, by retaining the term 'indigenous knowledge' several risks are run. In this form, it refers to nothing other than a folk or embodied knowledge versus a high or systematized knowledge. But others have slipped into seeing this kind of knowledge as the typification of the knowledge that indigenous people have. Thus Hobart summarizes a particular stance embodied by his volume: 'Most of the contributors share the view that *the peoples they write about* seem to work more through a body of practices—knowing how to do things and to react to changes, a set of practical procedures—than through a formal system of shared knowledge' (1993:18, italics mine). Indigenous people may well have this kind of 'knowledge how' but they also have 'knowledge that' or propositional knowledge (on this distinction, see Quinton 1967:346). To attempt to extract one for 'development', or other even less savoury pursuits, while ignoring their other beliefs reeks of arrogance. Indigenous people are not merely technicians but also scientists who have complex systems of classification and abstract philosophical ideas and who can provide systematic accounts of various aspects of the world (see Agrawal 1995:422). Moreover, what are the 'formal systems of shared knowledge' that industrial workers and scientists in America have in common that makes their 'culture' different from 'the peoples' that Hobart's contributors write about?

On the other hand, several descriptions of indigenous knowledge emphasise its rootedness in a 'community' (Banuri and Apfel

Marglin 1993:10–18). Werner and Begishe (1980:152; quoted in Fairhead 1993:193) argue for the systematicity of indigenous knowledge across a 'culture': 'Although we start with informants (consultants) and their individual knowledge, we end up with the total knowledge of an idealized member of the culture.' Fairhead argues (ibid.) that this ignores the dynamic nature of farmers' knowledge. Equally importantly, it ignores the fact that knowledge is not distributed evenly across societies. In every society, knowledge and access to it is differentiated by class and gender, age and occupation, specialization and degree of expertise. Anil Gupta (1996) has brought out several examples of villagers in India who have innovated and experimented in their individual capacities, and who other villagers look to for specialist assistance. Men and women may have different kinds of environmental knowledge. In a situation where women marry into distant villages (as in north India), they may possibly have 'a greater understanding of spatial variations and lesser understanding of temporal variations' than men (Jackson 1993:411).

Local knowledge changes as local environments change and as people become implicated in new projects. This is obviously an uneven process, as memories of past practices continue to hold good for a while and as knowledge is transmitted through cultural practices which continue to take place even when the features of the world they refer to no longer exist in the same way.[3] In a situation of rapid deforestation due to large development projects like dams, industrial forestry projects, forest department exploitation, timber-smuggling and villagers' own need for extending cultivation, it is inevitable that the number of species that villagers will have knowledge or experience of will be drastically reduced over time. A herbal medical practitioner we encountered in the hills of eastern Andhra Pradesh claimed that in the high forests of East Godavari district he had access to and made use of some four hundred species. In the degraded jungles further west near Narsipatnam, on the other hand, he could find only about forty to fifty species. Older people might remember species of plants and animals and crops that used to exist. The young, however, are affected by more than just the changes in the natural landscape. The horizons of 'civilization' now lie in another direction, in the sphere of urban employment rather than what is seen as old-fashioned botanical knowledge, an emphasis which is reinforced by the entire educational system which values bookish literacy and certificates alone (see also Nanda 1994:117, for a description of how the educational system encourages the 'growth of ignorance' in tribal areas).

Following Agrawal's (1995) demolition of 'neo-indigenista' claims that IK can be distinguished on substantive, methodological and contextual grounds, we see that on almost any count—the presence or absence of a formal system or the degree to which it is held by a

community in common—indigenous knowledge shares features with non-indigenous knowledge. Nor is 'tradition' versus knowledge a helpful way of understanding the IK-non-IK dichotomy. As the philosopher of science Barry Barnes argues, knowledge is always bound up with tradition:

> In all societies, learning is a matter of extending, adapting and at times pruning the inherited knowledge. The world is never apprehended directly: experience and tradition (nature and culture as is often said) acting together, symbiotically, inseparably, define the conditions in which perception and cognition proceed. (1995:116)

But the question of how 'tradition' is defined in any particular context or at any particular time is not pre-given, it is individuals who choose and thus take tradition forward. The opposition of 'tradition' to science or 'enlightened reason' therefore has little meaning except as part of 'self-congratulatory accounts of 'modernity' (ibid.: 112, 126). By emphasising that IK depends on 'tradition,' one is really categorizing certain people as 'traditional,' usually in a pejorative sense. A similar point is made by Fairhead: 'the creation of difference between groups of people is reproduced in the construction and depiction of their different types of knowledge, and in the location of agency for action in that knowledge' (Fairhead 1993:201).

To conclude this section, there is a serious risk of 'indigenous knowledge' being used to patronize 'indigenous people,' among both devotees of the concept and cynics. The concept has achieved some popularity, causing governments, the World Bank (see Warren 1991) and development planners to want to institutionalize popular participation and valorize indigenous knowledge in particular schemes, through mechanisms like PRA (discussed in the next section). At the same time, larger political and economic processes set in motion by the same actors are conspiring to marginalize certain types of people, through both physical displacement and denigration of their life-styles and systems of knowledge.

MAPS AND MATRICES: THE REPRESENTATION OF LOCAL KNOWLEDGE THROUGH PARTICIPATORY RURAL APPRAISAL

Tracing the history of development discourse through what he calls the 'neo-Fabian' and 'neo-LiberaP stages, and emphasising the roles of the state and market respectively, Robert Chambers hits upon a third paradigm, which he calls 'an ideology of reversals of the normal'. This third ideology, which currently enjoys dominance in the discourse of development agencies—notably donors, professional

NGOs, consultants and related academics—is characterized as 'putting people before things and poor people first; development through learning process rather than blueprint; decentralization, democracy and diversity (to value local knowledge, participation and small group and community action): open and effective communications and access' (1992:31). 'What is especially new,' adds Chambers, 'is the value placed on adaptive and iterative rather than linear processes, on learning and changing rather than implementing a set plan, on differentness, on empowering local groups, and on demand from below' (ibid.).

In this whole process, PRA or 'participatory rural appraisal' plays a major role as the instrument which elicits local knowledge. Described by Chambers, one of the people most closely identified with the development and spread of PRA, as 'a family of approaches and methods to enable rural people to share, enhance and analyse their knowledge of life and conditions, to plan and to act' (1994a: 953), it generally includes 'participatory mapping and modelling, transect walks, time lines and trend and change analysis, seasonal calendars, daily time use analysis, livelihood analysis, well being and wealth grouping and ranking, matrix scoring and ranking' etc. (ibid.: 960).

Some of the major claims made for PRA, based on a reading of several reports included in Chambers (1994b) are: first, that it is a set of tools (whether RRA or PRA) that is better at getting quick research output using local knowledge than other conventional research tools, including surveys and the extended fieldwork conducted by anthropologists. The heavy emphasis on visual methods is seen as preferable for illiterate, rural populations. Enthusiasts like Jules Pretty from IIED in London claim in addition (personal communication, November 1994) that PRA inherently has an equalizing tendency, since people (investigators and respondents) are no longer looking at each other but jointly looking at something on the ground, for example, while doing social mapping.

The second major claim is that it enables rural people to analyse their own conditions in order to act. As one development practitioner breathlessly wrote to Robert Chambers: 'I agree with you that we can use this technique for making dominant groups analyse the position of subordinate groups in not just gender relations but parents-children, junior-senior, old-young, rich-poor etc., and even a different caste group' (Meena Bilgi, Aga Khan Rural Support Programme, to Robert Chambers, October 14 1992). The assumption is first, that local people are not fully aware of their own conditions or that of their subordinates or superiors, and that they come to this awareness in the process of drawing maps for outsiders; and secondly, that once they know their own situation they can change it.

The third assumption is that PRA techniques are neutral with respect to the multitude of relations swishing outside the circle of map-drawers or matrix-rankers, so that, for example, it is assumed that tree-ranking will be a pristine reflection of people's needs rather than being subject to the latest information about which trees are commercially valuable and which are not.

No doubt in many situations, some if not all of these claims have been found to be true. But there are also certain crucial things about local knowledge and the way it becomes accessible to an outsider that are being ignored here. Apart from the scepticism associated with thinking that class relations—and the distance between the city-bred researcher or even activist and villagers—can be obliterated with a stroke of a felt pen or covered up with coloured powder, there is perhaps also a dangerous assumption that villagers are more spatially and visually oriented and less able to cope with direct verbal questioning. As anyone who has listened to the rural old telling their stories knows, language and communication is not a problem. The problem perhaps lies instead in the outsider's lack of understanding of the nuances of language and her/his need for visual and hence easily understandable data, rather than in the villagers' need to communicate thus. In very few instances have I come across even NGO personnel, let alone government staff, with any significant knowledge of tribal languages. In most cases they use the language of the local state (Hindi, Gujarati, Oriya or Telugu in Madhya Pradesh, Gujarat, Orissa and Andhra Pradesh respectively, instead of Dhurwa, Gondi, Chodhri, Kui etc.). Given that so much knowledge is stored in a particular language and in particular words for things that have no existence in other languages (Geertz 1983:88), loss of a language means the loss of a certain way of knowing the world. Simultaneously, as David Mosse points out, there are large areas of expertise that cannot be linguistically or visually translated, but 'exist as unconscious schemes which produce practical fluency in a task, or skill in making a judgement' (1994:519).

Secondly, it is a moot point as to whether it is awareness of their own conditions that people lack or the structural capacity to change them. For instance, Jan Breman (1974) has shown in his study of lower caste agricultural labourers (Halpatis) in southern Gujarat and their high-caste employers (Patidars), that the former are limited not by ideological mystification but by the objective economic and political situation they find themselves in. Their problem is internal segmentation, the lack of time and energy afforded by their living and working conditions, the sheer force employed by Patidars who are often assisted by the state, and their dependence on the Patidars for work. In any case, given the hoary tradition of debates on false consciousness among subordinate groups, it is doubtful whether this aspect of PRA can be as

emanicipatory as it claims to be, in the absence of other factors that enable people to organize.

Thirdly, drawing maps or listing villagers in terms of their wealth are not merely passive reflections of an existing reality but active interventions into shaping that reality. Maps of border lines between countries are hotly contested, not because the squiggles they represent are unpleasing to the eye or because they are 'inaccurate' but because they represent recognitions of sovereignty, things that people are forced to die for. In one village in north India where we tried to do 'social mapping', i.e. obtain a graphic presentation of all the different castes and houses in the village, we found that the upper-caste young men involved had entirely left out the Harijan or scheduled-caste hamlet. Was this lack of a basic knowledge of the layout of their village or a statement about the significance of some castes and the insignificance of others? A brief look even at some of the chapter titles of Denis Wood's (1992) book, the *Power of Maps,* illustrates the functions maps can perform: 'Maps work by serving interests; maps are embedded in a history they help construct; every map shows this…but not that; the interest the map serves is masked', and so on. PRAs where maps of the village are communally and publicly constructed in order to facilitate the channelling of certain development goods provide opportunities to dominant groups—males, upper castes, elders—to structure reality, effectively to redraw the maps of their social and economic existence.

Maps can make different kinds of sense out of what appears to be the same landscape. Comparing aboriginal and white settler understandings of landscape and history, Paul Carter writes:

> Aboriginal occupation had created tracks and clearings: it had been responsible in all probability for the 'meadows' Cook remarked on. Instead of confronting chaotic nature, map-like in its uniformity, explorers and overlanders entered a country replete with directions. The very horizons had been channelled and grooved by aboriginal journeys…. It is not simply that Aborigines ascribed different meanings to a country already there: the country itself was the product of their journeying…. It may be that the incidents and accidents of travelling that constituted the explorer's history of the country did not exist for the guides. They shared the same sensory experiences…. But the meaning of these events, the historical significance of their spatial appearance was another matter. The world of the journey furnished a symbolic text where each culture read its own intentions. Physical overlap was no guarantee of mutual under-standing…the country did not precede the traveller: it was the offspring of his intention. (1987:337–49)

However, it is possible for the same 'culture' or even the same person to juggle different maps of the same object within their minds, depending on the particular context, and even for those maps to harm each other in their intent (see also Bender 1993:3). For instance, while walking through the Kanger National Park in Bastar with a local inhabitant, what appeared to me as a succession of dense forest and open spaces was explained instead as the site of a former settlement of distillers, as a place where all the cattle would gather before the village to whom the cattle belonged was displaced, a stone representing a petrified man—history in rock and stone and trees, a spatial record of time and the passing of events and people. But equally, my guide could tell me the history of the forest as the history of coupes demarcated by the forest department, as the history of wide roads cut into the jungle for the trucks of former contractors, the history of the forest as the history of the mansions in the city made on its exploitation. To work as wage labour in the framing of the second type of map might well mean obliterating the first.

In India's recent Joint Forest Management (JFM) programme, villagers are given degraded state-owned forest land to protect in return for a share of the final harvests. In most states, the better forests are meant to be reserved for forest department management. In this case, it is not a map of where villagers draw their needs from or a map of their resource catchment that matters, but a map of what portions of their surroundings are degraded or non-degraded in technical forestry terms. It is quite another matter that an area which appears to foresters as degraded (with less than 40% crown density cover) may actually yield a range of intermediate products to villagers, like grasses, tubers, etc. In other words, even within a single scheme, different aspects generate different types of maps of the same local environment. As Henkel and Stirrat note in their critique of 'participation', maps are based on a particular agenda, which in the case of PRA for a particular programme is not necessarily that of the local map-makers. 'Different kinds of visual representations of space are crucially dependent on their cultural context, their institutional frame and their purpose. They are therefore culturally specific or "ideological"' (1996:11).

A similar case can be made for other types of PRA; the answer one gets depends on what one asks for, the meaning ascribed to the process of doing PRA by the local villagers etc. Let us take another common PRA, one designed to enable planners to identify the right 'beneficiaries' and target the poorer or weaker sections, viz. wealth-ranking or the classification of villagers in order of wealth. Again this is usually done in a group to enable people to counter and balance each other's estimations. In the north Indian village where we tried to do wealth ranking, it seemed to be going relatively smoothly till one lady insisted that a particular man be placed on top. The others initially demurred but finally acquiesced, and said

that it was because he was her uncle, from which we concluded that our wealth-ranking was being subject to local contests over prestige. As James Scott so convincingly shows in his *Weapons of the weak,* the classification of the rich and poor into different strata is not a question of describing an objective reality but part of another reality: the continuing class warfare within a village and the negotiation of expectations. Scott writes:

> The economic gap between the rich and the poor is dramatically different depending on which point of view one adopts. As seen by the rich, the gap is quite small; they themselves are barely making do, while those who claim to be poor are actually doing quite nicely.…As seen by the poor, the economic gap is much greater; the rich are much better off than they let on and the poor are very poor indeed.…*What we observe, in brief, is not some trivial difference of opinion over the facts, but rather the confrontation of two social constructions of the facts, each designed and employed to promote the interests of a different class* (1985:203–4, italics mine).

While in public the rich may be able to push their interpretation of the facts, in private the poor may give an entirely different point of view. The representation of 'local knowledge' and the construction of that locality itself depends, in short, on the end to which people perceive their knowledge to be put, whom one is talking to and where and when one is talking to them. In the following section I focus on one particular government programme, Joint Forest Management, to examine the way in which local knowledge is constructed within its confines.

THE CONSTRUCTION OF NEEDS AND KNOWLEDGE WITHIN JOINT FOREST MANAGEMENT

Joint Forest Management refers to co-operative agreements between village communities and the local Forest Department to protect a particular patch of (state-owned) forest land and share the final harvest. In addition to the Government of India circular of 1 June 1990, nineteen states have passed resolutions regarding the implementation of JFM, and one estimate suggests that nearly 15, 000 village forest protection and management groups are currently protecting over 1.5 million ha. of state forest land (Agarwal and Saigal 1996:2). However, each state resolution has varying rules regarding the constitution of forest protection committees, their legal status, the kind of land they are given to protect, the shares involved etc. Apart from this, differences in culture, ecology and the

organizational structure of the Forest Department have introduced variations in actual practice.

However, certain common features of Joint Forest Management include a stress on microplanning to be conducted through PRA; a stress on planting villagers' choice of species, wherever natural regeneration is not enough; and in some states the provision of alternative development inputs to wean people away from dependence on the forest or at least to build up trust in the forest department. In theory, villagers are asked what their problems are and the best way of redressing them. This is perhaps the first time that local knowledge and action are being *formally* tapped within forest policy, though in practice much of the work of forest departments has depended on the intimate knowledge and expertise of villagers regarding the forests in their vicinity. For instance, although 'scientific forestry' has traditionally managed forests for timber or 'major' forest produce at the expense of a diversity of 'minor' forest products, in practice forest departments have always depended for much of their revenue on the trade in minor or non-timber forest produce (NTFPs). And this has always been crucially dependent on the knowledge of villagers regarding the plants available, appropriate gathering practices etc. Other peasant practices too, such as grazing, lopping and firing, which were initially denigrated, were eventually utilized by forest departments as having positive silvicultural advantage (Guha 1989:49–55; Jeffery and Sundar 1995; Rangarajan 1996:89–92; Sundar 1997).

Underlying the concept of JFM is a certain notion of villagers' needs and patterns of use. A critical part of the Orissa JFM resolution is the preparation of microplans, defined in the following terms:

> It would be based on a diagnostic study of the specific problem of forest regeneration of the locality and the specific cost-effective solution for the same that may emerge from within the community. The views of all sections of the community, particularly the womenfolk, should be elicited in the PRA exercise for preparing the microplan.

Similarly, in Madhya Pradesh spearhead teams have been formed in those divisions taken up under the World Bank project. These teams have been trained in 'participatory methods' and are expected to train other staff in turn.

In practice, however, both usage and needs are incorporated into the JFM program through a process of negotiation between competing agendas. On the one hand, there are limits on the number of forest protection committees that can be set up, which are circumscribed by targets, funding and the person-power available to the forest department. There are restrictions on the kind

of land that can be given over to village communities to protect: as mentioned earlier, in most states this is restricted to degraded land with less than forty percent crown density. While microplans are drawn up, working plans which lay out in detail the working of the forest department over a twenty year period continue to exercise pre-eminence, though the situation may be changing somewhat. In Gujarat, the AKRSP (Aga Khan Rural Support Programme, a local NGO) had to abandon its plans for afforestation in a particular village because it was not due for plantation under the working plan. This resulted in the loss of thousands of seedlings as well as employment opportunities for villagers, many of whom were forced to migrate in search for work (Chandran and Singh 1995–7). However, there is now an attempt to dovetail microplans and working plans towards the same objectives (Chief Conservator of Forests, Gujarat, April 1998, SPWD workshop). But even more crucially, in at least three of the four sites studied by the Edinburgh University Joint Forest Management Project, the major threats to forest land came from commercial interests or large-scale development projects, for instance, tourism and bauxite mining in Borra in Paderu division of Visakhapatnam, proposed power plants in Sambalpur and the CPM paper mills near Kevdi village in Gujarat. Within all this the space reserved for the exercise of local knowledge or initiative is extremely limited. In the remaining portion of this paper, however, I look at those domains in which some premium is given to villagers' views in respect of selecting the forest areas to protect and choosing the species to plant in those areas.

In some cases, the choice of the particular plot is left to the villagers to decide, based on their usage patterns and their knowledge of their immediate environment, while in other cases it is the forest department which does the apportioning. Where villagers themselves initiate protection, they may choose to apportion land in informal ways that are generally ignored by forest departments in setting up their village-wide committees. For instance, in village Kenaloi in Sambhalpur distict of Orissa, after a period of flagging protection, villagers decided in 1993 to overcome the problem by having a sub-committee in each hamlet which would look after the protection of the forest patch closest to it. The total forest area was divided into seven parts and in each hamlet a president and secretary were appointed who were responsible to the original committee (Mishra and Peter 1995–7). As against this, the formal government scheme assigns land to the committee as a whole and makes decisions regarding the closure of certain areas for protection each year, regardless of the fact that this may affect the needs of hamlets differentially.

When the forest department decides to hand over land to villagers to protect, this is sometimes done on the basis of the availability of degraded land, regardless of which village it belongs to. But there are also conceptions of custom that both villagers and foresters

subscribe to, such as the idea that forest land within the revenue boundary of a village should be given to it for protection. The manner in which existing use conies to be recognized and addressed by schemes like JFM depends on the relative strength of either of these imperatives at any one point of time. On the other hand, contemporary notions of village boundaries are often determined by settlements made by earlier forest departments, and the 'customary rights' that villagers fight to retain are often rights conferred by earlier administrations.

For instance, in 1992, the forester responsible for two neighbouring villages in Rajpipla West Division, Gujarat, gave 61 ha. of Bharada forest land to Tabda to protect. The logic behind this was apparently that the Bharada villagers had encroached on parts of forest land, and also that Tabda was a larger village. In this 61 ha. within the Bharada boundary, the FD had planted *khair (Acacia Catechu)* in 1987, as part of a standard departmental plantation, i.e. one which would have excluded villagers. Thus when Tabda received the patch to protect, they started with a five-year plantation. According to the Tabda villagers, the forester told them that since the land belonged to the forest department, there was no problem in transferring some of it from Bharada to Tabda. The Ranger said, 'Whether it is in Bharada or Tabda's boundary, it belongs to the forest department and whoever protects it will get it.' In contrast, the Bharada villagers feel strongly that the forest land within their boundary is theirs, because their ancestors put *veth* or free labour into planting and protecting it. They also say that their 'encroachments' are of long standing, and that they have recently won their case to get *pattas* for the land. In fact there were several hamlets of Bharada in this area and nearby which were later depopulated due to cholera. Matters are complicated by the practical problems imposed by the type of species planted on the land and the fresh claims that protection has generated. The Tabda villagers say that they will return the land with the *khair* plantation after the first felling, while the Bharada villagers argue that the forest department should give wages for protection for four years to Tabda and return the land to Bharada. Since teak and *khair* plantations take thirty years to mature, the Bharada villagers may have to wait a long time to get their land back (author's field notes, 1996). Given the complex interplay of 'customary' boundaries, actual usage, the definition of forest as state property and new claims as a result of a changed context—all of which are invoked at different times—the concept that site selection can be a function of 'local' knowledge is highly problematic.

Unlike the selection of forest areas, which may or may not be left to villagers to decide, the selection of species for plantation in the protected areas has been specifically set aside for them, and it is generally assumed that these species will be NTFP bearing ones. As

Shivaramakrishnan puts it, highlighting the manner in which participation is compartmentalized:

> Foresters are intent on preserving their control (in the final instance) through silviculture, a knowledge that through manuals and working plans is claimed as their exclusive preserve. Given the participatory framework, this leaves the awkward question of what should be conceded to the domain of local knowledge, where under the rules of JFM villagers are skilled practitioners. The answer, jointly provided by environmentalists and development specialists, is the knowledge of NTFP collection and processing. (1996:19)

The emphasis on NTFPs in JFM arises for several reasons. In most states, villagers generally have rights (or concessions) to collect NTFPs, but no rights to timber. Offering villagers an increase in NTFPs as a part of JFM agreements does not normally require any change in the legal rules or existing balance of power. Secondly, timber products will take a long time (forty years in the case of teak) before they come to maturity. Thirdly, the degraded lands that are given for JFM may never be capable of good marketable timber, whereas even the most degraded patch is probably capable of giving some NTFPs—including fuelwood, grasses, and so on. In practice again, targets and availability of species in the forest department's nursery often determine what gets planted. This could mean NTFPs but it could also mean timber species like eucalyptus, since that may be all the local forest department has. The Divisional Forest officer in Paderu recognized that the department 'should give priority to people's choices;' but he added, 'November is the time for preparing the nurseries. If we ask the villagers they may suggest mango, tamarind etc. But at this time the department does not have the seed stock for these and they are very costly. So we prefer to plant whatever is feasible within the time limit' (Gorada 1995–7). Where NGOs are involved they may be better placed to cater to villager's expressed demands, but here too, the process by which demands come to be expressed is not a straightforward one. For instance, in the plantation projects of the AKRSP in Gujarat, tree selection is done by village-level extension volunteers through PRA techniques like species-ranking. This is carried out with different groups of men and women, and the two are then compared and a consensus formed (Ajith Chandran, ex-PO Forestry, personal communication). However, the very idea of ranking is something that is project-oriented and associated with the delivery of benefits, and not necessarily connected with the wide range of uses that villagers make of different plants (Mosse 1995). In one village in Bastar, a couple of old women identified, at a casual sitting, some 51 species for which they had various uses. This in itself is probably

a small sample of their knowledge. Of these, however, only a few would be nursery species, and even fewer would be provided within a plantation programme.

In several villages in Andhra Pradesh which were practising joint forest management, we found that villagers did not ask for trees which had traditionally grown in their forest areas or even those species from which they collected NTFPs for sale. When asked why, a common reply was that these would regenerate naturally from protection so it made sense to ask for new species, preferably timber species or commercially valuable species like coffee or jaffra, a red dye plant. In one village, the villagers asked for teak although previously they had had mainly rosewood in their forests because they had learnt from neighbouring villages and NGOs that teak was an important timber species. Thus one finds villagers in diverse ecological settings asking for the same species, regardless of the fact that it may or may not be suitable to the soil and the climate of the area. And this is often despite the fact that they are aware and knowledgeable about the suitability of particular species to particular soil types. In addition, while villagers recognize that regeneration is sufficient to afforest degraded land without additional plantation, they are loath to turn down the possibility of getting free seeds from the forest department. Forest staff, on the other hand, sometimes complain that they have to persuade the villagers of the benefits of natural regeneration and of traditional NTFP species rather than giving into their demands for the plantation of exotics like cashew. This is in many ways an interesting reversal of roles in a country where the forest department has long been castigated for creating large-scale plantations of alien species like eucalyptus (field notes, 1997).

In other words, villagers mould their own demands according to what they feel the project can deliver (see also Mosse 1995:9) and the opportunity this gives them, *or at least some among them,* for entering into the commercial sphere, as against continuing with their old subsistence economy. The simple assumption many environmentalists make, that villagers, if asked, will predominantly choose species which yield NTFPs, ignores the multiplicity of interests which different groups in a village can have, or their specific contexts. In Koraput, Orissa, just over the border from Paderu, villagers wanted eucalyptus because of the proximity of various paper mills. The choice of certain species or of certain silvicultural methods over others is not just a question of local knowledge or local choice but is a gendered and class question. For instance, in West Bengal, Orissa and Bihar, a common source of income for women is the collection, manufacture and sale of *sal (Shorea robusta)* leaf plates. As *sal* forests regenerate and increase in height to the level that foresters consider good timber, the availability of leaves goes down (Sarin 1996:26). Commercially valuable timber species are often associated with male elites,

whereas fruit- and fodder-bearing trees are associated with women and lower classes. This has been documented in the Chipko case by Shiva (1988). However, in many cases, especially for poorer women, 'subsistence' includes the sale of NTFPs or firewood through headloading, and unless some acknowledgement is made of this, environmental action intended to help women or poorer sections can often end up harming them (Rangan 1993, Sarin 1996).

Over the past two years in village Kilagada in Paderu, a hilly and tribal tract of Visakapatnam district in the state of Andhra Pradesh, successive conversations with villagers as to the objective of JFM have yielded different answers. Initially, fresh from the 'motivation speech' delivered by the forest staff, villagers cited ecological reasons, such as increased rainfall, for their involvement in JFM. Another reason cited was the fact that the forest department constructed a village meeting room and provided various other goods in order to improve their relations with the villagers. In subsequent meetings, villagers cited the increase in NTFPs as a factor for engaging in protection and finally came down to coffee as the major reason why they had taken to JFM. In Paderu, the forest development corporation and the Integrated Tribal Development Authority, which together constitute the major initiators of 'development' in the area, have flooded it with silver oak, which acts as a good shade for coffee. Coffee plantations are an important source of employment. Thus, even where the soil and climate is not suitable for silver oak, villagers often end up asking for it to be planted in their protection areas (Gorada 1995–7). In general one might argue, though, that this request for coffee comes from richer villagers who are not so dependent on the forests for the collection and sale of NTFPs like *adda* leaves *(Bauhinia vahilii)*. Apart from providing a valuable lesson in the perils associated with the doing of oral history and the practice of ethnography in general (see Clifford and Marcus 1986), what this illustrates is the manner in which local knowledge is a deeply problematic entity, differentiated by class and gender and under constant refashioning by the passage of time and the interaction with non-local forces. What comes to be represented as local knowledge to outsiders or adopted by villagers from the outside are not merely 'matters of instrumentalities, technical efficiencies, or hermeneutics…but involve aspects of control, authority and power that are embedded in social relationships' (Long 1992:270).

CONCLUSION

Essentially, what I have tried to argue in this paper is that indigenous or local knowledge is not a frozen, inert, timeless entity, but dependent on the material conditions of those whose knowledge it is, the changing environment in which they find themselves and

the uses to which it is put. To the extent that indigenous people or the poor are marginalized by economic and social processes, their knowledge is marginalized, however much it may be celebrated in development rhetoric.

Moreoever, the expression of 'indigenous knowledge' through the prism of certain programmes often has more to do with the aims and structures of the programme than with any reservoir of local knowledge. In other words, even where villagers do exercise initiative, it is under terms dictated by the overall framework of targets and activities prescribed by government rules, which in some sense distorts their agency. This has been well summarized by Mosse in a different context: 'If projects end up ventriloquizing villager's needs it is not only, or primarily, because artful and risk-averse villagers ask for what they think they will get. It is also because various development agencies are able to project their own various institutional needs on to rural communities' (1995:16). The parallels between this process and the codification of indigenous laws and traditions in the colonial period is striking: the selection of texts to translate, the choice of religious scholars all determined what kind of corpus would be institutionalized as 'Hindu' or 'Muslim' law and tradition, which all classes and castes were then expected to follow (Cohn 1990). Similarly, the kind of local knowledge that is mobilized within 'participatory' programmes for development action is presumed to be a kind of knowledge that is common to all groups within a village, regardless of their differing interests. In actuality, local knowledge, though drawing on a shared environment, constructs that environment in different ways.

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NOTES

1. There have been movements in recent years by *adivasi* organizations in India to obtain recognition as indigenous people, for instance, under the Draft Declaration of the Rights of Indigenous Peoples under consideration by the United Nations. For definitions of indigenous peoples under the ILO convention, see Posey, this volume. Nothing in this paper is intended to prejudice such political definitions of 'indigenous'—simply to point out its problematic use

as a historical category in the Indian context and perhaps to point to alternative political trajectories.

2. Successive census reports agonized over the problems in differentiating between tribals and others on the basis of a distinction between animism and Hinduism, especially when people were so lax about providing themselves with a category, and the enumerators at least initially put down whatever they thought the people should answer. But that the distinction should be made was never doubted. See especially Government of India 1881, ch. II; Government of Central Provinces 1911, ch. IV.
3. See, for example, the description of *penda* or shifting cultivation and a particular type of grain *(aikul)* that is embodied in the buffalo-shooting episode of the *kuraal,* a dance drama that takes place in some Dhurwa villages in Bastar on winter nights. The practice of shifting cultivation in that form and with this grain, however, has mostly died out among these Dhurwas. See Sundar 1997, ch. 2.

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Chapter 4
CLAIMS TO KNOWLEDGE, CLAIMS TO CONTROL ENVIRONMENTAL CONFLICT IN THE GREAT HIMALAYAN NATIONAL PARK, INDIA

Amita Baviskar

A passing bow to indigenous knowledge (IK) is a common courtesy in conservation policy in India today. An instrumental concern about promoting and harnessing IK is expressed in most policy documents, including those of Ecodevelopment, a World-Bank funded project that seeks to remove human pressure on the natural resources inside selected national parks and sanctuaries by creating alternative economic opportunities. Ecodevelopment has been initiated in the villages around the Great Himalayan National Park (GHNP) in the state of Himachal Pradesh in north-west India. From its very inception, the project has provoked fierce controversy between the Forest Department (FD: the state agency implementing the project) and local villagers over the meanings and motives around Ecodevelopment. Claims about knowledge figure centrally in this conflict—how 'ecological degradation' is determined or which management practices are superior—and are closely linked to claims over natural resources. In this debate, the notion of IK is used politically by local villagers and a non-governmental organization (NGO) working with them to naturalize and legitimize their claims to graze livestock and collect medicinal plants inside the park. However, villagers' actual practices do not necessarily conform to the idealized notion of IK that they project, but in fact creatively use the opportunities opened up by changing institutional structures such as the market. The FD, on the other hand, acknowledges the existence and importance of IK, but reduces it to a single component, viz. ethnobotany. At the same time, the FD also imports 'scientific experts' as Ecodevelopment advisors whose research borrows heavily from IK and yet plucks it out of its context. Villagers as well as the state employ the notion of IK to push their varied agenda and, in the process, raise related questions about the ways in which we understand 'tradition,' 'locality' and the 'indigenous'.[1]

THE AREA

The Great Himalayan National Park covers an area of 765 sq km in Kulu district, Himachal Pradesh state. The park largely consists of high mountain ridges rising more than 5500 metres high, divided by the gorges cleft by three streams, the Tirthan, Sainj and Jiwa Nala, that ultimately flow into the Beas.[2] These upper reaches of the Beas catchment are covered by moist temperate forests of oak and conifers, high-altitude forests of birch and fir interspersed with sub-alpine pastures crowned at the highest points by alpine meadows, scrub, and finally, permanently snow-capped peaks (Kothari *et al.* 1989:146). The rich flora of the area sustains an equally rich fauna, including several endangered species such as musk deer, serow, brown bear, blue sheep, Himalayan tahr, western tragopan, chir pheasant and the splendid-looking monal.

Every spring, as the snow starts to melt in the mountains, the high-altitude pastures come out of hibernation. When the weather warms, thawing ice moistens the soil and allows the first shallow-rooted annual herbs to sprout. As spring lapses into summer, the pastures change colour as one group of herbs, grasses and sedges flowers, sets seed and dies, to be replaced by another group. The wild herbivores of the area are not the only beings keenly monitoring this succession; for the human inhabitants of the adjoining villages, the seasonal vegetation includes as many as fifty species of medicinal use, which have recently become commercially valuable too. Besides medicinal plants, the villagers also seek *cbhunchhru* or *guchchhi (Morchella esculenta),* the morel mushrooms growing in the shaded forest undergrowth, much prized as delicacies abroad.

The pastures provide excellent forage for the herds of sheep and goats reared by villagers on the periphery of the park. In an intricately ordered system of grazing runs, every village despatches its livestock in herds of five hundred to a thousand, supervised by three or four *fuaal* (shepherds) and their dogs, into the park. From May to October, the animals graze in the alpine pastures and put on the flesh that will see them through the winter. The pastures also attract herds from villages far south of the park in Ani *tehsil* as well as migratory pastoralists such as Gaddis. While historical records show that livestock have grazed in this area for more than a century and a half, the extent of grazing in the past is not known (Bhattacharya 1995). At present, it is estimated that around 35,000 sheep and goats enter the park annually.[3]

THE NATIONAL PARK AND PEOPLE'S RIGHTS

While grazing is an ancient activity, the park itself is of recent creation. From 1980 onwards, the birds and large mammals in the reserved forests of the region came to be sporadically surveyed by

Gaston and Garson (biologists from Canada and Britain, respectively), key actors in the Himachal Wildlife Project, an enterprise of international environmental NGOs and the Himachal Pradesh government. Largely on their recommendation, the initial notification for GHNP was issued in March 1984, specifying a core and buffer zone. However, it was soon realized that the buffer zone contained numerous villages, all of which would have to be evacuated before final declaration as a national park could take place under the terms of the Wildlife Protection Act 1972[4] (Gaston and Garson 1992:9–12). Since the inclusion of this highly populated zone in the park would make the settlement of rights 'impossibly complex', the Himachal Pradesh legislature issued a re-notification specifying that only the original core area was to be declared as the GHNP. This left only 24 households spread over four settlements inside the vastness of the park. However, as we shall see later, the redefining of the park boundary did not avert a conflict over villagers' rights to resources within the park but merely reconfigured it, though in a muted form.

From 1987 onwards, the park authorities prepared a ten-year management plan for the area that set out the following objectives:

1. To maintain optimal habitats for wildlife
2. To increase populations of endangered species
3. To eliminate factors causing degradation of ecosystems
4. To carry out surveys and research on wildlife
5. To provide wildlife viewing opportunities for educational and recreational purposes
6. To provide employment opportunities for local people (Gaston and Garson ibid.: 20).

The management plan was the creation of the wildlife wing of the Himachal Pradesh Forest Department, with major support from the biologists mentioned above. Local people figured in the plan only as degraders of ecosystems who would have to be provided with alternative employment in return for making them give up their traditional resources. The plan does not appear to have consulted villagers except through informal conversations with the porters accompanying the biologists and with shepherds met along the way during field trips.

There has been a large gap between the formulation and implementation of the management plan. According to the Forest Department, the major obstacles in implementing the plan are the inroads made by the local population into the park, which degrade resources and disturb wildlife. However, destructive though the park authorities may consider villagers' activities inside the park, villagers have undeniable rights to graze their livestock and collect herbs and to a quota of construction timber.[5] These rights are laid

down in *an astonishing document,* Anderson's Forest Settlement Report of 1886, which records in minute *detail the specific rights of villages and even individuals in the* demarcated forests of Kulu. There has been no substantial revision of rights since the compilation of this report, and it remains the standard reference work for present-day *divisional* forest officers. The power of this book over people's lives is enormous and their faith in it unshakeable. Illiterate village elders, who could never have had access to the report, let alone decipher it, when questioned about their rights, will say that the names of their ancestors are recorded on such and such page of the *kitab* (book) and that this is how they, the descendants, come to have rights. Of course, the rights accorded in 1886 now operate in a vastly changed context, where human and livestock populations, landuse practices, links with the outside economy and life-styles bear little resemblance to what prevailed more than a century ago. As the subsequent discussion will show, villagers successfully invoke their 'traditional legal rights' in order to legitimize different present-day resource-use practices.

It is unclear why the rights of 1886 have not been gradually revised since. However, it would appear that the notification of the national park, as mandated by the Wildlife Protection Act, made it incumbent on the forest department to proceed with a task it had avoided for decades. Yet the process of settling these rights remains 'impossibly complex' because local livelihoods remain heavily dependent on resources within the park.[6] Even though park boundaries had been carefully redrawn to ensure that only four settlements would be physically displaced by the notification of their lands as part of the park, apparently the authorities had entirely overlooked the problem of 'resource displacement'. That is, more than 150 villages outside the western and southern edge of the park and numberless pastoralists from further afield stood to lose a crucial component of their economy, a threat that brought forth murmurs of local protest. Instead of attempting to settle these rights—a hazardous process full of headaches like offering inadequate compensation, facing public wrath and trying to identify alternative resource sites in an already burdened landscape—conservationists suggested that GHNP be adopted for the ecodevelopment approach, which would 'wean away' villagers from going into the park by providing them with alternative economic opportunities.

ECODEVELOPMENT: ON PAPER AND IN PRACTICE

According to Shekhar Singh, one of its influential proponents, 'ecodevelopment' *is* a strategy for protecting ecologically valuable areas (protected areas) from unsustainable or otherwise unacceptable pressures resulting from the needs and activities of

people living in and around such areas' (Singh n.d.: 3). Officially, ecodevelopment is described as 'a site-specific package of measures derived through people *(sic)* participation, which addresses all aspects of land use and other resources, in order to promote sustainable land-use practices, as well as income-generating activities, which are not deleterious to Protected Area values' (Panwar, cited in WII 1996:8). Ecodevelopment's basic thrust is to divert biotic pressure from the protected area (Kothari 1996). This attempt could take the form of establishing substitute fuel and fodder plantations to meet villagers' biomass needs and starting cottage industries to provide alternative income sources. Thus ecodevelopment is rather like rural development, but with an added emphasis on natural resource conservation, especially the conservation of wildlife within the protected area. However, ecodevelopment begins with the assumption that wildlife conservation is a priority that overrides people's rights to resources within the protected area. Its underlying philosophy is statist in that it ignores the crucial issue of redressing a fundamental inequity, namely the denial of rights to local people, a systematic bias begun by the colonial state and continued in independent India (Gadgil and Guha 1992). A critical perspective on ecodevelopment does not deny the cause of biodiversity conservation but argues for alternative modes of conservation which respect subsistence rights.

The strategy of ecodevelopment for India's protected areas was first mooted around 1990 by international NGOs such as the World Wide Fund for Nature (WWF). The idea gained institutional support during the 1992 United Nations Commission for Environment and Development (UNCED) conference in Rio de Janeiro, following which the World Bank created a special loan fund called the Global Environment Facility (GEF). In consultation with the World Bank and international NGOs, the Indian government identified possible protected areas in the country where ecodevelopment could be tried out. In the first phase, two National Parks, GHNP and Kalakad Mundanthurai in the southern Nilgiris, were chosen and the Bank funded their ecodevelopment plans with an IDA loan. In the second phase, seven other parks and sanctuaries, including Ranthambhor in Rajasthan, Rajaji in Uttar Pradesh, Gir in Gujarat and Melghat in Maharashtra, were also targeted for GEF funding.

In the case of GHNP, ecodevelopment was launched in November 1994. The GHNP project consists of a sixty-million rupee loan from the World Bank to be disbursed over five years, repayable at four percent interest. This money is to be spent under three heads: i) improving park management (training, equipment, infrastructure); ii) research (being conducted by the Wildlife Institute of India); and iii) actual ecodevelopment. The World Bank loan conditions stipulate that the park authorities must prepare detailed 'micro-plans' for every *panchayat* with the involvement of villagers as well as local NGOs. However, the exercise was entirely foreign to the FD

and, despite a crash course in participatory rural appraisal (PRA) techniques, microplans could not be made before 1994, and then only with the help of outside NGOs. Research gradually got under way from July 1995. In effect, this meant that research (an input into the planning process), planning and implementation started concurrently!

The present situation is somewhat absurd. Ecodevelopment suffered a temporary setback till mid-1996, with the World Bank rejecting all the micro-plans submitted by the GHNP authorities on the grounds that, *inter alia,* i) they did not quantify returns such as enhanced ecological productivity outside the park due to ecodevelopment;[7] and ii) did not include enforceable contracts between the park authorities and local people in which the latter would agree to forego their rights to resources within the park in return for ecodevelopment. Since several successive teams of researchers had circulated through the area, all of them describing ecodevelopment in glowing terms, popular expectations about the scale of investment had ballooned out of all proportion. Since two years passed without any signs of money coming in, these expectations became tinged with the suspicion that the park authorities were bent on deceiving and manipulating people. The FD realized that the atmosphere was too charged to allow the project to proceed smoothly. They played for time by initiating a new approach called TRUCO (Trust and Confidence-Building Measures). With the objective of getting villagers to look favourably upon the park authorities, officials undertook public relations activities, including building bridges, repairing bridlepaths, improving water supply and so on. However, TRUCO was perceived by some villagers as a move on the part of the park authorities to insinuate themselves into areas of public life traditionally managed by the village *panchayat,* and they remained wary of this approach.[8] Villagers also felt that the park authorities had to have some ulterior motive for their actions—they simply did not fit the role of fairy godmother. Ironically, then, the result of TRUCO was a groundswell of opposition to ecodevelopment and widespread unease about the intentions of the park authorities vis-à-vis local rights to resources within the park. This opposition has been buttressed by SAVE (Society for the Advancement of Village Economy), an NGO working in the area, as well as by local traders who control the trade in medicinal plants and by local politicians.

ECODEVELOPMENT VERSUS INDIGENOUS KNOWLEDGE

While local villagers have opposed ecodevelopment on the grounds that it will impoverish an economy that is heavily dependent on natural resources within the park and that, moreover, this

dependence is legitimized by their traditional rights as enshrined in the Settlement Report, SAVE activists have injected a new set of arguments in the debate. The NGO points out that ecodevelopment has been initiated on the assumption that local resource-use is inimical to the objectives of wildlife management. The scientific validity of this assumption has been challenged by the NGO and, instead, a counter-proposition put forward that traditional resource-use by local villagers is based on sound ecological principles which have always promoted, or at least maintained, the interests of wildlife. By stressing local management practices as superior to the scientific claims of the park authorities, the NGO has shifted the debate away from a 'park versus people' confrontation to a scenario in which villagers and wildlife have convergent interests which stand threatened by a forest department bent upon disrupting the fine ecological balance between the two.

This representation of traditional management practices also invokes the superiority of indigenous knowledge. However, asserting this superiority has not been easy for the NGO. While the park authorities and the researchers associated with them have been, rather unsurprisingly, dismissive of indigenous knowledge, it has also been difficult to convince local people about the worth of what they know and practice. For people, most knowledge about the environment is ingrained in a set of material and ideological practices in which they engage in a fairly matter-of-fact way. Such knowledge tended to be taken for granted and therefore valued lightly. Through regular village meetings, games and exercises, the NGO has tried to transform aspects of such knowledge into a more self-conscious repertoire. Such a change, it was felt, was essential for making people realize their own strength, intellectually and politically.

For the people living in the ecodevelopment zone immediately adjacent to the park, the area inside its boundaries has several meanings. Initially, however, when mapping indigenous knowledge, it was decided to treat the park primarily as a resource catchment and deal with its three main uses: grazing, the collection of medicinal plants and hunting. Documenting other ways of knowing will come later.

Grazing

Since agriculture and animal husbandry are inextricably linked in the local economy, the former would not be possible without access to the high-altitude pastures inside the park. Besides maintaining the fertility of the agricultural fields, livestock herds provide highland people with wool, meat and leather, which are assets that can be readily encashed when money is needed. From October to March, the herds of goats and sheep remain indoors, feeding on the

grass cut during the rainy season from the village pastures.[9] March brings spring; the weather is fairer, and there is enough fodder around the village for livestock. But the crucial phase for fattening livestock is their time up in the mountains.

Villages send their combined livestock, in herds of five hundred to a thousand, with three or four shepherds and their dogs. Different villages have fixed routes (some are, in fact, mentioned in the 1886 Settlement Report), with specified numbers of days to be spent at places *en route*. The routes are detailed, with as many as seventeen stops one way, and are planned to optimize utilization of the combination of grass and sedge species available in different meadows along the way. This involves knowing and exploiting the life-cycles of different plants, and also knowing their nutrient qualities. For instance, the highest pastures at Khandadhar become snow-free last and have the richest grass. So the grazing run of Sharan village is timed so that their livestock reaches Khandadhar in August and stays there for most of the month. Another pasture is known for its protein-rich 'black grass,' overindulgence in which can cause livestock to fall sick, so their time in this pasture is carefully restricted. While the pastures are vast, the shepherds always bed down the livestock for the night near the small stone shelters, where they can sleep in some warmth themselves. This has the effect of limiting the spread of *Rumex* and other 'weed' species that tend to proliferate in the presence of livestock activity. By collating instances of such practices, the NGO argues that the shepherds have a fine-tuned understanding of the environment that they use and also a respect for its limits. Nothing akin to this indigenous knowledge exists with the FD.

There is another aspect to such knowledge which is, curiously, not highlighted by the NGO or the villagers. Even though hundreds of villages send groups of livestock into the park at the same time, the entire operation is remarkably smooth and efficiently run. Villagers and park authorities could not recall even one incident in which villagers had to settle disputes about the transgression of the rules and norms governing the grazing runs. These rules pertain not only to adherence to allotted routes and periods of stay, but also to the maintenance of bridges and paths, etiquette regarding right of way and so on. Such exceptional management of criss-crossing people and livestock is surely a key element of institutionalized knowledge. The high degree of co-operation that villagers are able to muster for this task testifies to the importance that grazing has in the local economy.

Collection of Medicinal Plants

As mentioned above, spring and summer are seasons when the park yields more than fifty species of medicinal and edible plants. In

terms of both monetary value and quantity collected, the most important medicinal plants are *dhoop (Jurinea macrocephala), kadu (Picrorhiza kurroa), patees (Aconitum heterophyllum), hathpanja (Orchis latifolia)* and *nhaini (Valeriana hardwickii).* Successful collecting requires a knowledge of habitats (aspect, altitude, topography, vegetation types and so on) and also entails an understanding of moisture, soil and other micro-conditions favourable to particular plants. Naturally, it also presumes an ability to identify different species of plants. Like grazing, these skills are learnt on the job, passed on by the older men to the boys.[10]

Concern has recently emerged that the medicinal plants may be over-exploited. Collectors report that, whereas three years earlier they harvested *dhoop* roots as thick as their arm, now they can only find roots no thicker than their fingers. According to local villagers, they harvest certain annuals only after they have flowered and set seed. However, certain local traders employ Nepali migrant labour to collect plants from the park, and these 'outsiders' are ignorant or unmindful of the plants' life-cycle. Villagers know that only they have the right to collect plants in the park and they have sometimes turned back Nepali collectors. Yet the power to exclude others from one's territory cannot be exercised constantly; high up in the hills: if half a dozen Nepalis outnumber the shepherds or local collectors, the latter usually let them pass unchallenged. So far, the situation has remained one of somewhat uneasy accommodation between local villagers and the few Nepali collectors. While the latter are blamed for the over-harvesting, the real reason lies in the steadily rising demand for medicinal plants from pharmaceutical companies. With hundreds of rupees to be earned from selling a few kilos of herbs, local villagers have definitely stepped up the amounts that they collect.

Hunting

Hunting and trapping for flesh or fowl used to be a common pastime for villagers in the winter months, when animals would move to lower altitudes. Besides food, snares were also set for two prized quarries: the musk deer for its valuable gland, and the male monal for its iridescent crest (used as an ornament on caps worn by local men). Success in hunting and trapping calls for, among other skills, a knowledge of animal habitat and behaviour. However, because hunting is now forbidden, this knowledge is on its way underground. Hunting was banned in Kulu district in 1982 (except for crop protection), and inside the park it is doubly disallowed. If caught, poachers are liable for fines and imprisonment; teams of forest guards remove snares from the park in preventive combing operations. Hard as it is to get reliable information on a subject that

might land the informant in trouble, I would hazard the observation that enforcement by the park staff, combined with greater material prosperity in the agricultural economy, seems to have reduced *overall* hunting in the park.[11] The ticklish case of hunting apart, local villagers and the NGO opposing ecodevelopment have tried to establish that indigenous knowledge is embedded in a set of practices that promote the sustainable use of resources inside the park.

Villagers say that the resources within the park are theirs by virtue of their longstanding customary rights, which are enshrined in the colonial Settlement Report. As traditional stewards of the forest and its creatures, they have an intimate understanding of natural processes. Villagers feel that, as managers of the forest, they have certain privileges too. As an elderly man put it, 'They call this a park. Park means *bagicha* (garden). And one can pluck flowers from a garden.' A shepherd said, 'Just as God put the bird in the sky and made seeds for it to eat, so He placed our sheep on the earth and gave them pastures upon which to graze.' In articulating their opposition to the park and to ecodevelopment, villagers often use metaphors and analogies naturalizing their relationship with nature and attributing to it a timeless quality. The identification of certain spots in the upper reaches of the park as sacred sites endowed with mystical power adds another dimension of cultural signification to the park landscape, an aspect that reinforces the feeling of continuity and timelessness. Such a naturalization and sacralization of the park-people relationship is employed to legitimize claims to resources within the park further. Yet, as we shall see below, this strategy constructs a selective history and a partial present.

THE FD DISCOURSE ON DEGRADATION AND CONSERVATION

Ranged against the claims of indigenous knowledge and local rights is the FD's discourse on degradation and conservation, in which the livestock herds and herb-collectors figure as the most visible targets for censure in the eyes of the park authorities. Since the park was established with the avowed aim of creating optimal conditions for wildlife, especially endangered species, this entailed eliminating all factors perceived by the FD as causing the 'degradation of ecosystems'. By definition, any ecological change apparently inimical to the interests of wildlife, especially endangered species, came to be condemned as 'degradation'. Thus grazing livestock may gradually create a forest clearing with increased floral diversity, but grazing would still be described as 'degradation' by the park authorities because, they argue, livestock disturb wild animals and deprives wild ungulates of fodder. The browsing flocks of livestock, and the

shepherds and dogs who accompany them, who ascend on the park's pastures from May to October, disturb breeding pipits and wild ungulates and compete for food with the latter. Not only that, it is claimed that the visitors transfer diseases to the wild animals of the park. The other side of the equation, that domesticated livestock leaves its dung behind in the pastures and contributes generously to their fertilization, for the benefit of all, wild or tame, is often underplayed. Also ignored is the fact that grazing is an activity of ancient vintage which, over time, seems to have been accommodated and even integrated into ecological processes in the park. The extent of grazing has not increased over the years either.

The threat to biodiversity through herb collection is more substantial. In January 1997, most of the medicinal plants collected in the north-western Himalayas were included by the IUCN in its Red Data Book. *Patees* and *hathpanja* were declared to be 'critically endangered', *kadu* 'endangered' and *dhoop* 'nearly threatened' (S.Singh, personal communication). Given the mixed nature of impacts and the importance of these activities for the local subsistence economy, there needs to be a carefully considered evaluation of resource-use practices. Instead, park authorities tend towards a blanket ban where all human activities come in for censure.

Those opposing ecodevelopment point to the sketchy scientific basis of the FD's assumptions. They assert that the FD's and conservationists' identification of grazing and herb-collection as the two main 'biotic pressures' threatening the conservation of wildlife within the park is based only on impressions gained from short treks through the area, not on any 'scientific study'. I had the opportunity to corroborate this independently. I had assumed that the research component of the ecodevelopment project was aimed at monitoring ecological changes brought about by human resource use. But researchers who have been working in the park for more than a year were swift to disabuse me of this notion. Monitoring change, they said, requires baseline information on the species diversity of plants and animals inside the park and the relationships between them. The process of collecting these data had hardly begun. In the absence of baseline information about biodiversity, how can one track changes in it? Thus, without exact evidence of which specific human resource-use practices adversely affect park wildlife, the state has initiated comprehensive measures to curb them.[12] That the state is able to assert the superiority of its own understanding of the situation by claiming scientific legitimacy points to the power of the alliance between conservationist biologists and the FD, an alliance that is underwritten by the force of law, in particular the Wildlife Protection Act.

ECODEVELOPMENT, SCIENTIFIC RESEARCH AND INDIGENOUS KNOWLEDGE

Secure in the knowledge that its own science is superior, the FD has not been interested in seriously engaging with the issue of indigenous knowledge. For the most part, the park authorities consider local people to be simple and ignorant. The Park Director narrated a story about the absurd fears that villagers entertained about ecodevelopment:

> Villagers told the Park Director that they had heard that, under the ecodevelopment programme, a special kind of leopard had been released in their forests. This leopard had been imported from America and its diet chiefly consisted of sheep and goats. The villagers said that they knew someone who claimed to have seen one such leopard and this person had reported that the leopard had an identification tag in its ear which said 'made in America'. The Park Director had laughed heartily at this story and at the villagers. 'Bring me this man,' he said, 'and I will touch his feet. He must be extraordinarily brave if, on seeing a leopard, instead of running for his life, he went close enough actually to read what was printed on his ear-tag!'

The Park Director relates this incident to stress that people's doubts about ecodevelopment are baseless and that gullible villagers will swallow almost any tale cooked up by 'vested interests'. Yet the story, if true, can also be interpreted as villagers' use of a telling metaphor of an imported concept, namely ecodevelopment, consuming and alienating local resources.

Even though park authorities are dismissive of villagers' beliefs and apprehensions, the ecodevelopment documents have the usual statements about getting them to participate. The *Guidelines for Ecodevelopment Planning* offer a somewhat ingenuous rationale for eliciting villagers' participation:

> People who use natural resources, and who should benefit from rural development, have sometimes contributed to the undoing of programmes or, at best, have not believed that the programmes were for their benefit. Perhaps they were not asked to contribute to the programmes' success. (Pabla *et al.* 1995:3)

Thus, if villagers are asked to contribute to programmes, they would be more convinced about their benefits. This line of thinking assumes that people's responses have so far been hostile because of ignorance or because they resent being cold-shouldered. The guidelines do not acknowledge that there may be a real conflict of

interest between the park authorities and the villagers. Participation is seen as purely instrumental here, as something that promotes programme implementation rather than a right that villagers have as interested parties to the changes being contemplated by the state. The nature of participation is also not spelt out: going by experience so far, it seems that villagers are mainly called upon to submit to PRAs and then to submit to the ecodevelopment plans formulated on the basis of them.

That people may have knowledge and opinions about the objectives and strategies of natural resource management is not considered, let alone incorporated into the plans. The only way in which indigenous knowledge figures in official discourse is in the outline of research to be conducted (WII1996) where, under Task No. 2: assessment of the social context and socio-economic conditions of people using the GHNP', is listed a sub-task: 'Study ethnobiology of the area, including knowledge of local species, their medicinal use, and involvement in local rituals, ceremonies, food, fibre, etc.' Thus indigenous knowledge is reduced to ethnobotany and studied in a manner that divorces it from its changing political and economic context. Such an approach has led to the diligent preparation of lists. A couple of villagers are employed as native informants to identify and collect plants and bring them to outside researchers. The researchers refer to their taxonomic texts and figure out botanical names before adding the plants to their herbarium and noting down the uses mentioned by the local informants. The list so generated is the only official acknowledgement that indigenous knowledge exists. Yet the very manner of incorporating such knowledge into ongoing 'scientific' research devalues it and makes it irrelevant to the process of formulating resource management plans.

While the official attempt to bring in indigenous knowledge has only resulted in collecting and filing away a rapidly drying miscellany of botanical odds and ends, what has gone unacknowledged is the critical contribution of indigenous knowledge in making the entire research programme possible. The research component of ecodevelopment has brought in several 'scientific experts' to study wildlife and suggest how the park should be managed. Their work on, say, the ecology and diet of the monal and western tragopan pheasants would not be possible without local field assistants whose knowledge of bird habitat and behaviour is based on their previous experience of hunting and trapping. The study of wild ungulates also relies on the knowledge and skills acquired by villagers during the time spent grazing livestock. While a couple of the researchers may informally admit in a generous moment that their porters and guides know much more than them about the park and its wildlife, their research has a pre-set agenda which cannot accommodate local world-views and management objectives. That is, the indigenous knowledge developed by villagers to manage

a subsistence economy based on the integrated use of natural resources is now being acquired by 'scientific experts' as data to be incorporated into a new management regime aimed at optimizing conditions for wildlife.

CLAIMS TO KNOWLEDGE, CLAIMS TO CONTROL: CONCLUSIONS

For local people as well as for the FD, the pursuit of knowledge is central to the political act of controlling nature. Across the ecodevelopment divide, the claims to superior knowledge are key to legitimizing claims to control natural resources. In the above section, we have seen how the state officially rejects local knowledge or renders it meaningless even as it exploits and appropriates it through its unofficial practices. Local knowledge is transferred to the scientific expert and made to serve a new management objective, which ironically runs counter to the interests and ideals of local people.

In mobilizing against ecodevelopment, NGO efforts have highlighted the scientific validity of indigenous knowledge and the ecological sustainability of management practices based upon it. However, while asserting the role of indigenous knowledge and challenging the scientific hegemony of the FD, people have been compelled to construct a new myth, glorifying the IK tradition and representing it as timeless and unchanging.[13] Although the 'eternal village,' with its ancient institutions, is a potent symbol to rally round, enabling village leaders to draw clear-cut lines of political difference *vis-à-vis* the FD and its outside experts, not all villagers are equally enthused by this representation of knowledge and community. The extent to which different people have supported the political use of indigenous knowledge is closely related to how they have responded to the opportunities opened up by changing institutional structures such as the market.

The traditional highland economy consisted mainly of the cultivation of subsistence crops such as barley, wheat and beans, and the rearing of livestock. However, this economy has been drastically changed over the course of the last two or three decades. With the expansion of the road network and improved transport and communications in Kulu district, horticulture has emerged as a lucrative alternative to subsistence agriculture. Orchards of apricots, apples, plums and pears have replaced the fields of barley. More recently, vegetable crops such as potatoes, radishes, tomatoes and garlic have also been enthusiastically adopted. The climate of the area has always been suitable for these crops: with improved transport facilities, perishable produce can reach urban markets quickly. Enhanced links with cities have also fostered the collection of medicinal plants. Once gathered only for one's own use and in

much smaller quantities, now different species of plants are collected in bulk and sold to traders to meet the rising demands of pharmaceutical companies. A similar situation prevails with respect to cannabis and opium, the most profitable as well as the most risky crops grown locally. Cannabis flourishes in the wild here. Earlier harvested only for self-consumption, it is now grown almost entirely for sale. In the more remote villages, where these illicit crops can be cultivated and processed with little fear of punitive action, villagers discuss the economics of their operations with a business-like matter-of-factness. At least two growers approached this researcher for tips about contacting dealers directly in Delhi and Goa!

Consequent upon these changes, there has been a large influx of money into the area, and life-styles have changed too.[14] However, the rise in incomes has not been uniform. Villages closer to the roadhead have been better able to capitalize on market opportunities. Within villages, those with larger land holdings have prospered more than those with less land and the landless, but even the latter seem to have gained more employment locally in agricultural work. The increased profitability of agriculture and horticulture has weakened the economic relationship between some people and the park to some extent in that the livelihood of the better-off households appears to be less dependent on livestock-rearing.[15] While villagers report that livestock herds are getting smaller over the years, the collection of medicinal plants seems to have increased in intensity with increased demand. However, the better-off families are no longer interested in the activity themselves. Since herb collection is an extremely arduous business, it is done mainly by boys and young men from poorer families. Certain other practices appear to be unchanged: for instance, poor Dalits still harvest bamboo *(Arundinaria falcata)* and *bhashal (Salix wallichiana)* from the park to weave baskets, their traditional occupation.

Increased integration with the market, changed cropping patterns and intensity, combined with the higher densities of human and livestock populations in the region, have modified the nature and extent of people's relationship with the park. In this changed context, certain activities remain salient. Grazing continues to be the mainstay of most poor and middle-income families. The increasing demand for medicinal plants feeds the poorer families as well as making profits for local traders. Thus access to resources inside the park continues to be crucial for the survival of the weaker sections of village society. The emerging economic differentiation of the village community has resulted in different political responses to ecodevelopment too. It is the poorer and middle-income sections who provide the groundswell of opposition to ecodevelopment. Among them, the invocation of indigenous knowledge resonates most in the minds of the older men. Most younger men, even those

from poorer families who remain heavily dependent on resources within the park, find grazing and herb-collecting too arduous and would rather do something else if they could. Education and market opportunities have turned their eyes away from the snow-clad crags of the park towards the road and the urban settlements it links them to. For the young men, knowledge has shifted ground to a new terrain, where the skills they desire relate to the service sector (tourism, government jobs) and not to the land and livestock.

Even though younger villagers, especially the better-off ones, are gradually turning away from the actual practices which kept indigenous knowledge of natural resources alive and dynamic, many of them appreciate the importance of IK as a purely *political* symbol of strategic value in mobilizing their community against the FD. That is, even if they do not subscribe to the values underlying IK as naturalizing and sacralizing the relationship between villagers and the park, even though they do not employ indigenous knowledge for their subsistence, many of them believe that 'traditional' indigenous knowledge is valuable for defining their cultural identity vis-à-vis the state and outsiders. Here, the claim to knowledge becomes not a claim to control the material resources inside the park, but an assertion of the political and symbolic autonomy of the community from the state.

NOTES

1. This paper is based on fieldwork conducted in the Ecodevelopment area around GHNP over two months in 1996. The research for this paper is part of a larger project coordinated by the Wildlife Institute of India (WII) on the 'Ecological Study of the Conservation of Biodiversity and Biotic Pressures in the Great Himalayan National Park: An Ecodevelopment Approach'. I am grateful to the WII researchers in Kulu, especially Badrish S.Mehra, Sanjay Singh and Pradeep Chaudhary for their unstinted support. I would also like to thank Iqbal Singh, Hukam Ram and Lata Sharma of SAVE, Sainj and Ashwini Chhatre for help of various kinds, Farhad Vania and Ashish Kothari for briefings and debriefings, Beli Ramji and family in Sharan for their warmhearted hospitality, and the Park Director and other members of the Himachal Pradesh Forest Service. The views expressed in this paper are solely those of the author.
2. Besides these three gorges, the park includes 235 sq. km. of the Parbati valley, which were added in 1994.
3. While park authorities accept this figure, it is challenged by those opposed to the park as a gross over-estimate. This view has been borne out by the preliminary findings of B.S.Mehra, a biologist at the Wildlife Institute of India. On the basis of a meticulous and comprehensive survey, Mehra established that 23,280 sheep and goats visit the park annually.

4. The Act specifies that rights to land or other resources inside the area to be notified as a national park must be acquired by the government, thus effectively displacing villages. In addition, no wildlife can be destroyed, exploited or removed from a national park, nor can grazing be permitted.
5. Villages are allocated rights in different forests, and each household in a village is entitled to one tree every five years.
6. So far, GHNP has not managed to achieve full-fledged national park status. However, this state of limbo is by no means unusual; most national parks and sanctuaries in India have not received final notification. This situation may change with the recent Supreme Court order in a case filed by WWF-I (Worldwide Fund for Nature-India) that settlement be completed within a year of notification. Specifying a deadline for the complex process of identifying rights and rights-holders and compensating them may have been motivated by the best of intentions but, if hurried through, may end up short-changing villagers.
7. The World Bank seems to be primarily interested in reducing the situation to a simple equation: quantifying the value of natural resources extracted by people from the park, and investing in ecodevelopment in order to generate the same value outside the park. Unfortunately, such an elegant solution is a little hard to obtain in the context of an ecological landscape saturated with political-economic and other cultural meanings (or in any other real-life situation, for that matter!).
8. In one village, however, the local *panchayat* committee was quite content to let bridge repairs languish, anticipating that the FD would step into the breach.
9. Most of these hay fields belong to the government and are leased to individual farmers. Some people cut grass from their orchards too.
10. All three activities, grazing, the collection of medicinal plants and hunting, are performed by men only. Thus, the knowledge so far mapped and made political by the efforts of the NGO is exclusively male knowledge. Women have little to do with the park directly.
11. However, a census of the musk deer population conducted over the last five years shows an alarming decline (by almost half) in their numbers (Mehra, personal communication). The reasons for this decline may be poaching, disease, drastic changes in food availability or habitat, or some combination thereof. It does seem rather puzzling, though, that the numbers of a species identified as 'most vulnerable' by the park authorities should plummet following the 'protection' of its habitat.
12. Anxiety about degradation may well be due to considerations other than those of local ecology. Saberwal (1996) discusses the institutional origins of the 'alarmist degradation discourse' and attributes the FD's (scientifically dubious) concern about the environmental impact of resource-use in the Himalaya to inter-

departmental conflicts within the state, i.e. with the agriculture ministry.

13. Such a myth is now familiar in environmentalist writings about tribal and peasant struggles over nature and has been variously described as 'the myth of the noble savage', 'the new traditionalist environmentalism', and so on (see Baviskar 1995).
14. When I left Sharan my hosts had just planted garlic in all their fields and were engrossed in discussions about which brand of television set to buy with the profits.
15. These households are also able to afford chemical fertilizers, thereby reducing their dependence on organic manure.

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Chapter 5
LOCATING INDIGENOUS ENVIRONMENTAL KNOWLEDGE IN INDONESIA

Tania Murray Li

The idea that there is an epistemological or substantive distinction between indigenous knowledge and other kinds of knowledge (western, scientific, non-indigenous) has been, quite rightly, debunked (Agrawal 1995). Everyone has practical, usually tacit knowledge of their social and physical environment, a competence reflected in 'knowing how to go on' in the routine activities of everyday life, and the capacity to improvise and innovate when necessary (Giddens 1979). This is the kind of knowledge or disposition Bourdieu (1977) refers to as 'habitus'. If such knowledge exists everywhere, in city and country, west and east, then the distinctive feature of 'indigenous environmental knowledge' is not its content but rather its *location* in particular agendas. As Gray (1995) argues, the term 'indigenous' is more imperative than descriptive, referring to a quality that emerges in the course of struggles over rights to territories, resources and cultural respect. Typically, these struggles pit local groups against encompassing nation states. It is in the context of such struggles that the concept of 'indigenous environmental knowledge' takes on meaning and relevance. International and national NGOs, donors, officials from various government departments, academics and tourist promoters have particular interests in supporting (or rejecting) the idea that 'indigenous people' have important knowledge. The diversity of agendas surrounding the concept of indigenous environmental knowledge forms a field of power within which alliances may be formed, struggles waged, claims made and rights asserted (or denied).

In this chapter I examine the field of power surrounding the concept of indigenous environmental knowledge in Indonesia and explore its strengths and limitations as a vehicle for advancing claims to resources. First, I outline some of the positions taken by the Indonesian government, itself a complex formation in which

there are varied interests in acknowledging, or rejecting, claims about indigenous knowledge. Next, I discuss Indonesian NGOs, exploring the different ways in which claims about indigenous knowledge have figured in their arguments and campaigns and in their relationship to the state and to donors. Then I examine two contrasting sites in central Sulawesi, identifying the characteristics of local conjunctures at which claims about indigenous knowledge have (or have not) been made. Finally, I consider both the tactical benefits and the risks associated with attaching a political agenda about the rights of indigenous people to claims about indigenous knowledge and practice.

STATE-MENTS: INDIGENOUS PEOPLE, KNOWLEDGE AND RIGHTS

The official position of Indonesia's Department of Social Affairs is that Indonesia has no indigenous people,[1] although it still has some communities which are, due to accidents of history or geography, isolated and alienated from society at large. Such people are designated *masyarakat terasing* and are estimated to number about one million (Departmen Sosial 1994a:1). The mandate of the department is to re-locate, re-form and re-educate these people (Department Sosial 1994b), bringing them closer into line with an imagined category of 'ordinary, average, Indonesian persons' (Koentjaraningrat 1993). The very category *masyarakat terasing* and the programme designed for people so classified are antithetical to the concept of indigenous knowledge. All that is unique about *masyarakat terasing,* bar a few songs and dances, is regarded as evidence of deficiency, to be rectified by 'development'. The Department's programme exemplifies, in extreme form, the overall logic of 'development' in Indonesia, which assumes that subalterns know nothing of value and must be instructed, guided, administered and changed according to state-defined models (Dove 1983). Those who obstruct 'development' are deemed to lack the necessary knowledge and understanding, and they must therefore be re-educated to the point where they *do* understand (Dove 1999).

The potential usefulness of traditional environmental knowledge has been recognized by other branches of the state apparatus, but not in ways which concede much on the issue of rights. Speaking at an NGO forum on indigenous people and customary land rights, Minister of State for Environment Sarwono Kusumaatmadja informed activists that Indonesia 'is a country of indigenous people, run and governed by and for indigenous people' (1993:12). Therefore, he argued, the term 'indigenous' as used in the west is inappropriate for Indonesia. The relevant term for Indonesia is 'vulnerable population groups', which includes tribal people and others who depend on natural resources, as well as the urban

poor.[2] He warned the activist community against the risk of cultural relativism in view of Indonesia's attempt to balance diversity with national unity. He argued against the assumption that indigenous cultures should be preserved at all costs and noted that indigenous resource management institutions are not necessarily relevant to today's conditions. He also warned against romantic and patronizing views which emanate from an imported environmentalism without a community-based constituency. The Minister's statement was well crafted. That he attended and spoke at such an event sent a message that he acknowledged the significance of the issues and the national and international constituency formed around them. He conceded arguments about poverty and vulnerability while suggesting that the state, through its new legislation, had matters under control. He conceded that traditional or local knowledge might be practically useful, but made this claim subject to empirical verification. He firmly rejected the concept of indigenous identity, dismissing it as a western import and/or a recipe for national disintegration.

The Department of Forestry has taken a hard line on rights and stepped up its efforts to remove people from the vast areas (75% of the nation's territory) that are officially classified as state forest land (Departmen Kehutanan 1994). At the same time, responding to international criticism, NGO campaigns and the threatened disruption of timber exports, the Minister has acknowledged that forest-dwelling communities which have customary conservation practices and local capacities for collective organization and discipline may be able to play a role in forest management.[3] The Department has therefore conceded the issue of knowledge (subject, again, to verification) and accepted the rhetoric of 'participation', but rejected the discourse that presents forest dwellers as 'indigenous peoples' with traditional and enduring *rights* to the land currently under Forestry control. Those who are permitted to remain on land officially classified as state forest land must do so on terms defined by the Forest Department.[4]

Two official documents prepared in the past few years confirm that the ecological soundness of 'traditional knowledge' is increasingly accepted by (some parts of) Indonesia's ruling regime. One document is the Biodiversity Action Plan for Indonesia (Bappenas 1993). This Plan was prepared as part of a pitch for donor funds to support conservation activities. It does not start from the premise that rural people (including those who might be called indigenous) have rights to their resources, but focuses rather upon the need for the participation of traditional resource users if conservation objectives are to be met. It recognizes that such people possess relevant knowledge (Bappenas 1993:29, 37, 44). It also recognizes, possibly for the first time in an official document, that there are forty million people living in or dependent upon resources in the public forest estate, and that these people are the effective resource managers

(ibid.: 43). It notes that insecure land tenure has had deleterious effects on sound land management (ibid.: 15) and calls for a revision to the 1967 Basic Forestry Law to accommodate customary *(adat)* rights to land (ibid.: 19, 25, 38). It seems to assume that 'traditional' people are naturally inclined to conserve biodiversity, although it notes that the compatibility of 'traditional' uses and conservation goals still needs to be assessed (ibid.: 36–8). Not surprisingly, given the direction of its argument (from conservation goals, to a recognition of traditional knowledge, to an enhancement of rights), the report begs the question of how 'traditional resource users' are to be identified, or by whose criteria the sustainability of their resource use and management systems should be assessed. New respect for traditional or tribal environmental knowledge has had positive implications for rights, but the argument for rights is instrumental and framed as an adjunct to a conservation agenda. The term 'indigenous' is not used.

The second document which highlights indigenous environmental knowledge is Indonesia's national strategy for implementing Agenda 21 (KLH/UNDP 1997). This is a six-hundred-page document resulting from a consultative process involving over a thousand participants (government, non-government and academic). It contains, therefore, some unevenness in terminology and approach. The chapter on poverty notes the need for continued transmigration to make use of 'unproductive' lands in the outer islands (ibid.: 28), and the chapter on agriculture observes that low returns to 'slash-and-burn' farming force its practitioners to 'become nomads, so that they simply leave their farms when the land is no longer productive' (ibid.: 29). In contrast, the chapters on forestry and on biodiversity refer strongly and repeatedly to both the knowledge and the rights of people called, at various times, indigenous, traditional, local, forest-dwelling or tribal. As in the biodiversity document discussed above, the argument generally moves from a recognition of indigenous knowledge and conservation-related practices to the need for enhanced rights. For example:

> Many of the diverse cultures among indigenous groups in Kalimantan, Sulawesi, Irian Jaya and Maluku have a special affinity with the forests. With this cultural development, knowledge about the ecology and sustainable use of the forest is generated, and is of high value today in terms of biodiversity management. For instance, at least 6,000 indigenous plants and animal species are used on a daily basis by Indonesians for food, medicine, dyes and many other purposes. (Bappenas 1991)
>
> Equitable sharing of benefits would ensure the preservation of this knowledge which would, in turn, help to ensure sustainable forest management. (KLH/UNDP 1997:365)

More remarkably, the conservation agenda has opened up space for a recognition that existing forest policies and practices are contrary to the interests of communities and that locals are acting rationally when they resist them:

> In places where government-designated forest land overlaps with areas in which forest-dependent communities farm, hunt, fish and gather non-timber forest products, serious adverse impacts on local communities occur. Modern functional classification and development of the forestry sector is often in conflict with the community's customary rights and tenure over land and forest resources. This stems from lack of recognition of customary *(adat)* laws and the boundaries separating logging concessions or other forestry operations from community forests on the outer islands. In the inner islands, the reason is the insecurity of land tenure as well as competition for land and resources. This leads to loss of economic and socio-cultural access to forest resources, and to conflicts between forestry companies and the communities as well as between forestry officials and the communities. These conflicts sometimes lead to community protests that create physical and ecological damage, and to non-cooperation on the part of the communities towards new schemes of sustainable forest management. The final result is erosion of local customary institutions which might otherwise offer a mechanism for increased sustainable forest management. (KLH/UNDP 1997:389)

In the same vein, and also contrary to the normal direction of instruction presupposed by the logic of 'development', the report observes that there is a need to 'improve the capacity of local government officials to understand the ecological, economic and cultural value of the forests to the community' (ibid.: 92). From the recognition of the capacities of forest-dwelling people stems the need to 'set-up a legal mechanism which protects traditional knowledge, territories, cultural practices and which also guarantees the genuine participation of traditional communities by recognizing their traditional laws and incorporating them into the national laws' (ibid.: 401).

Despite the rhetoric, the legal mechanisms proposed for forest-dwelling communities fall short of full recognition of their rights to occupy, much less farm, state-defined forest land. The report calls for clarification of the legal status of traditional communities vis-à-vis concessionaires; the development of a legal framework for 'community forestry' as an official state program; a review of the regulations on participation in forestry programmes; systematic mapping and inventory of forest dwelling communities; consultation

and equitable sharing of benefits; documentation of sustainable techniques; and the revival and adaptation of traditional resource management institutions (ibid.: 390). The emphasis is, again, on conservation within a forestry framework, for which the participation of traditional communities and the strengthening of their rights is a prerequisite.

Mild as they are, the discussions of traditional knowledge and the rights of 'traditional' communities in these documents put the state institutions that prepared them significantly at odds with others which continue to deny the existence of indigenous knowledge (e.g. the Department of Social Affairs), or which have a mandate to intensify state territorial control or to bring large scale 'development' programmes into areas in which traditional resource-users are located (e.g. transmigration, forestry, estate-crops, mining and energy). Claims about knowledge and struggles over rights take shape in relation to the constraints and opportunities set up by this complex, differentiated field of power.

LOCATING POLITICS IN KNOWLEDGE: NGO AND DONOR AGENDAS

The activities and agendas of Indonesian NGOs both shape and are shaped by state policies and donor priorities. Similarly, international donors adjust their agendas to accommodate, while also attempting to reform, the policies and programmes of particular state agencies and NGOs. Both donors and NGOs participated in the production of the two documents mentioned earlier, making it difficult to separate or clearly distinguish 'government', 'non-government' and 'donor' positions. Donors acknowledge the sensitivity of the issue of 'indigenous people' to the ruling regime and have avoided becoming directly involved in struggles over land. The conservation and biodiversity agenda offers a compromise, an agenda upon which state, donors and NGOs can agree. It is significant that the word 'consensus' is mentioned in the foreword to the biodiversity document, and also in the introduction to Agenda 21. Around the edges of this compromise, struggles continue to be waged, often discretely, over the meaning of key terms as well as their applicability in particular contexts.

Support for 'indigenous people' is widespread in the activist community. The green claim that 'indigenous people' derive ecologically sound livelihoods from their ancestral lands and possess forms of knowledge and wisdom which are unique and valuable has provided a common platform for many Jakarta-based NGOs. But for many activists, the political significance of 'indigenous people' goes beyond green arguments. For some, the plight of indigenous people is taken to indicate one among many ways in which the promises of Indonesian democracy and

nationhood remain unfulfilled. For others, 'indigenous people' have come to hold a special place as the representatives of diverse but pure forms of Indonesian cultural heritage unsullied by encounters with colonialism, westernization and modernity.[5]

There is some difference among NGOs in the nature and extent of the population group that is envisaged to fit within the category of 'indigenous people'.[6] Some focus their concern upon relatively more isolated or exotic people, those the state would readily classify as *masyarakat terasing.* They seek to reverse the negative valorization placed upon the knowledge and practices of such groups and to defend their right to maintain distinctive ways of life, contrary to the state logic of 'development'. For other activists the classification 'indigenous people' properly applies not only to a few especially isolated groups, but to the majority of Indonesia's rural citizens outside Java. Their goal is to secure land rights for the millions who are currently deemed to be 'squatters' on state land and who are subject to displacement in the course of state-defined 'development' imperatives. Their legal arguments refer to the Basic Agrarian Law of 1960 which recognizes customary *(adat)* rights so long as these are not in conflict with the national interest.[7] According to legal activists, a customary tenure system can be said to exist when people manage their land and resources in an orderly way. It is not necessary for customary knowledge and practice of this kind to be written down or formulated in explicit rules and regulations: it is enough that people 'know how to go on', making everyday decisions, resolving disputes and adapting to new conditions as required. Neither 'traditional' life-styles nor a conservation orientation are prerequisites for the applicability of law recognizing customary rights.

The implication of a broad definition of customary knowledge and practice is that millions of Indonesian citizens could make claims for security of tenure under the Basic Agrarian Law. It is a scenario that has provoked a response from the National Land Board (BPN) and led to an attempt to limit the scope of the term 'customary'. The head of the BPN has accused unnamed parties of attempting to reactivate traditional rights where 'in fact, they no longer exist' in order to seek political or personal gain (Kepala BPN akan Matikan Hukum Adat, *Forum Keadilan* 22, 18 February 1993). He has also suggested that such rights will disappear because they are not properly documented (Eksistensi Hukum Dewasa Ini, *Kompas,* 27 March 1996). The identification of what, precisely, will count as evidence of 'customary knowledge and practice' has therefore become a crucial issue in the struggle over rights. For NGOs, their participation in the documentation of 'traditional environmental knowledge' in support of conservation agendas is also an opportunity to help communities strengthen their legal position vis-à-vis agencies such as the BPN, which deny the existence of customary knowledge and rights in the modern era. NGOs have

worked with communities to prepare documents, lists, rules and regulations as well as maps showing territorial boundaries and land-use zones, all of which help to make the idea of a community with customary practices and rights more visible to the state.[8]

The shifting definition of who counts as 'indigenous' or traditional people in Indonesia has provided some room for manoeuvre in the relationship between donors and NGOs[9]. When the international environmental lobby and donors connect biodiversity with indigenous people, they probably have in mind some famous exemplars, mostly based in the Amazon (cf. Stearman 1994). Their images and expectations resonate readily with NGO support for especially remote and exotic people, who, it is assumed, have large and unique reservoirs of biodiversity knowledge. They resonate less readily with the millions of rather ordinary farmers whose customary resource-management practices could also be framed in terms of 'indigenous environmental knowledge'. Yet, so long as definitions remain vague and the compromise agenda focused on conservation can be invoked, support for the latter is not ruled out. Donor agendas and budget lines, together with the opportunities and constraints presented by different state agencies, are important in shaping the work that NGOs do and, more significantly, in shaping the ways their work is framed and presented.

Within the contested array of state and activist positions, there are many criteria for specifying who qualifies as 'indigenous' in Indonesia.

Rural people also have 'room for manoeuvre' as they situate themselves in relation to the images, discourses and agendas that others produce for or about them, although, under some conditions, the room may be quite limited. Struggles over resources, which are simultaneously struggles over meaning, tend to invoke simplified symbols fashioned through processes of opposition and dialogue which narrow the gaze to certain well-established signifiers and traits. Those who are to fit the preconfigured space of 'indigenous people' must be ready and able to articulate their identity in terms of a set of characteristics recognized by the government agencies that might support them, by NGOs and by the media that presents their case to the public. Agency is involved in the selection and combination of elements that form a recognizably 'indigenous' identity, as well as in the production of a reified body of 'indigenous environmental knowledge' from the pool of everyday local knowledge and practice.

The repertoire of images and arguments surrounding indigenous environmental knowledge offers one framework within which alliances can be made and struggles configured. But it is not the only possible repertoire, nor is it necessarily one which is available or relevant to all rural people who might potentially fall within its scope. The constraints and opportunities presented by international and national images, agendas and debates resonate differently with

the sedimented histories and landscapes, as well as the current concerns, of particular groups in the Indonesian countryside. In the next section I turn to two contrasting sites in the hills of central Sulawesi, seeking to account for the factors that led struggles to be focused around the issue of indigenous identity and environmental knowledge in one case but not the other.

CONDITIONS AND CONJUNCTURES: INDIGENOUS KNOWLEDGE IN CENTRAL SULAWESI

Sulawesi Tribe Opposes Lake Lindu Dam Project

So stated a headline in the *Jakarta Post* (an English language daily) on 11 September 1994. The article quoted Gesadombu, 'Tribal Chief of the Lindu plains', on the centrality of the lake to the Lindu tribe's livelihood; the 'strong traditional and practical ties the Lindu people had with the land they live on'; and the certain loss of traditional values should the reservoir be constructed and the people moved out. Accompanying the Chief were '23 other fellow Lindu indigenous people, non-governmental activists, students and nature-lovers from Central Sulawesi'. They were visiting Jakarta to meet with state officials and present their case against the construction of a hydroelectric plant at the lake. The article also quoted activists on the ecological soundness of the Lindu people's traditional resource-management practices, on the need for the government to learn about land and water management from the people and on the right of the Lindu people to express their culture.

Every component of this news story is familiar: the presence of tribes, tribal leaders, tribal ecological wisdom and a specific tribal place central to the group's identity and culture, plus the presence of allies and sympathizers, and of a massive external force poised for destruction. It is a story for which the conceptual space already exists and for which the intended readership has been prepared. Nevertheless, the telling of this story in relation to Lindu or any other place in Indonesia has to be regarded as an accomplishment, a outcome of the power-laden processes through which indigenous knowledge and identity are made explicit, alliances formed, and media attention appropriately focused.

The historical preconditions for this situation were established at Lindu at the turn of the century, when, according to Acciaioli (1989) the area was subjugated by the Dutch and the scattered hill farmers (numbering about six hundred) were forced to form three concentrated settlements beside the lake. There, they were converted to Christianity by the Salvation Army mission, educated in mission schools and encouraged to view 'custom' as matter for display at celebrations overseen by an officially recognized 'customary' leadership, the *adat* council. Subsequently, the arrival

of migrants from neighbouring districts and of Bugis from the south gave the Lindu people some (often bitter) experience in articulating claims to their 'ancestral, customary or village land' (ibid.: 151). Resource struggles provided the stimulus to articulate (select, formulate and convey) a set of Lindu *adat* rules which *ought* to be acknowledged by outsiders, a process which in turn reworked the significance and substance, of Lindu knowledge and identity. The mission-educated, literate middle class of Lindu village officials, school teachers and prosperous farmers participated in the process of articulating Lindu identity, rights and claims.

The identity of the Lindu as an indigenous people with valuable knowledge and with rights to their ancestral land was firmly established in the context of opposition to the hydroelectric plan and the threat of forced resettlement. According to Sangadji's account (1996), the campaign involved confrontational encounters with the authorities, media attention, collaboration with national and international NGOs and activities organized by Lindu leaders to heighten awareness within the community. NGO campaigning and support began in 1988. In 1992, at a dialogue with NGOs in Palu, a local leader stated that the people of Lindu would rather die than be removed from their ancestral lands. A youth group formed at Lindu to research Lindu—tradition and work for its preservation. Many journalists and officials visited the site, and *adat* leaders reiterated their preference to die rather than lose their culture. Security forces warned the people against activists who were misleading them, whose values were western and contrary to national ideals *(pancasila).* An environmental assessment was carried out by consultants in 1993, but invited no public input. The delegation which visited Jakarta and met with top-level officials was told that plans had changed and resettlement would no longer be necessary. However, there are concerns that the requirement for a 'green belt' around the lake will restrict access both to fisheries and to farmland, and opposition to the project continues.[10]

The scale of the threat to local lives and livelihoods, the dramatic nature of a dam as a stage for NGO action, the location of the dam within a national park, and the massive economic implications of the project, explain why Lindu attracted the attention it did. But it remains to be explained how and why the Lindu have come to articulate their identity, present themselves and be represented by their supporters in terms consistent with both national and international expectations concerning 'indigenous people' or tribes.

The news coverage and documents prepared in the course of the campaign shed some light on the 'how' question. Various documents were written by members of the NGO coalition (with Lindu leaders as key informants) to inform the public and policy-makers about the Lindu people and the negative impacts of the dam. These documents present Lindu as a unique, tribal place, its integrity basically intact. They note that the Lindu are the only

speakers of the Tado language (related to Kaili) and that they are an autonomous group that have managed their own affairs *(hidup mandiri)* for hundreds of years (Sangadji 1996:19; Laudjeng 1994: 150–2). There is little mention of the impact of Dutch rule or the presence of Bugis and other non-Lindu at the lake. The documents focus upon cultural features which confirm the uniqueness of the Lindu people, their environmental wisdom and their spiritual attachment to the landscape. Culture is substantivized through a focus upon 'traditional' costumes, major annual feasts and marriage arrangements. Lindu capacities for environmental management are demonstrated through the existence of the *adat* council, said to have jurisdiction over the Lindu people's collective territory, an area which extends to the peaks of all the mountains surrounding the lake. Management rules include the exclusion of outsiders from the use of Lindu resources (except with the permission of the *adat* chiefs) and the zoning of land according to specified uses. The documents pay considerable attention to the existence of named zones for farming, hunting and grazing, and sacred sites in which all forms of activity (tree-cutting, gathering, etc.) are strictly forbidden (Laudjeng 1994: 155–60). They also state that each clan and, within the clan, each household has fishing rights over specific portions of the lake. Filtered and interpreted through a 'green lens' (Zerner 1994), these land-use categories are presented as similar to, but more efficient than, the land-use zones imposed by the state through its forest and national park regulations (Sangadji 1996:26–8). Finally, the documents emphasise Lindu people's attachment to their place by naming features of the landscape: hills, sacred spots, grazing areas and, most especially, the sacred island in the lake associated with the magical culture hero Maradindo. Although they mean nothing to a reader without a map, these place names assert and confirm that the Lindu are thoroughly familiar with their territory. Between the named zones and the specific named places, the point is made that there is no undifferentiated or unclaimed space, but rather, an orderly system of land-use designed and managed by the 'indigenous people' of Lindu.[11]

A finer reading reveals many subtleties in these accounts. They present a selective picture, but one which is complex rather than simple, positioning the Lindu in relation to multiple fields of power. They emphasise that the Lindu are 'traditional' people, but in no sense are they primitive. The mention of Christianity confirms their nationally acceptable religious standing, yet little is made of the influence of ninety years of missionary work upon their 'traditional' rituals and practices. They are shown to be in touch with nature and the bearers of tribal wisdom, but by emphasising the orderliness of the Lindu land-use system it is made clear that there is nothing wild about this scene. The accounts emphasise subsistence uses of the forest, such as building materials and

medicinal plants (Sangadji 1996:44). They make less of the presence within these forests of the hill-side coffee-groves that provide the Lindu people with a significant source of cash. It is noted that the Lindu people are not poor: they have an adequate standard of living, though not luxurious, and they are satisfied with their lot. Thus they are sufficiently similar to 'ordinary rural people' not to be in need of drastic changes or improvements framed as 'development', still less the civilizing projects directed at *masyarakat terasing.* Yet they are unlike 'ordinary rural people' in their uniqueness, their special knowledge and their attachment to place.

The efficacy of framing of the position of the Lindu people in terms of the arguments and images associated with 'indigenous people' was not guaranteed. It was effective in the NGO campaign, as activists were able to use the case of the 'green' Lindu to argue against the dam and also to support their arguments on behalf of other 'indigenous people' in Indonesia. In activist circles, Lindu became an exemplary case, which was both framed within, and helped to frame, broader struggles.[12] But not all NGOs recognized the tribal uniqueness of Lindu. In 1992, while the Lindu campaign was underway, a parks-focused international conservation NGO described the population in the many villages bordering the national park as ethnically diverse, with a mix of 'local' or 'traditional' people and newcomers. It observed that they were subsistence farmers, only weakly integrated into markets, and often exploited and displaced by aggressive newcomers. It also noted that they were rather lacking in handicrafts with a tourist potential (Schweithelm *et al.* 1992:39–47). Thus described, they fit the state category of 'ordinary villagers'. But the NGO's report contains no suggestion that the border villages in general, or Lindu in particular, are populated by tribal people who have ancient ties to the forest or who possess unique environmental wisdom.

Media receptiveness to the idea of the Lindu as an indigenous people was also mixed. The English-language news coverage cited earlier picked up the tribal angle, as the headline clearly shows. The coverage of opposition to the dam in a major Indonesian language newspaper *(Kompas)* was more equivocal. An article (Masyarakat Lindu Menolak Rencana Pembangunan PLTA, *Kompas* 11 September 1993) described the Lindu people not as a tribe but as 'a sub-group of Kaili'. It acknowledged their environmental wisdom, but observed that, the satisfaction expressed by residents notwithstanding, the area does suffer from a development deficit, signaled by the seventeen-kilometre hike from the nearest road, the muddy village paths and the incomplete electricity service. Most of the media coverage skilfully analysed by Sangadji (1996) supported the hydroelectric plan on the grounds of 'development' and did not address the issue of 'indigenous people'.

Throughout the campaign, the government agencies promoting the power plant neither accepted nor rejected the notion that the Lindu are 'indigenous people': they simply did not engage with it. Refusing, or not recognizing, the discursive terrain developed by the Lindu people and their allies, officials maintained their focus upon the need for electricity to promote modernization and industrial development in the Palu valley (Sangadji ibid.: 54). They also made the argument that the resettlement of the Lindu would make them more developed, but this was difficult to justify. It was an argument consistently rejected by Lindu spokesmen. Indeed, it was their overt rejection of the idea that they were in need of state-directed 'development', as much as their emphasis upon the unique character of their tribal place, that was notable in their campaign.

In view of the weak case made by the state, various approaches could have been used to frame opposition to the project. A materialist case focusing upon the loss of good livelihoods and a political case focusing upon the rights of the Lindu people to fair treatment as citizens were indeed argued. But the most prominent argument focused upon the loss of a unique tribal identity and way of life. The reasons for this had to do with the fields of power and opportunity surrounding the concept of indigenous people at that conjuncture. The possibility of articulating local concerns with national and international agendas was clearly present. Situations which set indigenous people up against big projects and the state are guaranteed attention, and they set up predictable alliances (Sangadji ibid.: 13, 16). Also significant is the way in which an indigenous or tribal identity asserts the unity of people and place, addressing an issue at the heart of state-society relations in the Indonesian countryside. According to the state model which sees rural people as 'ordinary villagers', those that must be moved can be compensated in cash or given new land to replace the old. If the Lindu people were simply villagers, their livelihoods could, in theory, be re-created elsewhere. Indeed, the state's plan for them was that they would join the (technically troubled) transmigration scheme at Lalundu (ibid.: 20), thus becoming homogenized quota-fillers, names on a list. Only 'indigenous people' can claim that their very culture, identity and existence are tied up in the unique space that they occupy (Cohen 1993). There can be no compensation. This was the point argued repeatedly by the Lindu and their supporters (Sangadji ibid.: 16).

Finally, the concept of indigenous people, especially when they are shown to be ecologically wise, opens up some 'room for manoeuvre' unavailable to ordinary villagers. Obstinate peasants can be labelled communists, as they often are in Java (Sangadji ibid.: 15), but communist tribesmen are somehow less plausible. Their concerns seem to be somewhat different from those of the mass of rural people reacting to the contempt and arrogance with which they are treated by their government. Indigenous people, and their

nature-and-culture loving supporters, are differently positioned in relation to the field of power. The sacred shrine of the Lindu's heroic and supernatural ancestor Maradindo is located on an island in the lake. When Maradindo is angered, he causes accidents, bizarre events, of which the Lindu can cite recent examples (Sangadji ibid.: 32, 41–2). The Lindu tell a powerful story: ignore Maradindo at your peril.[13]

Lauje Hill Farmers Get By Without Anyone Paying Much Attention to Their Knowledge

This is not a plausible newspaper headline, not because the statement is untrue, but because it posits an unlikely scenario of media attention becoming focused on a place where nothing much (of interest to outsiders) is happening. The Lauje people, currently numbering about 30,000, occupy the hilly interior and the narrow coastal strip of the peninsula to the north of Tomini Bay and are concentrated in the present-day districts of Tomini and Tinombo. Their language (Lauje) shades gradually into Tiaolo and Tajio, the languages of their neighbours. Besides language, there are no ethnicizing or demarcating signs that mark the borders of the Lauje domain. The Lauje hills are fairly densely settled and cultivated but not especially fertile, so they have not attracted outsiders. Unlike the Lindu, the Lauje have not therefore been provoked into articulating collective identities and associated boundaries in order to claim or defend their territory (Li 1996).

According to Nourse's (1989) account of local history, in precolonial times most Lauje kept to the hills for fear of slave-raiders and pirates, although they traded jungle produce. Those occupying the drier, lower slopes produced tobacco for regional markets. Lauje who moved down to the coast during the nineteenth century constituted themselves as a class of aristocrats, converted to Islam, and inter-married with incoming Bugis, Mandar and Gorontalo traders. The Lauje area was of only peripheral interest to the Dutch. It contained little natural wealth, and the coastal lords were quiescent and easily co-opted, posing no threat to Dutch authority. A half-hearted attempt was made early this century to move the interior population to the coast, but it was clear that they could not survive on the resources of the narrow coastal strip, and they were soon allowed to return to their scattered and rather anarchic hillside hamlets. Some performed occasional *corvée* duty, working on the construction of the coast road and bridges, while others moved further inland to evade such obligations. Dutch revenues from the area, such as they were, came from taxing the owners of coconut groves planted along the coast at Dutch insistence.

The minimal obligation of the coastal chiefs toward their Dutch overlords was to keep peace in the interior and prevent feuding and bloodshed. Their model of governance was to select highlanders of renown, people who appeared to command respect, and make them responsible for maintaining order over 'their' people. Since the expectations associated with rule over the interior were relatively light, they had no need to discover, constitute or record Lauje customary practices or traditional law *(adat).* The mechanisms for accomplishing rule in the post-colonial period became somewhat more systematic but did not fundamentally change. Since the borders of administrative village units *(desa)* were defined to cross-cut the terrain from the coast to the hills, the coast-based village heads continued the practice of appointing local leaders to be responsible for the maintenance of order in their part of the hillside terrain. Today these leaders occupy the official positions of hamlet chief *(kepala RT)* and chief of customary affairs *(kepala adat).* The task of the latter is to adjudicate marriage arrangements and local disputes in the vicinity of the hillside hamlets to which they belong.

According to several of those holding responsibility for 'customary affairs', the procedures, rules and fines they administer in their hillside hamlets were not handed down by the ancestors but rather established by the coastal authorities in order to overcome the anarchy and feuding that previously prevailed in the area. Similarly, they consider their own authority to settle disputes to be a power granted by the village administration, ultimately backed by the civil, police and military authorities of the district. They do not articulate a sense of *adat* or tradition as something distinctive, autochtonous, locally derived or essential to Lauje identity. There are, of course, many beliefs and practices of a spiritual nature relating to ancestors as well as to features of the landscape, but these are described as matters of personal, family or at most hamlet-wide conviction rather than pan-Lauje tradition. Village officials regard the hill people and their farming practices as backward and show no interest in them at all. The coastal Lauje elite seldom if ever hike into the hills and know little about the everyday lives or concerns of the hill farmers. Although they have to acknowledge that they speak a common language, most coastal Lauje regard their shared ancestry with the hill people as a source of embarrassment. Officials from the Ministry of Education and Culture bemoan their assignment to an area of Indonesia patently lacking in the kinds of songs, dances and handicrafts that they are expected to identify and turn into emblems of the local for display in provincial or national fora. No sympathetic outsiders have yet come looking for indigenous people or environmental knowledge.

Engagements between the state and the Lauje people have been framed within, rather than outside or in opposition to, the state's discourse of development. This does not mean that there is any consensus on who or what needs to be developed, or how

development should be accomplished (Li 1997). But there is no suggestion, for now at least, that the Lauje are an 'indigenous people' for whom, or by whom, an alternative agenda should be proposed. In general, coastal officials ignore the hills. Village maps show the hills in spatially compressed form, while showing the houses and public facilities on the narrow coastal strip in minute detail. Some officials describe the hills as 'empty', even when more than half the village population lives up above (see Li 1996). When pressed to discuss the mountain population, they emphasise their primitive, unruly nature and their status not as noble savages but as awkward and annoying ones. Officials sometimes refer to the mountain dwellers as *orang dayak,* a term they have picked up through media exposure to the apparently wild and primitive people of the Kalimantan interior, and which they have chosen to extend in order to label and characterize their own 'backwoods'.

Village officials readily classify the mountain Lauje as *masyarakat terasing.* In so doing, they seek to absolve themselves of responsibility for the onerous task of trying to count, monitor or control, let alone provide services to, a population which, they stress, is continuously on the move. They also hope to attract resettlement projects to their village, massive deployments of state attention and expenditure which would help to resolve the difficulties they face in administering the hills, as well as boost the local economy. An official document of the Department of Social Affairs (Department Sosial 1994a:89–93) has it on record that there are 612 Lauje families in Tinombo and Tomini that fall into the category of *masyarakat terasing* in addition to 130 households that have already been resettled under the department's programme. But the department receives many more requests for resettlement programmes than it can handle. Numbers alone do not make a compelling case. The department has already been exposed to embarrassment when all the Lauje abandoned a resettlement site and returned to the hills within a year. Moreover, the Lauje are considered rather dull folk, lacking in the paint and feathers expected of true primitives. As one senior official observed in an interview,[14] 'sometimes we look at them and say these are not indigenous people, they are village people'. There are other groups in Central Sulawesi, such as the Wana, who better fit the bill.[15] The mountain Lauje, who are not especially exotic and have no serious competitors for their hilly terrain, have therefore been left pretty much to their own devices.[16]

The hill people potentially classified as *masyarakat terasing* are, to my knowledge, unaware of the assumptions about primitives embedded in the official programme description and therefore have not addressed the issue of whether or not this classification should be applied to themselves. Their concerns are practical ones. Those who have heard about the resettlement program are quite afraid that they will be forced to move out of the hills against their will.[17]

While they would be happy to receive new houses and rice rations as gifts from the government, they are rightly skeptical about livelihood prospects on the coast and insist therefore that they would have to remain where they are. Some of them know about the failed resettlement site and are anxious about the punishments which might follow if they too find that they cannot survive on the coast and must return to the hills.

Generally, the mountain Lauje agree that their part of the province, and the hills in particular, suffer from a development deficit. This is a deficit they mostly attribute not to their own primitiveness or recalcitrance, but to the indifference, corruption and greed of local elites who direct state facilities, programmes and benefits away from them. Not having been exposed to the overtly coercive dimensions of state power, nor to the threat of having land and livelihoods removed from them in the name of 'development', they have not articulated collective positions on these matters. Their engagements with state authority and 'development' occur mostly through unremarked, mundane patterns of action and inaction. Some participate in mandatory public works days *(kerja bakti)* dedicated to 'development' tasks, others do not. Some hike down to the village office when called upon to pick up free seedlings, others surmise that any seedlings offered to them will probably be of poor quality or purloined by coastal elites, and make their own arrangements. Some pay land taxes, others claim they are too poor to pay and count on officials to be lenient. In general, they bring a well-honed cynicism to these everyday encounters. They have learned the parameters of what can be requested from the government, the list of things (schools, seedlings, roads or foot-paths) that fit within the official purview of what 'development' entails. These are indeed things they feel they want and need, although they do not define their lives as chronically deficient due to their absence, nor do they sit passively waiting for 'the state' to secure their futures. They are willing to adopt the position of supplicants in the hope that some of the desired things will come their way. To this end, some highlanders have begun to consolidate their hamlets, fixing their social and physical position on the landscape in ways that will attract development resources (Li 1996).

So far, there has been no conjuncture, no context, site, event or encounter, in which the mountain Lauje have articulated a collective position as 'indigenous people'. No hillside leaders have emerged interested in, or capable of, articulating territorial claims beyond the level of their own hamlet, still less a generic Lauje identity. There are respected shamans living both in the hills and on the coast, but their agendas do not appear to be political. The pretensions of coastal Lauje 'aristocrats' are largely unheard or ignored. The main authority hill folk acknowledge is that of village officials, but, as noted above, they are rightly suspicious of the motives of this group and resent the unfair treatment they receive

at their hands. They are not anti-development. Indeed, they are taking their own initiatives to improve their chances of being *included* in state development agendas which have hitherto passed them by (cf. Schuurman 1993). They engage with the state in a discourse consistent with their knowledge of themselves, their needs and aspirations, and their understanding of what it is possible to demand and expect in that relationship. The concept of 'indigenous people' has not taken hold in the Lauje hills because, under current conditions, it would not help people to make sense of their situation, nor would it help them to improve it.

LOCATING INDIGENOUS ENVIRONMENTAL KNOWLEDGE IN SHIFTING FIELDS OF POWER

The contrast between my two examples highlights some of the conditions under which 'indigenous environmental knowledge' has (or has not) been located in contemporary Indonesia. A summary of the factors present at Lindu, but not in the Lauje case, includes the following: competition for resources, in the context of which group boundaries were rendered explicit and cultural differences entrenched; the existence of a hierarchical political structure which included individuals (elders, leaders, tribal councils) mandated to speak on behalf of the group; a capacity to present cultural identity and local knowledge in forms intelligible to outsiders, an activity undertaken in this case by a literate elite or 'middle class' of teachers, local officials, prosperous farmers and entrepreneurs; an interest on the part of urban activists in discovering and supporting exemplary indigenous subjects and documenting 'indigenous knowledge' which fit the niche pre-constituted through national and international environmental debates; and, finally, heightened interest in a particular place, arising from a conflict which pits locals against the state or state-sponsored corporations.

Two further brief examples confirm the significance of these conditions, even though each conjuncture has its own unique characteristics. In a subtle account which is full of surprises, Tsing (1999) shows how Meratus village leaders in Kalimantan have been able to construct a 'tribal situation' which accurately plays up to the expectations of environmentalists seeking tribal wisdom while making use of the attention accorded to their village to make development claims upon the state. In her example, indigenous identity and development 'longing' have been creatively combined, not opposed. The leaders articulating Meratus identity in terms of this delicate balance occupy positions as village officials. Their status as 'tribal elders' is less than apparent to their local constituency, although readily apparent to outsiders. That outsiders showed any interest in them was the result of a conflict that erupted between villagers and a logging company over forest resources. Such

conflicts are common enough, but this particular one coincided with an international conference on tropical forests in a nearby city hosted by two national NGOs. As part of the programme, the NGOs wished to expose the participants to a 'case study' of a conflict between a timber company and 'a local indigenous community' (Hafild 1997). This initial contact lead to some (successful) campaign activities by the NGO in defence of the villager's resource rights. It also led to the village becoming marked by other NGOs, journalists and nature-lovers as a tribal place, offering village leaders the multiple opportunities for developing the 'tribal situation' described in Tsing's account.

Back again in central Sulawesi, a study of a group known as the Da'a reveals the difficult position of people who might be expected to possess indigenous ecological wisdom, but who are found deficient according to green-standards or fail to articulate their knowledge in forms intelligible to outsiders. The Da'a are usually seen as the hill-billies of the Kaili and they are officially classified as *masyarakat terasing.* They were the subject of a research project by two university-based anthropologists (Mamar and Nur Ali 1990), who had been prepared by their reading of the 'indigenous environmental knowledge' literature to look out for, and indeed to give credit to, the ecological wisdom in swidden practices normally dismissed as primitive. The exemplary case they cite is that of the Kantu Dayak of Kalimantan described by Michael Dove. But in the case of the Da'a the researchers were, sadly, disappointed. They encountered no informant or spokesman able or willing to explain Da'a practices in the 'indigenous knowledge' framework they were expecting. The only explanation they were able to elicit was that the Da'a simply carried on doing what their ancestors had done before them, even though they did not really know why things should be done that way. This was a 'normal' explanation—normal or commonsensical for the Da'a. It was also 'normal' for educated Indonesians, who generally do not expect much from primitives. There was a failure to connect, and stereotypes re-emerged to fill the space where recognition and respect for 'indigenous knowledge' might have been. The researchers concluded that the Da'a are in urgent need of state guidance to improve their agricultural practices and increase their understanding of the problems of erosion and the ecological function of forests.

Where 'indigenous environmental knowledge' might be expected, but the necessary processes of selection, filtering and articulation have not occurred, the application of a green lens presents a double burden. Those who are apprehended as failed or rather unsatisfactory primitives, like the Da'a, would not please environmentalists and would therefore miss out on a potentially positive niche. Others fail to meet expectations for different reasons. The majority of Indonesia's swidden farmers have long been committed to producing for the market, and many are more

interested in expanding commercially oriented agriculture than in conserving forests.[18] Some are interested in profits from the sale of timber, and not just from the 'non-timber forest products' usually deemed appropriate for them. Dove (1993) has critiqued the logic he dubs 'rain forest crunch', which assumes that forest-dwelling people will be satisfied with the marginal economic niche to which they have been assigned. Neither good tribes nor good peasants, many rural Indonesians are in an ambiguous position which, rather than allowing them 'room for manoeuvre', may instead restrict their scope and make it difficult to locate opponents, allies or arenas for action.

Environmentalists, journalists and other social and political activists searching for 'indigenous knowledge' find it more easily in some places than others, as the contrast between Lauje and Lindu clearly reveals. For people in a hurry, it is easier to seek out conjunctures at which the 'indigenous people' scenario is already established and connections easily made. Such places then become exemplars, visited by many people, and increasingly reified as they are written about, quoted and cited in ever-broadening circuits of knowledge and action.[19] The process at work has some similarities to that described by Chambers as 'rural development tourism' (1983). The circumstances of my own very brief visit to Lindu can usefully illustrate this point. It was NGO friends in Jakarta active in the campaign against the hydroelectric project who suggested I should visit Lindu and put me in touch with their partner NGO in Palu. With such smooth connections, I was able to make a two-day visit to Lindu at the end of a five-week stint in the Lauje hills. When I arrived at Lindu, an articulate group of educated, Indonesian-speaking community leaders gathered to talk to me, and the NGO presented me with a set of documents and press clippings. Connecting with the hillside Lauje is much more difficult. Very few people speak Indonesian, illiteracy is almost total, and there are precious few documentary sources. The hillside population has no obvious spatial or social centre, no hierarchy of leadership that would suggest to a visitor where they should go or who they should talk to. There is no individual or group able or willing to pontificate on Lauje identity, culture and tradition. My accounts about the Lauje are therefore more nuanced, but also fuzzier, more equivocal, less easily picked up and read by outsiders in search of exemplary indigenous people bearing tribal wisdom. The reasons for this are deep but contingent, as I have shown. The process of locating 'indigenous environmental knowledge' in contemporary Indonesia is therefore uneven, but it is not random. It has less to do with the innate qualities or wisdom of particular groups than with the power-laden processes through which knowledge and identity are formulated, communicated and brought to bear at particular conjunctures.

The issue which tends to draw NGOs to a particular scene is conflict, especially when it pits locals against the state. The identification of indigenous environmental knowledge and the presentation of that knowledge as part of the struggle occur subsequently. This scenario might change as NGOs become involved in community mapping and other activities designed to render indigenous identity and knowledge visible and explicit *before* conflicts arise. As the Da'a and Lauje cases both suggest, however, local enthusiasm for this kind of exercise might be to hard to generate if the group in question has not already experienced resource pressure and seen the relevance of writing down or telling outsiders about what they know and do.

Government agencies with a stake in proving that the state both recognizes and supports the traditional ecological wisdom of (some of) its people are not drawn by conflict, since they are likely to find themselves confronting their counterparts in other government agencies. Like NGOs, however, they are on the look-out for 'case studies' or exemplary places that illustrate the concept of indigenous environmental knowledge. As Zerner (1994) reports, officials from the Ministry of State for Environment played a role in the 'discovery' of the indigenous institution known as *sasi* in Maluku and its green reconstruction. Other participants in this process were local officials, scholars of Maluku culture and history, NGOs and donors, each with their own agendas but able to find common cause in the identification of 'indigenous environmental knowledge' at that conjuncture. Interestingly, Zerner observes that the new *sasi* was initially of little interest to villagers. He suggests that this situation will begin to change as villagers find it necessary to oppose *sasi* when it is deployed by local officials to increase their control over coastal resources or, alternatively, when they find that they can themselves deploy *sasi* to reinforce local control threatened by state and market intrusions (ibid.: 1109–14). The complex array of interests, risks and opportunities surrounding *sasi* are characteristic of the conjunctures at which 'indigenous environmental knowledge' is formulated and deployed.

In Indonesia, the concept of 'indigenous environmental knowledge' is associated with an apparently non-political niche, characterized by a scientific language (biodiversity), an attractive set of images (communities with ecology and culture intact), the approval of the international environmental lobby and donor support. The same features which make the concept acceptable (in at least some government circles) also make it both weak and risky. The problems relate to the expectations set up by romanticized green images about 'indigenous people'. Exaggerated claims make it possible for government agencies to agree to the rhetoric but then to find very few cases which meet the criteria in practice. They also legitimate the restriction of rights to those who practice 'traditional, sustainable' resource management. Whereas large-scale resource-

users (timber concessionaires, mine operators, plantations) are routinely excused for the environmental ruin they cause, the activities of 'indigenous people' granted resource rights on the basis of their ecological wisdom are severely monitored. The array of new government regulations and reporting requirements surrounding *sasi* are a case in point (Zerner ibid.). Land and resource rights made contingent upon stewardship are a pale version of the rights that other citizens effectively enjoy. Backlash is another risk, one that has already arisen in Amazonia, where Kayapó have experienced disastrous consequences from the exaggerated claims made by outsiders on their behalf (Stearman 1994). In Indonesia as elsewhere, the field of power within which the concept of 'indigenous environmental knowledge' is deployed remains stacked against the people likely to be deemed its subjects. Nevertheless, it is a concept which does offer some 'room for manoeuvre', and it provides, for the moment at least, a relatively safe and productive location for the advance of projects which are, at heart, about rights to resources, democracy and citizenship.

NOTES

1. Since the Indonesian government does not acknowledge the existence of indigenous people, it does not consider itself bound by pronouncements on their rights in international law and conventions such as that of the ILO (see Posey, Chapter 1). Nevertheless, developments in the international legal sphere do enter into the changing meanings of the term 'indigenous people' as deployed in different discourses and struggles in Indonesia.
2. Act Number 10 of 1992 concerning Population Development and Development of Prosperous Family (Ministry of State for Population and the Environment 1992) includes provisions in Article 6b and 6c which confirm the rights of tribal people and others who depend upon natural resources to their customary lands *(wilayah warisan adat).* This is potentially a very strong law, since it makes rights contingent upon occupation and use and makes no reference to ecological knowledge or conservation outcomes. However, there are still no implementing regulations for the Law, so there is no clarification of what it will take for a group to qualify for the enjoyment of rights to customary land.
3. The context of some of these remarks was the Asia Region Public Hearing on Forests and Sustainable Development attended by international commissioners. According to media reports, this event was 'dominated' by representations by and on behalf of Indonesia's 'indigenous people' about loss of forest land, livelihoods and other rights abuses. See WCFDS: Hargai Hakhak Masyarakat Tradisional, *Kompas,* 4 March 1996 (Anon); Sidang WCFSD Didominasi Perdebatan Pengusaha dan Masyarakat Tradisional, *Kompas,* 5

March 1996 (Anon); Kelestarian Hutan Berkait dengan Masa Depan Masyarakat Tradisional *Media Indonesia,* 4 March 1996 (Anon); Locals want more say, *Jakarta Post,* 4 March 1996 (Anon).

4. See Li (1999) for an extended discussion of the tensions between Forestry and other departments over control of population and resources on the nation's frontiers.
5. See, for example, Moniaga (1993b); Ekistensi Hukum Adat Dewasa Ini, *Kompas,* 27 March 1996 (Achmad Sodiki).
6. I am drawing here upon a set of interviews I carried out with Jakarta NGOs in 1996 as well as upon their published documents. Where the subject matter might be sensitive, I do not identify-the organizations to which I am referring in my discussion.
7. See critiques of the government for its refusal to recognize customary land rights in Moniaga 1993a, 1993b; Skephi and Kiddell-Monroe 1993; Semoga Hak Ulayat Dihargai, *Kompas,* 29 March 1993 (Masri Singarimbun); 'Indigenous Peoples' dan Penguasaan atas Tanah, *Kompas,* 29 April 1993 (Tim Babcock and Maria Ruwiastuti); and Eksistensi Hukum Adat Dewasa Ini, *Kompas,* 27 March 1996 (Achmad Sodiki). For an overview of the legal status of customary land rights, the difficulties of specifying who should be included in the category of 'indigenous people' in Indonesia and an attempt to reconcile these questions with World Bank policies, see Evers 1995. For a discussion of the difference between the Dutch colonial concept of a traditional-law society *(masyarakat hukum adat)* and the broader internationally recognized concept of 'indigenous people', as well as the (lack of) resonance of these concepts with forestry law, see Safitri 1995.
8. Peluso discusses the implications of mapping and notes the romanticism of activists and villagers alike who view *adat* unproblematically as the way local resources were managed prior to the 1960s, when foreign investment and intensive logging increased in frontier lands off Java (1995:399).
9. For an elucidation of the phrase 'room for manoeuvre', see Tsing 1999; also Coombe 1989.
10. Sangadji (1996) states that the seven Lindu subgroups (descended from the seven original hillside hamlets) each have their own points of access to the lake and their own specific fishing grounds. Therefore, even if the Lindu were still allowed to fish after the power plant was constructed, they would not be able to do so according to their own traditions, and their cultural integrity would therefore be jeopardized. Sangadji's research continues to highlight the ways in which the Lindu are, and must remain, anchored to very specific spots on the landscape.
11. When I visited Lindu, a 'community mapping' process facilitated by an NGO was underway. The Lindu leaders who had travelled to Jakarta were key participants. They had been informed directly by the Minister of State for Environment that their case would be strengthened by representing their customary zones and places on

maps which outsiders could read. On the politics of mapping (or counter-mapping) by the state, donors, NGOs and communities, and the implications of adopting a territorialized framework for describing and asserting resource rights, see Peluso 1995.

12. For green readings of Lindu used to support broader arguments, see Moniaga 1993a:33 and Kearifan Masyarakat Adat dalam Konservasi Alam Sangat Tmggi, *Kompas* 13 September 1993 (Anon). The Institute of Dayakology also presents generic 'Dayak' as environmentalists (Barnba 1993). For critiques of the claim that natives are naturally nurturant of nature, see Ellen 1986, Stearman 1994.
13. Opposition to the hydroelectric project at Lindu was widespread in the community, so there was a common interest in the success of the campaign. On other matters, including the relevance of indigenous environmental knowledge to everyday lives and practices and the role of the *adat* council in controlling resources, there are bound to be differences of opinion among people differently situated by class, gender and ethnic origins. Since I have not carried out field research at Lindu I am not in a position to discuss these. On the class and gender inequities of *adat* systems, see von Benda-Beckman and von Benda-Beckman 1994; on 'lairdism' or the risks asso ciated with concentrating power in the hands of *adat* chiefs, see Colchester 1994:87; on the ways in which concentrated *adat* power becomes more easily enmeshed in or subverted by the projects of the colonial and post-colonial states, see Zerner 1994.
14. I am grateful for access to transcripts of interviews with provincial officials carried out by Dan Paradis in 1994. Because the transcripts had been translated, I do not know which Indonesian expression was being translated here as 'indigenous people'.
15. To illustrate his point, the official showed photos of a Wana medicine man conducting a ritual. Prominently displayed in the Palu office are 'before and after' pictures of near-naked Wana who had subsequently been clothed, revealing the contradictory impulses of nostalgia and 'development'.
16. This situation has changed in the past five years as coastal elites have begun to plant, or buy up, cocoa and clove gardens. For discussions of the local and regional class dimensions of this process, see Li 1996, 1997.
17. Many people were reluctant to talk to me when I first started fieldwork in the Lauje hills because they feared that my research would lead to their resettlement. They were especially nervous about anything that looked like a list of names.
18. For an extended discussion of the implications of attributing a conservation ethic and subsistence motivations to upland farmers in Indonesia, see Li 1999; for a perspective on similar issues in the Philippines, see Li forthcoming. In the Amazon, Stearman (1994) notes the outrage of environmentalists when the Kayapó sought to profit from the mineral resources within their territory.

19. Keck (1995) describes how particular places and events become efficacious in the articulation of political causes and the formation of alliances as they are re-interpreted through ever-widening frames of meaning. Her case concerns Brazilian rubber-tappers fighting labour battles being reframed as saviours of the tropical rainforest. A similar dynamic within India is documented by Sinha *et al.* 1997 and Rangan 1993. For a close reading of the textual embellishments and communicative processes through which environmental rhetorics are inflated, circulated and infused back into their 'original' sites, see Brosius 1997, Ch. 10 this volume.

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Chapter 6
'INDIGENOUS' REGIONALISM IN JAPAN

John Knight

Japan is a modern society with a conspicuous preoccupation with the past. Commentators have suggested that present-day Japan is afflicted by a chronic 'sense of homelessness' (Robertson 1995:101), that it is governed by a fetishistic cultural logic (Ivy 1995), and that the upshot of this sense of loss and incompletion is a national tendency to restore what has disappeared and to recover distant origins. One feature of this intense national nostalgia is the role of the regions as repositories of Japanese custom and tradition and 'cultural building blocks' of the nation (Yoneyama 1988:79). In the context of rural tourism and revitalization initiatives, localities and regions project themselves as 'survivals' of particular historical pasts, well-known examples of which include the reconstructed period-style 'villages' such as 'Heian Village', 'Edo Village', 'Meiji Village' etc.[1]

A recent manifestation of this Japanese heritage industry is the Jömon 'boom' (Kataoka 1997:39). The Jömon period, named after its distinctive style of pottery, is the foraging period usually dated 10,000 BC–300 BC. Hitherto the Jömon period has tended to be understood as opposed to, and replaced by, the agrarian Yayoi period (300 BC to AD 300) and later periods of Japanese history. To the extent that the Jömon legacy continued at all, this was in the alien peripheries of the Japanese archipelago, among the Ainu in the north and in the Ryükyü islands in the south. Jömon culture has largely been viewed as 'poor, shabby, primitive and barbaric' (ibid.). However, recent archaeological finds on the main islands of Japan have created a strong public interest in and re-evaluation of the Jömon era. These finds, including pillar foundations, lacquered bowls and jade ornaments, indicate a 'hitherto unimagined cultural sophistication and prosperity' among Jömon-era people. These sites and Jömon exhibitions have drawn large crowds and attracted

enormous public and media interest, and a large number of books on the Jōmon era, including some best-sellers, have appeared.

Jōmon heritage has been linked to a revival of national pride.

> [T]he rediscovery of the Jōmon period's spectacular history appears to have boosted Japanese self-confidence.... Having experienced the catastrophe of defeat in World War II, they renounced their past values and, with great effort, pulled themselves up from physical and spiritual collapse...[But] the Japanese have been ridiculed as economic animals by other countries...[T]he Japanese are now beset with a feeling of crisis as they wonder whether the very economy that produced their success can survive...The Japanese have finally realized that they have neglected to seek spiritual enrichment in their rush to achieve material prosperity. The rediscovery of the Jōmon era occurred in this context. The Jōmon people led peaceful lives in harmony with nature. This "philosophy" is a welcome relief as an antidote to a modern civilization that increasingly feels like a dead end. For Japanese, the Jōmon culture provides new forms and ideals for the future, (ibid.)

But this national self-renewal is mediated by the regions. There has emerged a form of Jōmon regionalism on the main islands of Japan in which localities and regions project themselves as sites of Jōmon culture as part of rural revitalization strategies. 'Jōmon Villages', featuring the reconstruction of Jōmon-era architecture and dwellings, have been established (Iikubo 1997). Some commentators suggest that this new Jōmon regionalism can serve to raise the self-esteem of regional populations in the eyes of metropolitan Japanese.

> From a regional perspective, the sudden national fame of the Sannai Maruyama ruins has undoubtedly given a tremendous boost to the confidence and pride of the citizens of Aomori Prefecture, who have struggled with feelings of inferiority *vis-à-vis* central Japan since the beginnings of recorded history. (Kataoka ibid.)

However, this new Jōmon regionalism, I shall argue, is rather more complicated than such accounts of it suggest. This is because it engages the very basis of the Japanese state the relationship between majority Japan and the minorities subjugated in the establishment of the Yamato state. Jōmonism is not simply another form of regional exploitation of national heritage, but potentially represents a challenge to, even a revision of, received understandings of national identity.

This chapter focuses on a particular manifestation of Jōmon regionalism from western Japan: the region on the southeast of the Kii Peninsula known as Kumano, and more specifically the upland municipality of Hongū-chō, where I carried out ethnographic fieldwork in the late 1980s and mid-1990s. The Jōmon period is invoked by local government modernizers as the indigenous past of Hongū and other municipalities in the Kumano region. But it is also invoked by particular groups of local people for whom it is a tradition at odds with, and even threatened by, present-day modernization.

The primary site of Japan's Jōmon heritage is the forest. The forest's 'Jōmon' associations contribute to its utilization as a material and symbolic resource by modern municipalities in connection with wildlife industries, tourism and environmentalism. However, the exploitation of traditional forest knowledge, as opposed to forest symbolism, is actually quite limited. In an attempt to account for this, in what follows I show how Jōmon forest heritage is viewed in a number of different ways: as the ancient heritage of a modernizing rural town; as a distinctive set of physical characteristics and proficiencies and an intimate knowledge of forest space; and as a site of backwardness and danger. The practical exploitation of the Jōmon indigenous heritage is complicated by its local status as a highly contentious past to which different would-be legatees lay claim in the present.

INDIGENOUSNESS IN JAPAN

In Japan the term 'indigenous people' *(senjūmin)* is largely associated with overseas—American Indians, Australian Aborigines, Maoris et al. Internally, the term has come to be associated with the Ainu of Hokkaido, the northern island of Japan. In recent decades, through their involvement in the world indigenous people's movement, the Ainu have come to identify themselves in terms of the international language of indigenousness and aboriginality (Siddle 1997:37–43; Hanazaki 1996: 127–8). But while the Ainu are officially recognized as an ethnic minority in Japan, their claim to be an indigenous people is not accepted by the Japanese government.

Another referent of indigenousness in Japan is the pre-agrarian Jōmon period, which, in recent years, has become the object of considerable scholarly interest and public fascination.[2] Until recently, Japanese national identity has tended to be seen as discontinuous with that of Jōmon dwellers. The majority Japanese population of the main islands was seen as originating from migrations during the Yayoi and Kofun (AD300–700) periods (Omoto and Saitou 1997:438). These invasions have typically been positively represented as the introduction of a higher civilization

and have largely formed the genealogical base point of national history in the second half of the twentieth century.

The effect of this model is to fix the majority Japanese population as continental migrants or settlers, and, by default, the minority Ainu and Ryūkyū populations as native or indigenous, a polarity reinforced by recent Ainu indigenist discourse. Where this continental ancestry comes to be specified—for example, as a Korean ancestry—it becomes the source of considerable controversy.[3]

On the other hand, there is also a tendency in present-day Japan towards identification with the 'primitive' past. From tourism to popular music, Ainu and Ryūkyū an cultures have become incorporated into Japanese popular culture. Some commentators even refer to 'the dramatic shift from the demonization of the "wild" inhabitants of the North (whether animal or human) towards their idealization in the literature of the last twenty years' (Liman 1995: 184). This is the background to the recent tendency in majority Japan to trace national origins to the 'Jōmonese people' *(Jōmonjin)* (Taira 1997:145). Hitherto, a pervasive self-image within Japan, and a recurring theme in political and social discourse up until the second world war and afterwards, has been that Japanese culture is, at base, an agrarian culture or 'rice culture' *(inasaku bunka).* However, many archaeologists and other scholars now argue that it is the Jōmon period rather than the Yayoi period which is 'the base of Japanese culture' (Mori *et al.* 1994). One of the features of this genealogical repositioning of Japanese national identity is the role played by the regions.

'INDIGENOUS' REGIONS

One of the main exponents of this Jōmonist view of Japanese culture is the philosopher Umehara Takeshi, the former head of the International Research Center for Japanese Studies (known as Nichibunken) in Kyoto, who has been variously described as a 'conservative intellectual' (Gluck 1993:88) and 'Japan's foremost exponent of Stone Age purity' (*Asahi Evening News* 22/9/1987). Umehara's thesis consists of a number of inter-related themes.

Umehara argues that the legacy of Jōmon culture is most clearly evident among the Ainu to the north and in the Ryūkyū islands to the south (1990:44). The Ainu are the forebears of the modern Japanese: 'Let us view Ainu culture as the *furusato* [place of origin, literally 'old village'] of Japanese culture, and try to learn from it' (Umehara, and Nakagami 1994:86). Japanese culture as such has Jōmon roots by virtue of this Ainu ancestry.

Umehara holds that some regions on the main island have retained this legacy more than others. In 1988 he gave the keynote address to a conference convened in Kumano to consider the

region's identity. A central theme of the gathering, Kumano's indigenous or Jōmon identity, was captured by a photograph that appeared in local newspapers. Beneath the headline 'The Time to Look Again at Kumano' was a photo of Umehara talking with Ainu performers dressed in their distinctive folk costumes. The Ainu presence at the conference served to highlight the idea of a common Jōmon legacy with 'Kumano people' *(Kumanojin).*

One conference speaker stated that 'long ago, the Ainu were all over Japan, and today the Japanese have much Ainu blood within them'. The implicit suggestion here is that Kumano has an Ainu ancestry and therefore that the population of Kumano have Ainu blood. Umehara has similarly argued that the people inhabiting the special Jōmon regions of the Japanese main island physically resemble the Ainu. They are 'old mongoloids' in contrast to the 'new mongoloids' of south-western Japan (Umehara *et al.* 1993:48).[4] In drawing this distinction, Umehara is attempting to blur the racial line between Ainu and majority Japanese rather than emphasise new racial divisions within majority Japan. His point is that the Japanese racial pool includes rather than excludes the physical characteristics associated with the Ainu.

Although Umehara emphasises genetic ancestry, race is not in fact central to his thesis. More than the bodies of regional Japanese, the principal sites of Japan's Jōmon legacy are the nation's extensive forests. The typical Jōmon forest is beech *(Fagus crenata)* forest, associated with eastern Japan, but the Jōmon legacy is also found in Lucidophyllous forest areas of western Japan.

The forest is a central theme in Ainu self-identity. The English title of the autobiography of a leading Ainu figure is *Our home was a forest* (Kayano 1994). Kayano begins the book by referring to the 'dense woods' of his youth, the 'herds of deer' which ran through them, and the old hunting and fishing lifestyle in which the Ainu would take only as much as they needed (ibid.: 8). But then came the *shamo* (Japanese). 'Ignoring the ways of the Ainu, who had formulated hunting and woodcutting practices in accordance with the cycles of nature, the shamo came up with arbitrary "laws" that led to the destruction of the beautiful woods of Nibutani for the profit of "the nation of Japan" and the corporate giants' (ibid.: 9). The Japanese colonization of Hokkaido replaced the forest, on which Ainu livelihoods were based, with farms and ranches for settlers. The misery of the modern Ainu has its origin in their forcible separation from their forest home. This forested landscape, suffused with nature spirits, is one of the main foci of the Ainu movement.[5]

Although from the Ainu view, the Japanese appear as forest-clearing farmers and ranchers, the effect of Jōmon indigenization is to typify majority Japan as a 'forest culture' *(shinrin bunka)* (cf. Ichikawa and Saito 1985; Tadaki 1988; Takaya 1989). The traditional forest or *mori* is the object of considerable nostalgic interest as a site of national identity. *Mori* connotes a 'deep' *(fukai)*

forest, unmodified by human contact, an abode of the spirits (Shidei 1993:132–6), which inspires fear and gratitude among the Japanese (Makino 1988:199). However, the *mori* also inspires affection among present-day Japanese as a gentle, warm and benign place (Shirahata 1994:100–1).

A central theme in this concern with the *mori* is its disappearance in the face of extensive logging and replacement by timber plantations (e.g. Gotō 1994:47–8; Aoyama 1994:24). But there is also a tendency to extend the term *mori* to include these artificial conifer forests. The effect of this is to focus on the amount of forest rather than criticize its qualitative character. Thus, for Umehara, tree cover *per se* serves as evidence of Japan's Jōmon character: despite large-scale industrialization, forest still makes up around two-thirds of Japan's land area (Umehara 1993b:112). Unlike many other countries, Japan has not undergone irreversible deforestation in the course of its industrialization. In an age of widespread desertification, Japan's forest heritage makes the nation particularly well placed to proclaim internationally the importance of conserving the world's forests (ibid.: 114).

Thirdly, Jōmon dwellers were hunters and gatherers. Boar-hunting with dogs is seen as a quintessential Jōmon activity. The importance of wild boar hunting to Jōmon peoples is suggested by discoveries of shellmounds of wild boar bones (Koike 1992:210) and figurines of wild boars (Sutō 1991:120). Clay figurines of dogs from the Jōmon era show that ancient boarhounds had pointed ears and a curly tail—i.e. features common to present-day regional hunting dog breeds in Japan (Saitō 1987:239). The centrality of hunting in Jōmon times reinforces its status as an important national tradition. The association of hunting with national identity was made by a Hongū hunter when, in the course of a long explanation of why he and others hunted, he informed me that the Japanese were a 'hunting people' *(shuryō minzoku).* This national self- characterization is occasionally made in Japan by folklore scholars and other writers.[6]

The fourth area of the Jōmon legacy is ritual and religion. While technology and political organization have undergone enormous change, religion in Japan still bears 'the imprint of Jōmon times' (Umehara 1989: 73). Japanese religion contains a 'primordial concept of the afterlife', and one feature of this 'indigenous Japanese [religious] view' is 'the notion of the cyclic continuity of life' (ibid.: 80–1). This world-view is manifested in the Japanese *kuyō* memorial rituals, especially the hunting *kuyō,* which Umehara likens to the famous Ainu bear ceremony or *iyomante,* in which the bear's spirit is sent back to the spirit country as a condition for regenerating the population of bears in this world (1988:109–12).[7] For Umehara, hunters' rites for wild boars and for bears documented in the Tōhoku area share this regenerative logic of the Ainu bear-sending ceremony (Umehara 1988:112; 1994:273–7; cf.

Nebuka 1991:69). There is, in other words, a Jōmon character to Japanese hunting culture and to Ainu culture.[8]

A 'JŌMON' TOWN

Within the Kumano region, some localities have taken up the theme of Jōmon heritage more enthusiastically than others. One of these is Hongū-chō, an upland municipality which has been largely dependent on forestry. Hongū has undergone large scale depopulation through urban out-migration over the postwar decades, losing over half its population between 1956 and 1996. Depopulation is seen as threatening the very survival of upland areas like Hongū, and since the 1970s this has been an object of intense government concern. The main response has taken the form of rationalization and modernization. Settlement geography has been altered by the relocation of the scattered upstream population to more concentrated downstream zones, and a quasi-urban public environment of surfaced roads, civic amenities and factory workplaces has been established.

This new environment would help to foster civic integration and a sense of local community and municipal identity by replacing existing village parochialisms. Efforts have also been made to promote popular identification with, and even pride in, the municipal locality. One perceived obstacle to achieving such popular identification with the town is its artificiality. Hongū was established as a municipal entity in 1956, from the merger of a number of smaller entities. Moreover, its constituent mountain village settlements, originating in the medieval period, lack any great historical depth.[9] It is against this background that the concern in the 1990s with Jōmon origins can be understood. One stimulus was provided by Umehara Takeshi's pronouncements at the 1988 Kumano conference above. Moreover, in his publications Umehara has since emphasized the special Jōmon character of Hongū. For example, Umehara explicitly invokes his knowledge of Ainu culture in interpreting the character of the Hongū shrine *kami* (1990:116–17).

A further aspect of the take-up of Jōmon identity has to do with Hongū's involvement in national forestry politics. Hongū played a founding role in the establishment of an association of upland municipalities which is calling on the Japanese government to provide new resources to mountain village areas in recognition of their role in forest management (see Knight 1998). In 1993 a conference calling for the establishment of a 'forest grant' for upland municipalities was convened in Hongū. Umehara Takeshi gave his support to the forest grant campaign, and made the opening address at the conference. While the main arguments for the forest grant are environmental and economic, the emphasis of Umehara's

own remarks was on national identity. For him, the primary importance of upland forest areas like Hongū is as sites of Japan's Jōmon legacy.

The association between Hongū and Umehara Takeshi is also evident in the 1996 booklet produced to commemorate the fortieth anniversary of the founding of the municipality. In the centre of the booklet is a discussion between Umehara and the Hongū mayor, Nakayama Yoshihiro. The two-page article is entitled 'Kumano is a romantic, mysterious place which conceals Jōmon culture', and in the course of the discussion Umehara praises Hongū for its special Jōmon heritage (Hongū-chō 1996). The front cover of the booklet features a photograph of the dark Hongū mountains wrapped in fog, while on the back is a photograph of an old, thick forest tree with a *shimenawa* sacred rope around it—visual expressions of Hongū's Jōmon identity.

Another stimulus to Hongū's adoption of Jōmon identity was the discovery, in the early 1990s, within it's municipal area, of Jōmon-era stone implements (axes, hide-cutters and pounding stones). According to the town newsletter, the discovery indicates the location of a hunting camp (Hongū-chō 1992:5). The newsletter reports that the large size of the implements, compared to similar items found on the coast, indicates that the wild boar and deer in the Hongū area were large animals. The report adds that the local education committee has decided to display the tools in the lobby of the Mountain Village Development Centre—alongside other items of local material culture and stuffed wildlife specimens—and it invites Hongū citizens to come along and see the Jōmon discoveries for themselves.

Arguably, the rediscovery of Jōmon, 'stone-age' roots serves to help naturalize the new municipality. Jōmon forest culture represents the distant upstream past of a modern, downstream town. Jōmon tradition serves as a remote—indeed, the remotest—starting-point against which progress can be measured.

'MOUNTAIN PEOPLE'

Invocation of Jōmon heritage in Hongū is not exclusive to municipal authorities. The discovery of the Jōmon hunting camp reinforced the status of hunting as a local tradition. Among Hongū hunters, the find was taken as proof of the antiquity of their hunting and its centrality to local identity. In contrast to municipal officialdom, hunters are just as likely to stress *continuity with* the Jōmon past as *distance from* it. Although most present-day hunters are recreational hunters, they still identify with ancestral hunting which, providing meat for household consumption and medicinal animal organs for sale, was important to local livelihoods. Each time a wild boar or deer is killed, an organ (often the heart) of the animal

is offered to the mountain spirit—a recognition that the mountain spirit is the source of the forest animals on which upland dwellers feed.

Hunters, many of whom work as forest labourers, are knowledgeable about the forest. They know which parts of the forest are favoured by deer, wild boar and bears; they can identify animal tracks, forest passages, and animal fur or faeces; and they know where this or that variety of herb, mushroom or flower can be picked. Hunters and foresters develop a certain physical ease when walking in the mountains that contrasts with the breathlessness of others. They are renowned for their speed of movement, their balance on inclines, their powers of endurance and their sharp senses. This almost animal-like mobility is evident during hunting, when the *seko* (the beater-cum-chaser who flushes the animal out of its mountain lair), following the scent of the wild animal, runs in a crouching posture with his dogs along the low, narrow animal corridors in the forest.

Hunters and foresters are known to have distinctive physical characteristics. According to a local doctor, they have wiry, lean bodies and thick, powerful hearts which allow them to move easily up and down the mountainsides. They are known for their hardiness; foresters come into the doctor's surgery with serious injuries sustained days before which, in the case of other people, would have led to an ambulance emergency. The doctor adds that while they eat salty food, drink and smoke, they age less than other men; many a forester has the body of a man ten or twenty years younger. In short, hunters and foresters are physically different from others, though this is not, *pace* Umehara, a racial difference, but a physical one deriving from the mountainous environment. Their upland home is, as it were, physically part of them.

There is also a sense in which those who hunt or work in the forest have a different character from others. This is especially pronounced in the case of hunters to whom a certain mystique attaches. Hunters—especially boarhunters—are renowned for their daring and courage in the mountains, but they are also seen as dangerous in the village. There are many tales of morally dissolute hunters who are a source of discord and conflict in the village. By virtue of their association with the space of the mountain forest or *yama,* in contrast to the village, 'mountain people' form part of a different moral universe.

These themes are evident in the folklore on 'mountain people' or *yamabito.* One local writer, Ue Toshikatsu, uses the term *yamabito* to describe the charcoal-burners, timber-foresters and hunters of the southern Kii Peninsula. As someone brought up in the mountains in a wandering family of charcoal-burners, who later worked as a plantation forest labourer, living in mountain huts, Ue identifies himself as a *yamabito* and claims to have 'wild blood' *(yasei no chi)* running through his body (Ue 1987:95).

But, this *yamabito* tradition is in tension with the modern society that Hongū has become. Post-war resettlement schemes has made Hongū an overwhelmingly downstream municipality in which most of the population live much more apart from the forest than before. The establishment of a network of forest roads in recent decades has transformed human mobility in the mountains, while the decline of forestry has greatly diminished the number of forest labourers. Hunting, one of the archetypical forms of Jōmon behaviour, is also in decline: in addition to the falling numbers of hunters, hunting is the object of ever-increasing official regulation and restriction. Hongū is a 'Jōmon town' whose forest-centred Jōmon character is steadily disappearing.

EXPLOITING FOREST KNOWLEDGE?

One reason for the adoption of the Jōmon theme was its perceived internal appeal in providing historical depth for a new municipality. But another reason was its perceived external appeal to the wider Japanese population. In this section, I survey the ways in which the Jōmon heritage has been exploited economically.

(i) Wildlife Products

Jōmon dwellers are known to have eaten a range of forest mammals, including wild boar, deer, serow, bear and even monkeys (Ue and Tanba 1987:43). Consumption of forest wildlife also takes place in the present-day. In Hongū, wildlife-related cures and tonics are popular, and hunters are a ready source of wildlife valuables. Although monkeys are not generally eaten in the modern era, there is a certain amount of health-related consumption of monkeys. For example, after the outbreak of E. coli food poisoning in Japan in the summer of 1996, one local response in Hongū was to acquire monkey meat from hunters (employed culling pest monkeys) in the belief that it had the power to prevent or combat food poisoning.

In addition to this largely informal circulation of wildlife substances, hunters also supply the wider market for wildlife-based health products such as bear gall. But hunting cannot ensure a regular supply of wildlife products. One local response to this urban demand for wildlife parts has been the establishment of wildlife farms, mostly of wild boar and deer. Demand for wild boar meat, marketed as 'the taste of the wilds' *(yasei no aji)* or 'the taste of the mountains' *(yama no aji),* has soared in the 1980s and 1990s (Takahashi 1995:40–55; Ue 1994:151–4). Venison and boar meat are served in *ryokan* tourist inns in rural areas and sold through mail-order by farm-produce businesses as a quintessential winter taste of the Japanese countryside. Other deer products include deer 'ham' on the bone, deer horn alcohol *(tsunoshu),* and deer velvet

(rokujo).[10] Some proponents believe that deer farming could become a mainstay industry for depopulated upland areas in Japan (Drew *et al.* 1989:345). One of the attractions of wildlife farming is that, in contrast to the many transplanted industries found in rural areas, it would draw on local knowledge of and familiarity with wild animals.

Wildlife farming has encountered certain problems, however. First, farmed wildlife products are often viewed as inferior to the body parts of wild animals. Wild animals are believed to concentrate the goodness of their natural environments within them, an association which extends to the idea of the environmental determination of the curative potency of wildlife parts. One example of this is the distinction made between the gall of bears from different kinds of forest in Japan. In Niigata, the bears of white oak *(Quercus spp.)* forest are believed to have harder and better quality gall bladders than do those of beech *(Fagus crenata)* forest.[11] Herb-farming encounters similar objections.[12] A second problem with wildlife farming is its image as a lowly, dirty, unpleasant occupation.

(ii) Tourism

Jōmon-based regional revival is perhaps strongest in the northeast of Honshu, where 'Jōmon villages' have been established as part of regional revitalization strategies and tourist promotion. But perhaps the best-known example of Jōmon-related nature tourism are the Jōmon cryptomeria stands *(Jōmon sugi)* on the southern island of Yakushima (Mishima 1994:11–12). Dogs with ancient pedigrees are another possible Jōmon tourist attraction. In the Kumano area, claims are made that the local breed, Kishūken, is a dog with Jōmon ancestors (cf. Iwahashi 1989:15–16) and even a canine 'mirror' which 'reflects the Jōmon period' (in Ue and Tanba 1987: 45). Two rival municipalities on the Kii Peninsula claim to be the home of the Kishūken breed, and one of them established an annual dog festival. In other parts of Japan too, ancient dog-breeds are the focus of local and regional revival efforts linked to tourist promotion. The local identity which such dogs help to define is one which also evokes a sense of the wider nation. Many of the regional Japanese or *waken* breeds have been designated 'natural treasures' *(tennen kinenbutsu)* of the nation. Hunting allows a rural municipality to present itself as the repository of some otherwise disappearing national tradition.

However, this incorporation of hunting into tourism is highly partial. Some guesthouses feature stuffed game animals in their lobbies, as well as books on local folklore which include hunting lore. But in Japan there is relatively little hunting tourism as such.[13] There is no significant hunting tourism on the Kii Peninsula, and local hunting is typically deemed inappropriate for the eyes of

visitors. No visual illustrations of hunting appear on Hongū tourist pamphlets. An indication that the tourist sector is effectively insulated from hunting was the fate of some hunting photographs (of a wild boar being assailed by hounds) given to the owner of a popular guesthouse by a hunter friend. The friend's intention evidently was that the photographs would help to decorate the walls of the guest rooms, but the guesthouse-owner decided that the photos were not suitable to put up.[14]

Forests have a central place in Hongū's tourist appeal. They appear on tourist brochures as the verdent background to hot-spring pools or as the dark tree cover of a rolling mountain landscape. Many of the souvenirs sold at guesthouses are woodcrafts, some of which are made by retired local foresters. Some plain wooden dolls are presented as 'like those made by foresters in their mountain huts for their daughters in the village'. Other forestry-related souvenirs include charcoal and bottled wood fragrances such as cypress. Some ex-foresters act as tourist guides advising tourist visitors about which forests to visit for herb-gathering etc.

(iii) Forestry

Traditional forest knowledge has been largely neglected in post-war timber forestry. Large-scale state-sponsored scientific intervention has taken place in areas such as breeding, planting, pruning and thinning techniques, the development of chemical fertilizers, herbicides and insecticides, and pest control. The logging process has been mechanized with the introduction of chainsaws for felling and (depending on slope) tractors and yarders for skidding and hauling. The state has also attempted to promote the idea of timber forestry. The tradition of charcoal forestry meant that many existing foresters were growing different sorts of tree and had to be persuaded to grow conifer species instead. In particular, small-scale forest owners or farmer-foresters were targeted, for whom the forest had hitherto been an adjunct of the farm. A new forestry extension section was established in the Ministry of Agriculture and Forestry to which was attached a cadre of specialist advisors, whose task was to assist forest owners in areas such as nursery techniques, species selection and fertilization, with a view to improving land productivity and increasing foresters' profits (Kamino 1988:227). Advice was also given on forest management, resource planning and financial matters.

Despite this scale of intervention, there is a widespread perception that plantation forestry has failed both economically and environmentally. In part, this failure is attributed to post-war forestry's disregard of certain basic rules and practices of earlier forestry. There is much criticism of excessive post-war planting.

There are many sayings about which kind of earlier forest makes for good plantations—'ask the soil, then plant' *(tsuchi ni kiite ueyō),* create cryptomeria plantations in the sites of former chestnut forest and white oak *(nara; Quercus mongolica)* forest, and establish cypress plantations in *Quercus phillyreoides (ubamekashi)* forest, etc.—but post-war forestry established plantations everywhere, including in the most inappropriate places, such as high up the mountainside, too close to the village, etc. Postwar forestry also contravened earlier concerns about excessive felling—for example, that part of the deciduous natural forest should be left standing so that the soil below can continue to be fertilized by greenery.

JŌMON ENVIRONMENTALISM?

One of the main expressions of Kumano regional distinctiveness is the forest. In the upland interior of the Kumano region, both beech *(Fagus crenata)* and Lucidophyllous forests are found in close proximity, leading some local writers to proclaim the special importance of the area's natural environment as the place where Japan's two ecologies meet (Ue 1994:4–6). Yet, most of the visible mountainside where Lucidophyllous species such as evergreen oaks and pasania grew earlier is now covered with plantation conifers (cypress or cryptomeria).

Umehara stresses the present-day environmental relevance of Jōmon thought. In his introduction to a book on forest civilizations (subtitled 'Searching for a path to save mankind'), Umehara reflects on the forest civilizations of the past which have disappeared and ends by invoking Ainu thought as manifested in the bear ceremony and what he sees as its central motif—the regeneration of life (Umehara 1993a:31). The message is that the way forward in protecting the world's forests is to recover this Ainu-Japanese regenerative ethos. Other writers too hold up Jōmon dwellers as ecological exemplars. In the course of almost ten thousand years, Jōmon people 'gained a deep knowledge of nature' and even lived 'in harmony with nature'. This Jōmon legacy, it is argued, 'provides clues for solving many of the problems facing Japan today…Jōmon people's way of life, their use of varied natural resources, enabled them to maintain the ecological balance' (Mori *et al.* 1994:83).

Jōmon heritage is invoked to support forestry. For Umehara, the forestry industry appears more as custodian of the Jōmon forest than destroyer of it. This is suggested by his interpretation of forestry ritual. 'Tree spirit memorial rites' *(mokurei kuyō)* for the spirits of felled trees are carried out by commercial forestry associations in the Kumano area and other parts of Japan (see Knight 1997a). According to Umehara's Jōmonist analysis, such rites are *ki no iyomante* or 'tree-sending ceremomies' in which the tree's soul is sent back to the other world in order to be regenerated

as a material tree once more in the future (Umehara 1994:284). Commercial forestry, to the extent that felling is soon followed by planting, is deemed consistent with this regenerative ethic (Umehara in Hongū-chō 1996:17). The implication of this apparent endorsement of forestry is that the industry can continue to fell primary and secondary forest and build ever more forest roads.

But the forest's status as a site of indigenous heritage may, on the contrary, serve as an environmentalist idiom directed against the excesses of the forestry industry. Forestry has attracted much criticism in Japan in recent decades, including anti-logging protests on the Kii Peninsula (Ue 1994:130–3). During the protests against logging in Shiretoko National Park (in Hokkaido) in the 1980s, rituals for tree spirits were carried out by Ainu groups (Mitsuda and Geisler 1992:38 n.). The Shiretoko struggle showed how the indigenous identity of the forests can be invoked against the logging industry. But logging also engages a ritual sensibility in mainland Japanese culture, not just among the Ainu. Much Japanese folklore on trees concerns the disastrous consequences of felling old stands. Many of the sacred trees on the Kii Peninsula were felled at the beginning of the century as part of the national government's shrine-merger policy, which aroused considerable opposition and many attempts to save sacred old trees (see Ue 1984:188–93, on the Kii Peninsula). In some cases, rumour spread that death befell those people who actually carried out the merger policy, suggesting that they had incurred the revenge of the tree spirit (Hardacre 1989: 99). The premise of these beliefs is that tree-felling or logging is a form of violent life-taking which, like human and animal life-taking, leads to spirit-revenge. This danger is offset by holding *kuyō* memorial rites for the spirits of the felled trees.

This interpretation of the *kuyō* rites—as facilitating tree-felling by ritually neutralizing the danger of spirit revenge—is not the only possible interpretation. These rites could also be interpreted as expressing the interdependence of human beings and the wider natural world and the imperative of exercizing restraint in exploiting the forest. Accordingly, Jōmon heritage would take the form of a new environmental concern for the forest and its wildlife and reinforce the local claim to care for the nation's forests. In practical terms, this would mean halting the proliferating network of forest roads, a moratorium on felling primary and much secondary forest, and control of large-scale, forest-clearing resort developments. This interpretation of the Jōmon legacy is critically opposed to ongoing upland modernization and would entail a challenge to the various interests served by the road-building, forestry and tourist industries.

AMBIVALENT 'JŌMONESE'

The take-up of Jōmon identity by municipal localities is problematic for a number of reasons. First of all, Kumano's claim to Jōmon identity is somewhat at odds with the region's actual significance in the Jōmon period itself. Estimations of the population distribution in the Jōmon period show a much higher population in the eastern (Kantō) area than in western Japan such that the cultural centre of the Jōmon period is conventionally sited in the east (Sasaki 1993: 212–15).

Secondly, present-day upland municipalities like Hongū can only very partially be characterized as places of 'forest culture'. Fewer and fewer people live in upstream settlements surrounded by forest; the numbers of foresters and hunters are steadily falling; and knowledge of forest wildlife is far from generalized.[15] Even among hunters, the claim to indigenous Jōmon heritage is open to doubt because of the major discontinuities between the practice of present-day hunting and past hunting (for example, the use of imported guns, tranceivers and heat sensors, and the preference for western dog breeds). The hunter's earlier forest knowledge has been rendered obsolete by changes in the forest, such as the spread of timber plantations and forest roads, which disrupt animal paths in the forest such that many hunters cease to be able to accurately assess and predict animal movements. If Hongū people are Jōmon descendants, most of them lack their forebears' knowledge of the forest.

Thirdly, the claim that Japanese hunting contains an indigenous environmental ethic—that hunting kuyō *have* a regenerative logic similar to the Ainu *iyomante*—is also open to question. Umehara's *iyomante* interpretation conflicts with the interpretations given locally for the Japanese *kuyō* rite. Formally, the *kuyō* is an act of Buddhistic compassion towards the dead animal: the hunter inflicts a fatal violence on his prey, and the transgressive character of this violence is institutionally expressed in the Buddhist *kuyō*. But a more widespread, popular understanding of hunting *kuyō* rites is that they are a kind of ritual pacification of the dead animals and therefore an act of protection of the hunter from the revenge of the animal spirit. There is a sense that the hunting *kuyō* insures hunters against spirit revenge. A further problem with the interpretation of hunting *kuyō* as regenerative is that many hunters themselves justify hunting in exactly opposite terms, as limiting the *natural* tendency of wild animals to multiply. Hunting is often characterized as *mabiki* or the 'thinning' of excessive animal numbers. Hunting is necessary, hunters argue, because forest animals would otherwise proliferate.

Fourthly, the Jōmon past, and the forest space associated with it, are often viewed negatively. The later periods, Yayoi and Kofun, have tended to be more popular than the Jōmon period with both

archaeologists and the general public (Mori *et al.* 1994:76). Among Hongū people, as among Japanese people more generally, ancient Jōmon dwellers are more likely to be viewed as primitive, alien pit-dwellers than ancestors to be revered. The stigma of the Jōmon association may also be related to the tendency of some scholars to project the Jōmon-Yayoi racial difference on to different contemporary social strata; thus the 'immigrant type' is associated with the upper classes (and above all the imperial clan) and the 'Jōmon type' with the lower classes (Hanihara in Taira 1997:144).

Upstream dwellers have often been stigmatized by the wider rural society. They are likened to demons or wild animals—bears (Sakurai 1990:599), monkeys (Nebuka 1991:91) and such—recalling similar imagery applied to the Ainu.[16] Those people perceived to live in or near the forest inhabit what is really a non-human space. Indeed, present-day forest labourers are sometimes objects of suspicion and even fear. The presence in the mountains of forest labourers, many of whom were from other areas, induced a certain caution among village women out gathering and reinforced the imperative to return to the village before dusk. Reports tell of female hikers who hide when encountering foresters in the mountains (e.g. Ue 1980:165).

CONCLUSION

This chapter has examined an example of what might be termed strategic self-indigenization. One expression of this is revisionist nationalist discourse on the part of nations founded on the conquest of indigenous populations. Indigenous or native traditions have been symbolically co-opted by settler nations, such as the United States and Australia, to stand for ancient national roots.[17] A Japanese example of strategic self-indigenization is evident in international forums such as the International Whaling Commission, where Japan asserts its right to whale 'along the same lines as aboriginal whaling' (Kalland and Moeran 1992:1; see also Takahashi 1998).

The present-day interest in Jōmon origins in Japan points to a similar process taking place. At a time when international environmental issues assume growing importance and Japan is subject to a range of environmentalist criticisms, the Jōmon Japan thesis portrays Japanese culture as close to nature and as containing the basis of an international environmental ethic for the twenty-first century. At a time when the Japanese government has sought 'to declare itself a world leader on environmental matters' (Brazil 1992:338), Jōmonism might provide intellectual support for such a claim.

The new Jōmonism can also be seen as a rhetorical defence against the rise of indigenist politics in Japan. On the Japanese

right, Ainu indigenism is viewed as threatening national integrity: not only is there an indigenist claim on the island of Hokkaido, but the indigenist argument has an important bearing in the dispute between Russia and Japan over the Southern Kurile Islands by challenging the legitimacy of the Japanese territorial claim.[18] Another conservative fear is that Ainu indigenism threatens the integrity of Japanese society, long imagined as ethnically homogeneous. Indigenist proponents argue that official recognition of the Ainu as an indigenous people would be 'an important first step towards a multi-ethnic and multicultural Japanese state and society' (Hanazaki 1996:127). The Japanese absorption of indigenism, in the form of Jōmon regionalism, arguably serves to neutralize such a danger. One observer has likened the Japanese embrace of the idea of a common ancestry with the Ainu to a similar pre-war discourse directed towards Koreans, which was used to legitimate the Japanese colonization of Korea (Nakagami in Umehara and Nakagami 1994:86).

This chapter has shown how indigenousness has been incorporated into Japanese regional revitalization by rural municipalities. In the 1990s, Japanese regions have increasingly been projecting themselves as sites of national indigenous origins, a process in which the forest constitutes the central symbolic medium. Yet, as we have seen, this trend involves the rediscovery of past knowledge of the forest only to a very limited extent. Rather, the forest serves as a touristic resource and as an environmental symbol —and in both cases the distinction between the pre-plantation and plantation forest is effectively blurred.

One of the main obstacles to the exploitation of forest knowledge is the association of the forest and those who live near it or work in it with backwardness and danger. This is why strategic self-indigenization on the part of the rural municipality of Hongū is highly circumscribed. The Jōmon tradition is recovered as the distant heritage of an upland modernity, but arguably highlights how far upland dwellers have come from these primitive origins as much as their connection to them. Accordingly, such 'indigenous' origins should be consistent with, not threatening to, municipal modernization.

This municipal strategy is complicated by the existence of other local claims to Jōmon heritage. Hunters invoke the Jōmon past. While they too are clearly distanced from it in practice, there is nonetheless a tendency to praise it *in opposition to* the modernizing present-day. There is, in short, a split in Jōmon regionalism between, on the one hand, its deployment as ancient heritage in the context of upland modernization and community-building strategies, and, on the other, its invocation as living heritage, via the *yamabito* tradition, which forms the basis for a revived upland culture based on interaction with the forest rather than ongoing distantiation from it. If, from the municipal perspective, the

invocation of indigenous, Jōmon roots is meant to naturalize the modern locality through extra historical depth, the *yamabito* tradition, because of its associations of backwardness, primitiveness and degeneracy, threatens to indigenize in a very different way.

Although the trends of depopulation and modernization continue, this does not necessarily ensure the success of municipal indigenization. This is because of the existence of certain countervailing forces. First, the outside folkloric interest in the *yamabito* tradition has the effect of raising its profile. Secondly, the changing character of upland areas may also lead to new support for the *yamabito* tradition. A prime example of this is the presence of city-born incomers who practice natural farming. Among one group of settlers in Hongū who call themselves 'the Kumano tribe' *(Kumanozoku)* there is considerable interest in indigenous cultural politics, from North American Indians to the Ainu.[19] One of the concerns of the settlers is to re-integrate farming with the forest, for example by using forest greenery as fertilizer. And although they tend not to hunt, they are enthusiastic forest gatherers (of herbs, nuts and mushrooms).

A kind of indigenous environmental knowledge is being rediscovered and exploited in the Japanese regions, but this takes the form of abstract motifs and symbolism and largely excludes the long tradition of routine human engagement with, practical mastery in and detailed knowledge of the upland environment.

NOTES

1. See Kanzaki (1988:131–198), Arima (1991:156–9), Ehrentraut (1993), Shioji (1994), Takada (1995:118–121).
2. In response to recent excavations a considerable reassessment of the Jōmon period is taking place (Kobayashi 1989; Anon. 1996). In particular, Jōmon dwellers have come to be viewed as much more technologically advanced. Although Jōmon culture was essentially a foraging culture, a degree of plant cultivation seems also to have taken place (Kobayashi ibid.: 16; Barnes 1993:89–91), as well as raising animals (dogs and wild boars) (Mori *et al.* 1994:78–9). The Jōmon way of life is seen as having been highly stable, and in the absence of continental invasions, as likely to have continued—just as North American Indian culture on the other side of the Pacific, with which it is often compared, continued until the eighteenth century (Kobayashi ibid.: 17).
3. Some scholars have even argued that, in addition to genetic continuity, the Japanese language, Shintoism, the imperial family and many other aspects of Japanese culture have Korean origins (Hong 1988, 1994).

4. These 'Jōmon people' are thick-bearded, have prominent noses, big eyes, large mouths, long limbs relative to the body, waxy ears and a strong body odour (Umehara 1993b:47). While these regional populations might imagine themselves as racially different from the Ainu and according to Umehara similar to other majority Japanese they are, in fact physically much more similar to the Ainu (ibid.).
5. The renewed concern among the Ainu with their lost forest tradition is evident in the revival of deerhunting, as well as Ainu hunting ceremonies (*Asahi Shinbun* 2/6/1986, 16/11/1995).
6. One eminent folklorist has even suggested that the Japanese national flag—the *hinomaru* or 'round sun'—derives from hunting. Hunters throughout Japan offer the heart (or other organ) of the wild boar to the mountain spirit in recognition of the spirit's benevolence in granting them the animal. The offering is made by placing the bloody heart on white paper—creating the image of a red circle against a white background (Hayakawa Kōtarō in Tanigawa 1980:288).
7. The most common Buddhist rite in Japan is the *kuyō* (Sanskrit *puja*). The *kuyō* is performed for dead people in the form of the 'ancestral memorials' *(senzo kuyō)* carried out or sponsored by family descendants. But the *kuyō* is also performed for a range of non-human spirits, including those of dead game animals, livestock animals, pets, fish, laboratory animals, insects and timber trees. See Knight 1997a.
8. This recalls the debate among Japanese folklorists over the extent to which the Matagi hunting tradition of the Japanese Northeast is related to Ainu culture. Many Ainu words are found in the hunting language used by Matagi hunters (Tanigawa 1980:324–5).
9. Many Hongū villagers trace village origins to the *ochi'udo* (literally 'fallen people')—the refugees of the twelfth-century Genpei Wars, who fled into the mountains to escape the persecution of the victors. The original appeal of the mountains, then, was less as a place of residence than a place of refuge capable of enveloping and concealing those who entered it. If anything, this origin story has developed an even greater rhetorical power in the recent decades of large-scale out-migration to the city, for it provides a reason why such a marginal area with little arable land was settled in the first place and in a sense naturalizes its abandonment at the present day.
10. See *Asabi Shinbun* (1/3/1986; 17/10/1991; 24/3/1993). Some rural municipalities have established deer parks as part of a tourist promotion strategy (*Asahi Shinbun* 9/10/1991).
11. See Suzuki (1982:222); Hazumi and Yoshii (1994:31); cf Tanba (1993:82). Similarly, the gall of bears of particular regions, renowned for their natural forests and the herbal growth in them, is reputed to have special curative and tonifying powers (Miyao 1989: 185). Hunters in Hongū point out that it is only the wild boars of the forest which have powerful gall bladders because they eat directly

from the forest, in contrast to the farmed wild boar which are fed imported American wheat meal. Some hunters speculate that it is because the wild boars of the forest eat the *mamushi* snake *(Agkistrodon halys blomhoffii),* which itself eats lots of medicinal forest herbs, that the animals have such powerful gall bladders.

12. There is a perception that farmed herbs are inferior to wild herbs. Wild herbs are natural concentrates of environmental goodness and their curative powers are associated with specific natural environments. One popular author accounts for the power of herbs by pointing out that they are the first thing to recover from the severity of the winter, and so concentrate in them the life power of spring (Tōjō 1995:12–16). The secret of the herbs is that they are a concentrated form of *yōki,* the Yang force of the universe; it is because of this Yang energy that herbs have their curative powers.
13. There are various reasons for the scarcity of hunting tourism. One of the main ones has to do with the problems of access to hunting lands and the likely opposition of local hunters to rival (tourist) hunters coming in from outside. A further illustration of the disconnection between the touristic incorporation of hunting heritage and actual hunting is to be found in the revival of the serow-hunting hound in Yamanashi Prefecture (*Asahi Shinbun* 22/3/1992), which is independent of actual serow-hunting, which (aside from culling) continues to be banned.
14. The wider unacceptability of bloody dog-boar encounters is further indicated by the fact that in the new Kishüken festival mentioned above, the dog-boar fights initially envisaged as a part of the festival were called off because of local fears about complaints on grounds of animal welfare.
15. Among those who do not hunt, there is considerable ignorance. Some women believe that the serow is a kind of deer (because of the similarity of their names—the Japanese term for serow is *kamoshika,* while that for deer is *shika*) (cf. Ue 1983:66–7), while younger people, especially women, are often unaware that the wolf is extinct.
16. The Ainu have been viewed in Japan variously as savage, demonic, childlike, morally and culturally inferior, and subhuman and animal-like (Siddle 1995:76–81). Official assimilationism in the seveneenth and eighteenth centuries co-existed with popular prejudices against the Ainu as a hairy, animal-like people.
17. On the United States, see Strong and Van Winkle 1993; On Australia, see Kapferer 1988: 142–3; Lattas 1991.
18. See Akibe 1993; Hanazaki 1996:128–9; Ludwig 1994.
19. See Knight 1997b. Some of the settlers participated in the Japan-leg of the 'Run for Peace' in the late 1980s—when American Indians came to Japan in the course of their worldwide run. There is also a broad set of alternative interests among some of the settlers, including Druidism and shamanism. One man had a keen interest in Ainu words and the link between Ainu and Japanese cultures.

This same man and his young family practiced their own kind of communion with nature—which entails placing one's head on the stem of old trees or large rocks to feel the vibrations, a practice they associated with ancient Celtic culture. But they also tend to identify Shinto as a Japanese counterpart of these foreign indigenous animist traditions, arguing, for example, that in the folk Shinto pantheon can be found the *ubusuna* spirits, which are the Japanese equivalent to the North American Indian 'Great Spirit'—a prominent theme in Japanese New Age spiritualism (see Yamada 1995). 'In Japan, beginning in the distant Jōmon age, a rich tradition of nature worship has been passed down through Shinto' (ibid.: 20).

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Chapter 7
THE USE OF FIRE IN NORTHEASTERN LUZON (PHILIPPINES): CONFLICTING VIEWS OF LOCAL PEOPLE, SCIENTISTS, AND GOVERNMENT OFFICIALS

Andres B.Masipiqueña, Gerard A.Persoon and Denyse J.Snelder

Since Prometheus stole fire from the gods and gave it to the world in mythical times (or similar fire origin stories in other cultural contexts), the use of fire has probably been the most powerful force in changing the landscape throughout history. This not only refers to the role of deliberate burning in the present-day reduction of the tropical rainforest: fire has also been an important element in many western countries, where forest lands were turned to pastures and agricultural land. European countries like Great Britain, Holland and Ireland and probably many others lost almost all their 'wild' forests in this process. It was only afterwards and through active replanting and strict protection of areas set aside for 'nature' itself that these countries regained some degree of forest cover, though of a domesticated nature, part of which is now being left to grow 'wild' again (Buis 1993; Neeson 1991; Rackham 1996). There are only a very few exceptions of societies where traditional forms of agriculture were developed in a forest area without the use of fire (see, for example, Conklin 1961).[1]

Control over the use of fire has played an important role in the general 'civilization process' (Goudsblom 1992). States increasingly tried to restrict, control and domesticate the use of fire. Colonial as well as national governments have tried to stop the process of slash and burn agriculture because of its environmental effects. Most of them wanted to conserve forests for watershed protection, nature parks or other reasons. They considered conversion of forest land through shifting agriculture a wasteful practice (see, for example, Fokkinga 1934; Goudsblom 1992). By and large this has not been successful in relation to expansion of agricultural land in forest areas. Conversion of forest land to agricultural land is hardly feasible without the use of fire. The cultivation of annual crops like wheat, rice, and corn is virtually impossible without 'clearing' the land using fire.

Burning is a common practice in traditional systems of shifting cultivation, i.e. small-scale 'slash and burn' agriculture, all over Southeast Asia. Its primary advantage is in the immediate release of nutrients for plant uptake, stimulating crop growth during the first years of cultivation. Moreover, fire alleviates labour-intensive activities, such as clearing vegetation, weeding, removal of crop residues after harvesting, and removal of trunks and branches on recently slashed forest land. Fire is an important and deliberately used management tool.

The role of fire in resource management varies with the various land-use stages characterizing the tropical moist-forest zone. Whereas tribal forest communities, the sole forest-dwellers in the past, did not directly depend on fire for the collection of food, the use of fire received increasing attention over the years when land use shifted from logging for timber and fuel wood to temporary and more permanent cultivation and extensive grazing. Whether the use of fire is beneficial for resource management and conservation under each land use is questioned by different scientists. Some of them describe fire as the primary destructive agent of tropical humid environments. The indigenous practice of conservative fire-use by 'traditional' shifting agriculturalists in forests has apparently been disregarded by pioneer shifting cultivators who migrated from other, often lowland areas. Their knowledge of fire effects on forest resources, based on environmental conditions in their place of origin, has been applied to grassland-converted environments with distinct atmospheric, hydrological and nutrient cycles. How far is indigenous knowledge applicable and to what extent has its application been altered and adjusted to the changes in biophysical conditions described above? What is the role of socio-economic factors that influence the nature and (non-)application of indigenous knowledge related to fire?

The perception of fire by local farmers specialized in the cultivation of high-value cash crops very likely differs from those who keep livestock or are specialized in thatching or basket-weaving using local grass as the raw material. In addition there is the government attitude towards fire, which is often unclear and does not always follow scientific views. The latter is evident from the use of fire for the improvement of range quality and quantity in government projects combined with government-sponsored activities in respect of reforestation using woody species sensitive to fire damage.

Research into indigenous environmental knowledge has moved from mere inventories of the cognitive elements of how much people know about their environment in terms of plants, animals and soils to systems of knowledge as well as to blind spots and elements of ignorance within these systems (Hobart 1993). Increasing attention is also paid to the application of this knowledge in daily life. In the body of literature of mainly anthropological and ecological

background, we find numerous references about the value of the adaptive knowledge of peasant and tribal societies contributing to the conservation and wise use of fragile ecosystems, including tropical forests, semi-arid grasslands as well as mountainous areas (Brush 1993). Knowledge is not only restricted to knowing in the cognitive sense but also to knowing in the practical and technical meaning of the word, that is, knowing how to do something, how to act in relation to the environment in order to achieve a particular result. This knowledge combines ecological knowledge with practical knowledge about the use of certain artefacts, techniques or causal chains in ecosystems. Use of this knowledge is based on the anticipated effects it might have but does not exclude certain negative effects which are accepted as the unavoidable side effects of the desired outcome of interventions. Some of the ecological fire effects may be desirable while others are not, but because of a differentiated value judgement of these effects, the former may dominate over the latter. It is a matter of research to determine the motivations for people retaining such preferences and the knowledge and perception from which these motivations are generated. The use of fire should be regarded as an intentionally used management tool, in which theoretical and practical knowledge are combined and which needs to be studied in the context of its empirical environmental consequences (Lewis 1989).

In this paper we shall discuss these issues based on our experience in Northeast Luzon (Philippines), an area traditionally covered by rainforest and inhabited by hunters and gatherers. In recent decades, however, large tracts of forest have been cleared by commercial logging and subsequently by slash-and-burn agriculturalists migrating to this area from various parts of Luzon. The conversion to pasture land takes on a permanent character because of extensive grassland fires which prevent natural forest regeneration. In recent years, however, there seems to have been a tendency to convert these grassland areas back into agricultural land, including agroforestry. The use of fire in agriculture in this zone is gradually diminishing and becoming more and more controlled. We shall also discuss how biophysical scientists regard the use of fire by forest-based and grassland communities. Their views differ widely from those held by the communities. Finally we shall discuss the view of the Philippine government on the use of fire and what it has done to reduce the frequency and the assumed negative impact of fires in forests and grasslands. In the discussion we shall try to explain the differences between these bodies of environmental knowledge and whether a connection can be made between them.

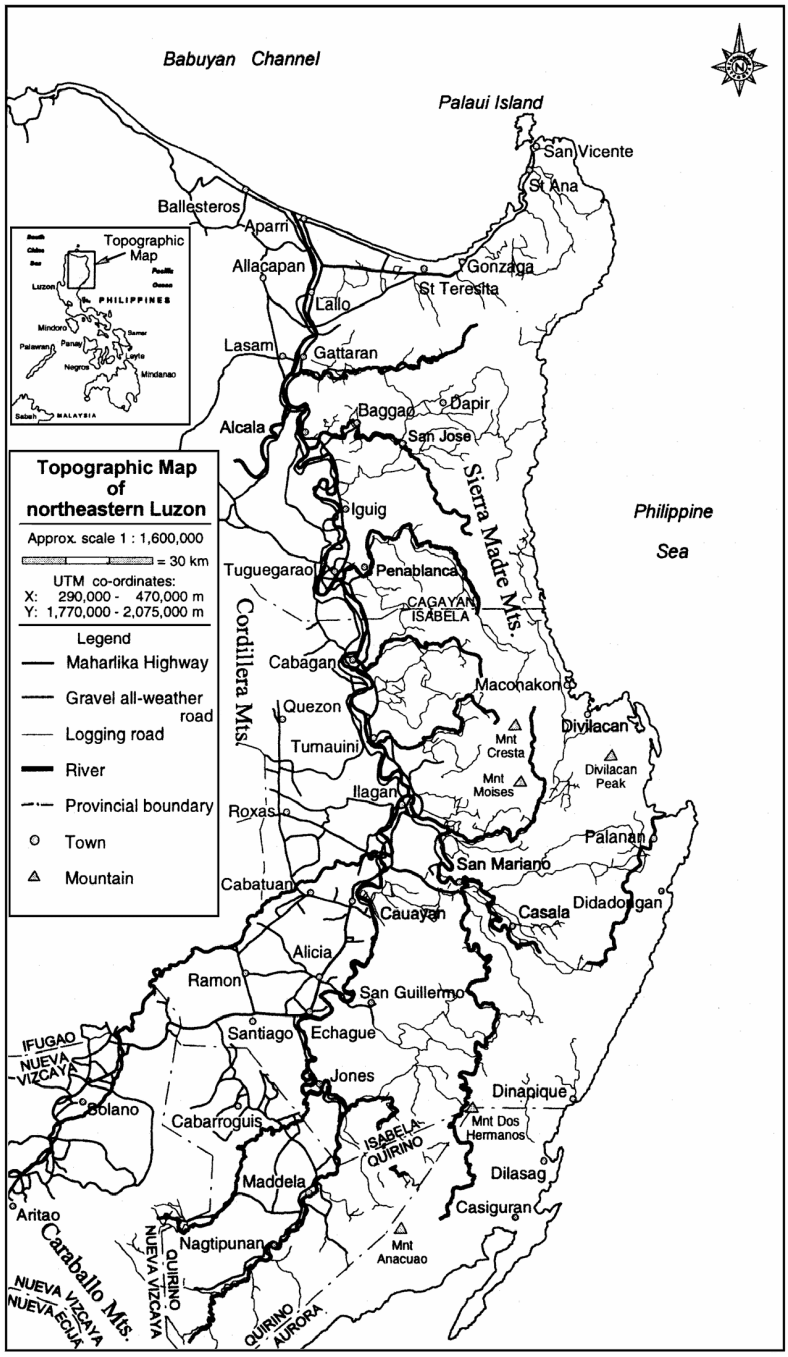
THE CACAYAN VALLEY

The Cagayan Valley in Northeast Luzon (Plate 7.1) is bounded by three mountain ranges, to the east by the Sierra Madre, to the west by the Cordillera and to the south by the Caraballo Mountains. To the north lies the Babuyan Channel, beyond which is the South China Sea (Map 7.1). The area, officially Region 2 in the Philippine administrative structure, has a total land mass of 26,838 square kilometres and consists for the most part of mountainous areas. The regional capital is Tuguegarao, about 485 kilometres from Manila along the Maharlika Highway. The climate is tropical monsoon (mean annual rainfall 1500–2000 mm), with a relatively dry period from December to April and wet during the rest of the year (Boquiren 1992). During the wet season, the area is often struck by typhoons, which contribute significantly to the total annual rainfall.

The population of the region was 2.34 million in 1990, with an annual growth of 2% from 1980 onwards. Regional population density is eighty-seven persons per square kilometres, which is far below the national average of more than 200 per square kilometres. This makes the Cagayan Valley one of the least densely populated areas in the country. The population is predominantly rural and lives in the countryside in small villages *(barangay)* and hamlets *(sitio).* Capital towns and the major commercial centres are all located along the national highway, which runs almost parallel to the Cagayan river. The only exception is San Mariano, a boom town close to the Sierra Madre, which grew extensively due to the logging industry in the 1970s and 1980s.

On the eastern side of the Cagayan river, four kinds of land use can be distinguished:

a) intensive agriculture on the fertile plains of the Cagayan river. The dominant crops are irrigated rice, corn and formerly also tobacco
b) extensive grasslands with cattle rasing and some agricultural activities on the foothills of the Sierra Madre mountains adjacent to the fertile plains
c) the forest edge or logged-over forest between the grasslands and the undisturbed forests. In this transition zone there is limited logging and agriculture activities
d) the Sierra Madre mountains, which are covered by closed-canopy rainforests and mossy forest and which reach in some areas to the Pacific Ocean on the eastern side of this part of Luzon.



MAP 7.1 TOPOGRAPHIC MAP OF NORTHEASTERN LUZON (adapted from van den top 1998a)

FIRE IN THE CAGAYAN VALLEY: PEOPLE'S KNOWLEDGE AND PERCEPTION

Smoke fills the air above the slopes of the Sierra Madre each year towards the end of the dry season. The sources of the smoke differ, however. Most striking are the blazing and rapidly expanding fires in the open grassland areas, some of which are used for cattle raising, while others have only recently been reforested (Plate 7.1). Smoke is also coming from recently cleared fields in the logged-over forests and from small patches cleared inside the rainforests. And finally smoke rises from agricultural fields and areas adjacent to the large sawmills where charcoal is produced. In order to understand the various origins of these fires, we shall take a closer look at those who use fire for different purposes. We shall not consider the domestic use of fire but focus on fires as they occur in the wildland areas, that is, forest land, cleared agricultural fields, grassland and scrubland. The domestic use of fire by the groups mentioned here is of minor relevance to our main argument. Basically all fires *(apoy)* in these wildlands are induced by human action. From the sheer number of fires in the valley, it is obvious that fire is an important environmental management tool. In spite of the uniform nature of the tool itself, fire serves very different purposes.[2] People use it to deal with various aspects of their natural and social environment. We shall now take a closer look at the main groups, moving from the forest towards the intensive agricultural areas.

Indigenous People in Closed-Canopy Rain Forest

The indigenous people of the Sierra Madre Mountain range are the Agta, a group of hunters and gatherers living in the foothills, interior valleys and along the coastline facing the Pacific. They belong to the original Negrito population of the Philippines. They are organized in small bands and there is a great deal of mobility between both sides of the mountain range. They hunt wild pig, deer and numerous smaller animals. They gather wild tubers, fruits and vegetables from the forest. Trading of forest products has taken place already for hundreds of years, but in recent decades its intensity has greatly increased. They have also recently adopted shifting cultivation (Headland 1986; Griffin 1996).

The Agta use fire for various purposes, including the collection of edible forest products, hunting of wild animals, cooking, heating, lighting, repelling and killing insects, snakes and other unwanted animals, land clearing and the rejuvenation of senescent forage. They identify the fast clearing of land as the greatest advantage of fire use but at the same point out the greatest disadvantage when failing to keep forest fire under control: 'no food will be left when the forest is burned'. In general, the latter is not an immediate danger for traditional Agta communities residing in the closed-canopy rainforest, where fire does not easily spread during most of the year

given the relatively high moisture content of the biomass. The Agta do slash and burn small fields within the forest for planting of food crops and attracting wild animals to facilitate 'garden hunting' activities. However, the fields are scattered throughout the forest and left for regeneration as soon as the Agta move to the next dwelling in the forest. The environmental damage remains minimal and is by no means comparable to that caused by pioneer shifting cultivators who clear large tracks of land on the forest fringes (see also Estioko-Griffin and Griffin 1981).

Some Agta communities have changed their practices and life-style, due to new developments moving into the forest. When logging business started in the 1960s, followed by encroaching farmers, Agta communities became involved in more intensive trade relations. In addition to the exchange of traditional forest products such as rattan, bush meat and resin, the Agta became more and more involved in wage labour relations with the migrant farmers. After timber-lease agreements were cancelled, they lost their trading partners and consequently some Agta communities moved towards the forest fringe in search of new marketing outlets and, later on, started cultivating rice and other crops. Over the years this process of sedentarization was also greatly stimulated by missionaries and governmental institutions (Headland 1985). Cultivation practices are partly copied from pioneer shifting cultivators, including burning as a means of land preparation. Fields are burned during dry spells, usually in April or May when grass-covered areas are also burned to produce green grasses for grazing of cattle and water buffaloes *(carabao).*

The Agta use certain plant materials, and sometimes stones, for making fire, for example, a certain rattan species referred to as '*takal* rattan'. Dried bamboo is also used by rubbing two bamboo sticks against one another to generate heat and ignite dried, flammable bark. Smoke is an important tool in hunting wild animals. It is generated by burning different types of plant materials. The smoke of these plants is very effective in taming wild animals. Fire is also used for removing hair from the skin of animals caught, such as wild pig, deer and monkey, before preparing the meat for home consumption. The Agta collect honey and the larvae and eggs of red ants, for which smoke is produced by burning palm leaves. Similarly, lizards hiding in hollow trees are driven out by smoke.

The surroundings of Agta settlements are cleared with the use of fire, making the area free of snakes, insects, harmful plants and grasses. The Agta reside in a lean-to or a hut which is left open on all sides. During the rainy season, when nights can be rather cool, small fires are made to produce heat while sleeping. At the same time, the smoke will drive away the mosquitoes and small flies which nestle in the Agta's hair and bite the skin of their head.

Shifting Cultivators in Logged-Over Forest and Grassland

Since the early 1960s, farmers from different cultural backgrounds (Ilocano, Ifugao, Itawi and Tingguian) have been migrating to logged-over forest to start shifting cultivation (van den Top 1998, 1998b). They generally established themselves in permanent settlements, whereas their fields were cleared, burned, cultivated and shifted to newly opened up areas after a couple of planting seasons. Over the years, the logging belt has moved eastward towards the Sierra Madre, leaving behind vast tracts of residual forest which were transformed into slashed and burned fields. Most of them have gradually been converted into grassland due to repeated burning. The earlier pioneer shifting cultivators have adapted to the new environment by switching to permanent fields cultivated with upland rice, corn and other vegetable crops like mongo beans. Some irrigated rice fields are laid out in little valleys and lowland areas, and the grasslands are used for grazing purposes. Lately, there has been a strong tendency to further increase farming activities in the grasslands. Many of these grasslands have been turned into plots for sedentary agriculture, and people also invest in tree planting. This is happening particularly in areas close to markets.

Like the Agta, the shifting cultivators and permanent farmers identify the fastest way to clear land as one of the most advantageous uses of fire. Towards the end of the dry season, all vegetation (grasses and shrubs) is burned and whenever possible the land is ploughed with the help of a water buffalo. In order to start such a fire successfully, piles of previously collected and dried grass are made. Once these are lit, the vegetation on the fields will burn almost completely. Burning the vegetation makes ploughing easier. Later rice and corn seeds are sown. Farmers indicate that burning vegetation increases soil fertility and retards the regrowth of weeds.

Grass-covered areas near farms and houses are burned to produce young grassshoots which will keep cattle nearby and prevent them from moving away to more distant areas in search of better grazing sites. Fires are often spread due to loss of control. Damage to settlements or isolated grass *(cogon)* roofed houses, agricultural crops, poultry farms and even public facilities like electric posts is done by these blazing fires.[3]

Farmers use fire for drying harvested crops like corn and upland rice, particularly during the wet season. The corn or rice is put into a basket with a small hole in it and attached to a tree, pole or roof about two metres high. Then a fire is made under the basket to speed up the drying process. Baskets are also hung above the cooking area in houses in order to dry the rice or corn through the heat generated during cooking.

Like the Agta, these farmers consider fire and smoke as primary tools in the collection of honey, ant eggs and larvae, and in hunting wild animals that hide in the woody patches in grassland areas. Smoke is generated to repel insects, ash is used as an insecticide on tobacco plants, and fire to provide light at night. Resin is collected from different trees in the forest and placed into a hollow bamboo stick, after which the mouth or top of the stick is lit. A stick 0.5 m in length and 0.10 m in diameter is needed to provide light for about ten hours.

Cowboys in the Grasslands

Parts of the former forests are turned into permanent grassland. These are often referred to as 'idle grassland' or 'waste lands', but parts of them are used for livestock. Under certain conditions the government issues permits for pasture areas. In practice mainly wealthy people and politicians hold such permits. Grasslands with extensive cattle-grazing are generally burned once or twice a year during the dry season (in March, April and May). The timing and the frequency of this activity depend on the dryness, and hence palatability, of the grasses and on the length of the dry season respectively. Not all grassland is burned at the same time: some smaller areas are selected and fired, while other areas are protected from burning and reserved for grazing. Moreover, local differences in the moisture conditions of grasses will partly control the extent of fire. The main reasons for grassland burning, as identified by the cowboys, are to promote the growth of young grasses and to increase accessibility to green forage by removing tall and senescent grass. This type of management is locally referred to as 'the system of grass regeneration through match management'.

Most large and medium-scale ranches in the Cagayan Valley are looked after and managed by cowboys, whereas the ranch 'owners' live in nearby towns such as Tuguegarao or in Manila. Most grasslands are under pasture-lease agreements or forest grazing-land agreements valid for 25 years and renewable for another 25 years if agreement rules and regulations are followed. Among the latter regulations are the requirements for proper fire control and protection.

The cowboys receive a meagre monthly salary together with various benefits, among which are the right to cultivate some fields within the ranch with cash or food crops and to keep one cow and all her offspring, or keep one male *carabao* to assist with ploughing in the field and to transport goods. The cowboys are also held responsible for any losses of cattle stock. The latter implies that the cowboys have a vested interest in keeping the herd in good condition, for which proper grassland management is imperative. However, due to lack of alternatives and financial inability, the sole

means of maintaining a green, palatable forage cover is through the above-mentioned match approach towards grass regeneration. With the absence of proper supervision and planning, the burning gets often out of control, destroying adjacent areas. Likewise various attempts to improve grass cover on well-financed and large-scale ranches by introducing palatable grass species and legumes (e.g. *Stylosanthes* sp.) failed, most likely because of the susceptibility of species to fire and the low survival rate due to inadequate soil moisture conditions.

Cogon Gatherers

Also settled in the grassland are the so-called *cogon*-gatherers, people who make a living by cutting and selling *cogon* grass *(Imperata cylindrica).* This grass is used as a cheap material for roofing houses as well as other buildings such as sheds for animals (e.g. chickens, pigs, *carabaos,* cattle and horses). It is also used for sheds to dry tobacco. Cogon-gathering is not a full-time occupation, although for some farmers it has turned into an important part of the agricultural calender and is a major source of cash income.

The frequency and timing of burning in order to obtain the best quality of *cogon* grass as roofing material are somewhat different from those practised by the cowboys mentioned above. The cogon-gatherers burn towards the end of the dry season with the aim of rejuvenating and stimulating the growth of *cogon,* so that it will be of the same length during harvest time. They also burn the fields after harvesting the *cogon* to get rid of all remnants and to destroy other weeds and shrub vegetation.

Because of the differences in optimal burning time and the lack of measures to avoid fires spreading to adjacent areas, conflicts can occur between cogon-gatherers on the one hand and cowboys and ranch-owners on the other. Mention is also made of jealousy amongst *cogon*-gatherers as a source of untimely burning of other people's fields (Zeegers 1992). As yet there are often no structures at the local level to settle these kinds of disputes. Most of the fires have been lit by unidentified persons.

Contract Workers and Farmers in Reforestation Sites

For many years the Philippines have put a great deal of effort into reforesting denuded hills and mountains. Agencies like the Asian Development Bank and the World Bank have put large sums of money into reforestation projects. In preparing sites for reforestation, burning of standing vegetation is often employed in order to create 'space' for the new seedlings. Reforestation with new species is generally preferred by donor agencies to natural regeneration. In general these reforestation projects have not been

very successful. Apart from ill-planned projects and technical deficiencies in their implementation, anthropogenic fire is considered to be the main cause behind the failure of these projects. In 1993, for instance, 595 grassland fires were reported throughout the country which burned down tree plantations worth PI60 million. These fires were all of human origin (Florece 1996). Fires in the Cagayan Valley were a substantial part of this problem.

In these cases the use of fire cannot be explained in terms of a lack of ecological or environmental knowledge but is mainly to be understood as a form of social protest, a powerful 'weapon in the hands of the weak' (Scott 1989). The background to this behaviour is often to be found in the bad performance of project managers, frustration about delayed payments, disputed ownership of reforested land, the lack of compensation for the loss of agricultural land, the lack of active involvement in the design and implementation of projects and uncertainty about the distribution of future benefits (Pasicolan 1996). Another reason might be the small number of surviving seedlings which could lead to reduced payments to the project's workers. Destruction by fire, however, is an external factor for which the workers cannot be held responsible. Sometimes plantation workers also set fire to the plantation to ensure renewed reforestation activities in the near future for which they may be hired again. The immediate ecological effects are, of course, the burning of the newly planted seedlings. The ultimate aim, however, is to draw attention to the problems mentioned and to hope for their solution one way or another.

Survey research on the reasons behind these fires discloses unlikely or unsatisfactory answers. Florece (1996), for instance, refers to 66% 'unknown human cause' in addition to intentional burning and escape from neighbouring swidden farming. Magcale-Macandog and Galinanda (1996) state that informants of one study site put the blame for over 40% of the fires on lightning. These statements must probably be understood as rationalizations of the 'real' causes.[4]

Farmers and Plantation Workers in Intensive Agriculture

Another use of fire to be mentioned here takes place in rice, corn or sugar-cane fields. Due to the high fertilizer inputs and good irrigation networks, productive fields can be used almost throughout the year. Because of this there is hardly any excessive vegetation to be burned at the start of the planting season. It is usually only the remnants of the harvesting process which are burned in a controlled manner. Sometimes cattle are allowed to roam around in those fields.

Somewhat different is the use of fire in sugar-cane plantations. Here fire is used towards harvest time in order to drive out snakes but also to get rid of the dead and withering leafs on the ground and hanging down from the cane. The small quantity of this material and the heat generated while burning relatively low, will not cause serious damage to the content of the cane itself. This burning greatly facilitates the harvesting and transporting of the yield. Some workers also stated that the quality of the sugar is improved by this kind of burning.

Charcoal Producers

Finally controlled use of fire takes place in the production of charcoal, often in the neighbourhood of sawmills. The remains of the timber logs are covered with sawdust, which is set alight. The amount of sawdust is carefully regulated in order to limit the amount of oxygen and hence to prevent the burning of the wood. The incomplete burning results in the development of heavy smoke. Since the logging moratorium was announced in a number of municipalities and provinces in 1992, most of the sawmills in the area were forced to close down. Logging was greatly reduced, though some illegal logging still takes place (Geelkerken 1997). Production of charcoal has also decreased and has become somewhat decentralized throughout the region.

Conclusion: Why Fire?

Reviewing the motivations of people in the Cagayan Valley for using fire, three main categories can be distinguished:

1) Fire as an ecological tool. This is related to the environmental effects of burning and its assumed consequences for soil fertility and the regeneration of grass and other vegetation.
2) Fire as an economic instrument. This is related to the time-saving effects of using fire, to future possibilities for ploughing the land and to ideas about 'cleanliness' and organic material as rubbish.
3) Fire as a weapon, to combat injustice or release feelings of revenge or jealousy.

Motivations for using fire in the Cagayan Valley vary widely, as does the knowledge on which this use is based. Within the agricultural slash-and-burn *(kaingin)* activities it is clear that fire is used to clear the field of all vegetation (tree trunks, branches, scrub and layers of decaying organic material on the forest floor) in order to allow the cultivation of annual and other crops. It is widely believed, although phrased in different wordings, that burning improves the

soil, adds to its fertility and retards the growth of weeds. This refers to the first burning of a freshly cleared field in the forest, either in the closed canopy forest or in logged-over forest after a long fallow period.

To some degree similar motivations are given for subsequent burnings in fields which have not been left fallow for a number of years. In these cases the quantity of vegetation remaining is far less. Second and third burnings of fields without fallow periods help destroy the decaying tree trunks and stems further and burn shrub and weed vegetation. Basically people maintain similar motivations for these fires as in the case of the first ones, but add that burning facilitates passing through older fields left fallow for some time. The thick ground cover is easily removed, and burning is mainly considered as a way to save time-consuming cutting and weeding activities. In general people do not hold widely different views regarding first burning on the one hand and subsequent burnings on the other.

A big advantage of subsequent burnings is that it will gradually become possible to plough the land with the help of a cow or *carabao.* Once all major tree trunks, stems and superficial roots have decayed —and fires are believed to quicken this process considerably— ploughing becomes possible. On average people believe it takes about six years and ten to twelve fires until a forest field can be ploughed reasonably easily.

On rangeland, fires are also used to get rid of dead and unpalatable grasses and to rejuvenate and stimulate the regrowth of green leaves. Cowboys as well as cogon-gatherers are aware of the fact that every fire further retards the process of natural reforestation and regrowth of shrub vegetation. This, however, is not taken as a major problem. These people are primarily interested in cattle fodder and palatable grass and not at all in a natural tree cover. Only few woody patches or isolated fire-resistant trees which have survived years of logging and burning are left (Snelder and Masipiqueña 1997), providing shade for cattle in the hot midday hours.

Apart from motivations regarding the use of fire to stimulate the productivity of forest fields and grassland, and the lack of alternatives to achieve similar effects by other means (apart from labour-intensive weeding, cutting and physically removing trees), people also have clear perceptions of a type of cleanliness relating to their fields and home yards. They look upon the remnants of harvesting activities and the decaying organic material on the forest floor as 'waste', 'rubbish' or—to use Mary Douglas's description —'matter out of place'. The easiest way to get rid of this material is to burn it. This practice is even maintained in rural settlements where the home yard is swept daily, leaves, dead branches, fruit peels, skins, seeds and other materials from the home garden being collected and burned every day. Efforts by agricultural extension

workers pointing to the usefulness of this organic material meet little support. Organic farming methods, like mulching, appeal most to those who cannot afford the expensive fertilizer. Most farmers prefer artificial fertilizers. Gradually, however, these ideas gain some support in a number of these communities, and burning is reduced as a method to cleaning up fields and home yards (Payoga Demonstration Farm, personal communication).

Of a totally different nature is the use of fires not on the basis of ecological arguments or knowledge but to influence environmental processes in order to achieve a particular objective related to that environment. We are referring here to fires which certainly have ecological effects but whose setting are mainly motivated by social circumstances like feelings of injustice, anger, disputes over land rights and the like. Lack of other options to resolve these kinds of conflict makes people turn to fire as a weapon. Fire is an attractive option because it is powerful, destructive, anonymous, irreversible, almost impossible to prevent and, once started, almost unextinguishable by human hand.[5]

SCIENTISTS' VIEW OF FIRE

In this section, we shall present the view of biophysical scientists who generally consider the ecological consequences of fire. The views of other scientists, in particular anthropologists, are often related to views of the communities and their understanding of ecological processes and will be mentioned in the discussion.

The Closed Nutrient Cycle of Closed-Canopy Rain Forests

Humid forest ecosystems are distinct from ecosystems elsewhere in the tropics in having most of their nutrients stored above the ground in the biomass rather than below the ground in the soil. They are characterized by their multi-layered, well-structured canopies and generally occur on old (e.g. early Tertiary) land surfaces composed of acid rock and low in base-rich minerals. The latter include elements such as potassium, calcium, magnesium and phosphorus, which are essential nutrients for plant growth.

The apparent contradiction of 'a lush vegetation cover sustained by a nutrient-poor soil' can be explained by various conservation mechanisms that control the release of plant nutrients in rain-forest soils (Menaut *et al* 1985; Weischet and Caviedes 1993). Most of the nutrients are concentrated in the topsoil and associated with organic matter which protects them from intense leaching, i.e. the downward movement of nutrients in the form of cations along with the soil solution.[6] Moreover, nutrient release through the decomposition of dead branches, leaves, roots and other plant

residues, i.e. organic matter, takes place in a slow and steady manner due to the controlling effect of various soil micro-organisms, among which are bacteria and fungi. For example, mycorrhizas (fungi that form a symbiotic association with plant roots) function as so-called 'nutrient traps' and facilitate the uptake of nutrients by trees by translocating captured nutrients to the tree roots that serve as their host. Mechanisms like this protect the ecosystem from the unnecessary removal of soil nutrients through leaching and keep the nutrient cycle closed.

The soils under closed-canopy forest in Northeast Luzon most likely have more favourable characteristics than those developed in acid rock. Most soils are developed in predominantly hilly and mountainous terrain composed of rock with relatively high percentages of base-rich minerals, e.g. schists, metamorphosed shales, marl, reef limestone, sandstone and siltstone (Bureau of Mines and Geo-Sciences 1982). Moreover, in addition to the conservation mechanisms described above, limited soil moisture controls the removal of base cations by intense weathering and leaching during the dry season at lower altitudes.[7]

Repeated Burning in Logged-over Forests

The ecological consequences of human-induced fires are paramount in logged-over forests. Whereas fire is a natural phenomenon in seasonally dry forests, most forests in high-rainfall areas have evolved without the presence of fire. Environmental conditions in tropical moist forests are generally not conducive to natural ignition. The moisture content of the living biomass is generally high and the accumulation of dead organic matter limited and localized, preventing the spread of fire (Koonce and Gonzalez-Caban 1990).

Disturbance of closed-canopy cover will change these conditions, as can be observed in logged-over forest and slashed-and-burned areas where direct sunlight reaches the ground. Higher surface temperature and lower soil moisture content promote the development of a vegetation cover with a mixture of grasses, weedy herbaceous plants and fast-growing vines, temporarily increasing fire hazard. Then, usually within a year, woody pioneer species begin to replace and dominate the herbaceous plant cover. Most tree species endemic to virgin forests also occur in logged-over areas, however, at lower densities and in different proportions. Bamboo, for example may still be abundant in areas logged ten to twenty years ago (Simons and Bacquiran 1992).

If forest land is frequently burned or grazed, pyrophytic grasses will invade and replace fire-susceptible woody colonizers, causing permanent fire hazard (Goldammer 1990). This process of grass invasion into formerly forested areas is affecting large parts of Northeastern Luzon, particularly the foothills of the Sierra Madre,

Cordillera and Caraballo Mountain Ranges. The conversion of forest into permanent grassland, i.e. savannization, depends on the frequency and intensity of burning and on the vicinity of forest trees. The extent and composition of the seed bank (i.e. seeds stored in the soil) are also of great importance. For example, Simons and Bacquiran (1992) report that forest regeneration in *kaingin* areas in the foothills of Tumauini depends on both the age (first or second clearing) and location of these areas. Regrowth of trees is pronounced in 'young' *kaingin* fields near forests, whereas trees are virtually absent in 'old' *kaingin* fields which are mainly covered by grasses such as *Imperata cylindrica, Themeda triandra,* and *Saccharum spontaneum.* Forest regeneration also depends on the areal extent of disturbances. Native woody colonizers usually decrease in number and variety with increasing size of disturbed area. The impoverishment of biodiversity may become a major limiting factor in the recovery process and induce savannization (Mueller-Dombois and Goldammer 1990).

With the removal of forest cover through burning, considerable amounts of nutrients are withdrawn from the ecosystem (Nye and Greenland 1960; Sanchez 1976).[8] Plants, whether regenerated or cultivated ones, cannot immediately benefit from the large quantities of nutrients that are released after fires because of their limited root systems at the early growth stage. Although burning is a common practice for controlling weeds in shifting cultivation and promoting the growth of palatable shoots on grasslands (Hoekstra 1992; Simons and Bacquiran 1992), it is by far the least effective practice of nutrient recycling. For example, one fire event in a *kaingin* field near Mansarong reduced the organic matter content from 7.8 per cent to 5.9 per cent (Dros 1996).

Burning causes nutrient loss in various ways, through 1) ash particle transport and volatilization of elements like nitrogen, sulphur, calcium, magnesium, potassium and phosphorus during the fire event; 2) leaching of nutrients in ash residues and mineral soil; and 3) increased surface erosion after burning (Bruijnzeel 1990). In addition, more solar radiation will reach the cleared forest surface and increase soil temperatures, which in turn promotes micro-biological activities. The latter results in rapid decomposition of organic matter and, if the input of fresh organic matter is minimized due to regular burning, the rapid decomposition will cause a significant decrease in soil fertility. Likewise, recurrent removal of vegetation cover will promote the leaching of nutrients in the form of basic cations and induce soil acidification. Soil fertility can be restored, but this requires fallow periods generally ranging in the order of fifteen to thirty years. For areas near Mansarong, fallow periods of six to ten years are already sufficient to maintain the soil 'regenerating capacity for re-establishment of Dipterocarpus forest after one or two cycles of kaingin' (Dros 1996).

Frequent and intense disturbance by fire can also cause the death of soil micro-organisms like mycchorizas, which will affect the protective mechanisms and open up the nutrient cycle, making the system more susceptible to leaching of soil nutrients. Moreover, after each clearing, significantly smaller quantities of nutrients are in circulation. Less nutrients are stored in the initial successional biomass or in planted crops and less nutrients returned through litter fall or crop residues. The input of nutrients through crop residues is, for example, estimated at only one-fifth of the natural input of the original forest (Weischet and Caviedes 1993). Hence if crop cultivation or grazing is practised on a more or less permanent basis, large quantities of fresh organic matter or manure are needed to keep soil fertility at a reasonable level. The latter seems to be an impossible task when dealing with large areas.

Clearing of forest cover may further result in hydrological disturbance and removal of nutrients through topsoil erosion. Burnt surfaces are subjected to the impact of raindrops, which may lead to the formation of a soil crust, particularly if high-intensity rains occur soon after a fire event, when vegetation cover has not been restored. Infiltration will be reduced and runoff may generate, possibly followed by flash floods in downstream areas, causing surface erosion. The latter will rapidly deprive the soil of its nutrient reserve, which is mainly concentrated in the topsoil layer. About 43 per cent of the total area in Northeast Luzon is affected by moderate rates of soil loss (36 t ha^{-1} on average) and about 16 per cent by severe soil loss (54 t ha^{-1}; ALMED 1993).

Repeated Burning in Grasslands

Grassland burning is mainly practised not to facilitate weeding or the growth of annual crops, but to rejuvenate senescent grasses and increase the accessibility of green forage for livestock grazing. Burning increases the proportion of high-quality green leaf, which may lead to better animal gains in the first few months following burning. Other reasons for grassland burning are to control fire-susceptible woody species, to stimulate out-of-season growth and to minimize pests and diseases.

A more ecological argument often used in verifying the practice of grassland burning is that, in contrast to forest fires, grassland fires thrive on a small fuel load with superficial effects on soils and causing less environmental damage. Burning will usually not destroy the grass roots and, in some cases, even enhance the tillering capacity, which explains why grasses like *Imperata cylindrica* easily persist.

However, repeated use of fire causes damage to soil and to the environment in general in various ways. In grasslands too, frequent burning and biomass removal will eventually lead to the destruction

of organic matter in topsoil layers, to the depletion of nitrogen, sulphur and base cations through the process of volatilization, and to acidification through leaching and intense weathering. The rate at which these processes of soil degradation take place varies with soil moisture and temperature conditions and the type of parent material underlying grassland soils. The grasslands in Northeast Luzon are located on terraces with gravelly and sandy material poor in nutrients and on calcareous sedimentary rock. Acidification through intense leaching is unlikely to affect the soils in sedimentary rock with abundant calcite and consequently high buffer capacity. Acidification of coarse-textured terraces is very likely to occur, particularly when leaching is increased after repeated burning and grazing. Castillo and Siapno (1995), and Helleman and Immerzeel (1997), report pH acidity values of between 3.8 and 5.5 for grassland soils in Nueva Vizcaya and Isabela. These soils are also low in nitrogen and potassium, and sometimes in phosphorus.[9] Most phosphorus is probably not available for plant uptake because of the high soil-acid conditions under which this element is easily fixed. Hence, fertilizers are being applied at increasing rates with ongoing grazing and cultivation. Zeegers (1992), for example, reports an increase in the application of triple 4 or urea from 150–200 kg ha^{-1} to 300–350 kg ha^{-1} to permanently cultivated fields in grassland areas near Ilagan, Isabela, within a period of three years.

The replacement of forest by grass vegetation through regular burning may have caused more incidents of mass movements in mountainous and hilly areas. Evidence of mass movement is particularly apparent in the rugged terrain of Nueva Vizcaya Province. Less moisture will be re-circulated to the atmosphere by a grass cover, causing rapid and frequent saturation of underlying soil during rainstorm events. For example, an *Andropogon virginicus* grass cover in a moist rain forest area transpires almost 50 mm per month, while an *Eugenia cumini* tree cover recirculates about 150 mm per month under the same environmental conditions (Mueller-Dombois 1973). The saturation of intensely weathered and deep soils, accompanied by an increase in mass, may trigger a sudden shift of soil slope-downward.

Surface erosion contributes to the rapid removal of nutrients in regularly burned grassland (Costales 1980—Philippine study in Goldammer 1990). The amount of soil loss measured at burned sites in pine-grassland of the Central Cordillera, Luzon, were two to three times the amount at unburned sites at the beginning of the wet season (ibid.). Moderate soil loss is also common in 60 per cent of all grasslands in Northeastern Luzon, and severe soil loss in 24 per cent (Concepción and Samar 1995). The eroded material is deposited on land in downstream areas and in rivers, causing damage to crops and filling up water reservoirs. Siltation in the Cagayan river is estimated at 4.5 -9.0 cm y^{-1}, which is sufficiently

high to increase the frequency and extent of flood events (Oosterberg 1995).

Burning, combined with selective grazing, affects vegetation composition and may result in the replacement of palatable perennial plants by unpalatable annual grasses and weeds, or the reverse may take place in the form of bush encroachment depending on local soil conditions, whereas the complete removal of ground cover and surface compaction by trampling may occur in areas where animals are concentrated (e.g. near water reservoirs).

Burning: A Wasteful Practice

The above discussion explains the negative attitude of many biophysical scientists towards the use of fire in humid tropical regions. In general, ecologists condemn the burning of any biomass, but particularly of primary and secondary forests, with statements such as 'the farmers of the tropics must be helped to understand that any kind of biomass burning, whether forest, bush, grassland, or crop residue, is a wasteful practice that sooner or later will destroy the very foundation of their habitat' (Weischet and Caviedes 1993).

GOVERNMENT VIEWS ON FIRE

In 1996 the newly completed regional head office of the Department of Environment and Natural Resources (DENR) in Tuguegarao was entirely destroyed by fire. All important documents and files on legal and illegal use of forest resources, court cases, computer files, maps and equipment were lost. The cause of the fire has still not been disclosed, though strong rumours persist that it was not pure accident.

History tells us that forest fire protection and prevention in the Philippines were already in place as early as 1863. This was the year when the first forestry office was established under the direction of the General Administration Civil of the Spanish government. The order is popularly known as Inspection General De Montes. The establishment of the office was the response to the forest destruction at that time, caused by slash-and-burn methods of agriculture.

More than hundred years later, the problem of forest destruction became even worse. The rate of forest destruction during that period was enormous. This was the effect of the declaration of Mindanao as a 'Land of Promise' in the 1950s, when interested Filipinos all over the country were given the right to occupy forested land. Beneficiaries of this 'clear a forest and own the land' approach to agricultural production were forced to use fire, as there were no other ways to clear the land. Forest destruction was estimated to be

200,000 hectares per year. This was believed to be mainly caused by *kaingeros* (slash and burn farmers), so that the Kaingin Law of 1963 (Republic Act 3701) was passed, which provide severe penalties for *kaingeros.* This started the punitive approach to fighting the *kaingin* method of raising crops. People who engaged in this activity were considered criminals by the state.

In 1975, the Presidential Decree (PD 705), known as the Forestry Code of the Philippines, was adopted to find remedies for the effects of forest destruction in the entire country, which again was believed to be mainly caused by *kaingin* or slash-and-burn agriculture. Central Luzon was almost completely flooded in 1972 while Mindanao was suffering from a drought, which brought even greater misery to the Filipinos (Masipiqueña 1989).

In 1991 the National Master Plan for Philippine forestry was adopted, which still serves as the mother of all development, protection, conservation and utilization programmes to be carried out in both private and public forests (DENR 1991a).

All regions of the country prepared and adopted their own regional master plan, with the national master plan as the basic foundation. The Cagayan Valley region was quick to respond to this challenge. One of the objectives of the regional master plan was to strengthen the forest protection activities of the Department of Environment and Natural Resources (DENR) by adopting the integrated forest protection and law enforcement strategy of the department in order to improve the dismal forest protection performance. From 1988 to 1990, the regional annual forest destruction figure was 2,300 hectares and the main cause was plantation and grassland fires (60%), followed by *kaingin* (32%), the remainder being caused by logging and infrastructural development (DENR 1991b).

Forest protection, prevention and control in most of the revised forest codes, including the master plan, are written in general terms. However, these are spelled out in the terms and conditions of all contracts signed between the Department, the People's Organizations and NGOs. Communities, families and individuals could also become contractors in the government projects related to forest utilization, development and conservation.

Participants or contractors are given training and workshops on fire prevention, detection and control, quite different from the education and information campaign through various media concerning the good (using fire to stop or prevent fire), the bad and the ugly about fire utilization as a tool in forest resource extraction, vegetation renewal and agricultural land preparation. In general, the government always emphasizes that burning is a bad practice with regard to the environment, so that during training and workshops, the positive aspects of burning from the point of view of the farmers are not given much attention.

The Department has included precisely formulated policies in neatly prepared and worded documents about forest fires in all its

forestry projects. Responsible units have done their best in taking the necessary preparations before the projects are implemented. However, DENR officials cannot be serious about enforcement of these policies because it is very difficult for the officials concerned to be wearing two hats, the development hat, and the regulatory or policy enforcement hat.

In any case, there are a lot of factors affecting serious enforcement of the law. These are: 1) the inadequacy on the part of the government to deliver the basic goods and services to the people; 2) logistical problems and lack of interest by the DENR department; 3) the economic condi tions of the upland people; 4) the climatic and biophysical characteristics of forest or grassland; 5) the immediate impact not being directly felt by local people; and 6) lack of sufficient support from the higher authorities during prosecutions (Masipiqueña 1993).

With all these factors, large areas of old and new reforestation projects, pasture land, grassland and even natural forest are still being turned into ashes annually. The government was able to monitor all fire damage and even presents extensive statistics on this subject, but it fails to implement effective corrective measures (see, for example, DENR 1996 Appendix 1).

A number of prosecutions were initiated by alleged violators, but the government found it very difficult to pursue most of the cases. Accusations are difficult to prove, and it takes a long time in court before a final judgement can be rendered. Because of this, complainants loose interest. Moreover, fire regulations are one area of legal practice in the country which is subjected to a process of 'humanization', of allowing non-compliance with the regulations to pass by unsanctioned for 'social reasons'. Most of the violators are said to be among the poor sectors of the society and therefore violations are often tolerated.

Punishment is very effective in changing values. Without convictions, people will just consider these policies a decoration, and nobody will be afraid or appreciate the advantages of not using fire indiscriminately.

Research findings reveal that, especially in the uplands, people who are the beneficiaries of government programmes are fully aware of fire policies, the negative environmental impacts and their responsibilities (people are informed during the pre-implementation stage of the project). However, they do not practise or follow the regulations because most of the damage affects areas owned by the government, which are therefore not their concern. But in areas where the bad consequences of fire affect the private properties of many individuals, they themselves group together and find ways of preventing or minimizing the damage to private property caused by indiscriminate burning. Through consensus by community members, many upland areas have made an agreement or even formal resolutions through their leaders, adopting measures for fire

prevention and control and for fire-fighting, including penalty systems. One instituted preventive measure is to clean or remove all combustible material within the boundaries of their farms and houses during the dry season. One example of a penalty system they have implemented is the payment of the value, assessed by both parties together with the elders or *barangay* officials, of the damage to crops or other private property. Payments can be in cash or in kind, by replacing damaged property, or performing work for the victim, or a combination of these. In most cases they settle the problem amicably.

DISCUSSION

An important element in the difference in perception of fire-use between farmers, government and scientists is related to the value and status of the forest. Farmers in search of arable land are primarily interested in its conversion, and fire is an important instrument in achieving this. The government may have classified large areas as forest land and wants to keep it that way for reasons like watershed protection or biodiversity conservation. Thus to a certain extent differences in perception about the use of fire are based on differences in the value attributed to forest land and all its resources and ecological functions. But because fire is such a paramount and powerful instrument, it has attracted a lot of attention.

In addressing the 'hazard of fire' (Wirawan 1993), natural scientists and governments mainly focus on the ecological effects of all previously mentioned categories of fire-use. In their offices pictures with smoking mountains are the symbol of local people 'destroying their own future'. Emphasis is laid on the wrong perceptions and the lack of knowledge among the forest users. In general little attention is paid to the non-environmental reasons behind the burning process. Proposed policy measures are all aimed at reducing the use and frequency of fire and at taking preventive measures to limit its environmental consequences. Most of these measures require considerable input in time and attention and limit some of the positive effects of burning as perceived by the local farmers. Livestock management in the tropics is, however, evolving in the direction of reduced burning as the area of planted pastures and leguminous protein banks increase. Managers are becoming more aware of the potential value of standing feed and of the environmental damage arising from fires.

Burning grasslands is a controversial issue and generates heated debates between government officials on the one hand, who oppose fire-use, and ranchers and farmers on the other. The latter generally support the use of fire, because cattle cannot graze efficiently when

stems and tree trunks are not removed from the land. (Humphreys 1991)

Thus here too the controversy is between the persistence of the forest and other forms of land-use. If the expansion of agricultural land is to take place (legally or illegally) on land presently covered by forests, fire is a logical option, irrespective of its negative ecological effects on the long term. In many cases it is part of the transition process. After all, most of the productive agricultural areas in the world were once covered by forests which were burned down to make room for other types of land-use. Gradually a layer of organic matter has to be created again through suitable farming methods. In that respect land degradation following slash-and-burn agriculture is, in some cases, a transitional phase towards a more domesticated landscape. Soil fertility can be restored to some extent and erosion can be controlled by taking adequate measures. Whether farmers are able and willing to do so depends on a number of factors like security of tenure, use of environmental knowledge and its practical applications, market accessibility, the availability of labour and sources for investment. States can play an important role in stimulating these induced innovations (Henkemans *et al.* 1998). If these measures are not taken, however, the process of land degradation may continue, and the area will virtually lose its potential for cultivation in the long run.[10]

Anthropologists and agricultural economists seem to focus primarily on the economic aspects of the use of fire, even though they also speak out on the assumed environmental consequences. They provide an emic perspective on the productivity of the labour input in comparison with other forms of land-use. In general they have little advice to give to local people, while they urge government officials (and natural scientists) to take the local perspective more seriously. Using fire seems a logical thing to do within the prevailing circumstances, with limited labour available, lack of specialization and a strong cultural preference for a diversified pattern of land-use (farming, hunting, gathering of forest products or keeping cattle; Dove 1985, 1986).

Anthropologists working among traditional forest-based societies have time and time again argue that shifting agriculture among these people is not bad by definition for the forest environment. With long fallow periods and relatively small pieces of land cleared in the forests, soil fertility could be restored within a couple of years, and the cleared space may often even contribute to an increase in the number of some animals as well plants at the local level. Others just refer to sustainable land-use among these groups because resource depletion simply did not seem to occur.

It is interesting, however, that Alvard (1993) believes that a number of these statements lack empirical evidence. He argues that they are based on impressionistic ideas of the characteristics and productivity of tropical ecosystems. They sometimes lack historical

depth and sound ecological knowledge, in particular knowledge of elements not easily visible like nutrient losses, decrease in fertility or reductions of biodiversity. They are based on a superficial understanding of ecological processes.

There are not only differences in fire perception between government officials, scientists and local communities, but also within each of the three groups. In the case of local communities, the use of fire and its consequences are predominantly defined by the type of land-use and related market products. The annual frequency and areal extent of fires in areas with slash-and-burn and permanent agriculture are lower than those in areas where extensive cattle-grazing is practised. Fires on cultivated land with a general discontinuous and often heterogenous vegetation cover are more easily slowed down or arrested, particularly in areas with intensive agriculture and obstacles such as dirt roads and small ponds or reservoirs. Farmers with permanent fields minimize the use of fire and put much effort into keeping fire under control in order to limit damage to fields planted with durable crops (e.g. mango, banana, timber, corn, rice). Fire is usually highly localized and mainly related to the burning of harvest residues and vegetation along roadsides and field boundaries. Cowboys, on the other hand, favour the use of fire and, unlike *cogon*gatherers, burn during the dry season at least once or twice to produce green palatable grasses which will keep their cattle in a healthy condition. Moreover, fires in grasslands with a relatively homogenous and continuous vegetation cover as fuel load tend to spread easily, particularly towards the end of the dry season, and regularly affect adjacent forests, plantations and cultivated fields. Grassland fires are therefore often the subject of local conflicts between farmers, foresters, forest-dwellers, *cogon*-gatherers and cowboys.

Efforts have been made to find a way out of the conflicting views on fire-use. Suggested alternatives for grassland burning and production of palatable forage are mainly aimed at improved pastures and the replacement of native grasslands with planted grass, leguminous forage species and possibly irrigated fodder crops. The regional government of Northeast Luzon is striving to reduce the area under grassland from 550,838 hectares in 1990 to 178,782 in the near future. The remaining grasslands will be converted into well-managed pastures serving to increase regional livestock production (Boquiren 1992). Such conversions and alternatives require some investment in seed and plant materials, fertilizers, machinery for land preparation and vehicles for transporting harvested feed. These suggestions are outside the scope of small-scale livestock owners.

Although most biophysical scientists have a negative attitude towards burning, some of them also favour fire as a management tool in grassland areas. For example, Florece (1996) suggests the implementation of a strategy that 'uses fire to eliminate fire' in order

to enhance the reforestation of grasslands. He reasons that planted trees are susceptible to high-intensity fires, which are most likely to occur in areas with a progressive accumulation of fuel load over time. The damage to young trees can be minimized by the strategy suggested, in which fire intensity is lowered through regular burning. The latter serves as a means of site preparation in the year of establishment and as a means of fuel management in the years to follow. Burning will reduce the fuel load and result in low-intensity fires which are less detrimental to planted trees. The 'use of fire to eliminate fire' is also practised near houses, settlements and farms, where all combustible materials are cleared, collected and burned as a fire-prevention measure during the dry season.

Some farmers and cowboys burn earlier in the dry season, when adequate soil moisture is present to prevent the occurrence of high-intensity fires, which they believe are more damaging to the soil than low-intensity fires. However, scientists claim that the regular burning of green and younger grasses and weeds will exhibit greater losses than the burning of mature, dried plants, and that low-intensity fires are less likely to kill unwanted woody species in farm fields and native pastures (e.g. Humphreys 1991; Pressland 1982).

Hence one may question whether the regular use of fire as a tool of fuel-load reduction contributes to less environmental damage. Moreover, losses in plant nutrients could be prevented by slashing, ploughing and mulching, instead of burning, the highly flammable grass vegetation, a method which could also be followed for the 'removal' of crop residues on cultivated fields. The extra costs of additional labour may counterbalance the costs of fertilizer application, which are necessary if regular burning is practised. The ploughing and mulching of grass and other vegetation may, however, be a difficult task, as pointed out by local farmers.

The above discussion further emphasises the fact that the decision whether, and if so how, to use fire is a mere factor in the operation of vested interests in the type of market product (cattle, roofing material, timber, lumber or durable crops) and counterbalancing the advantage of labour and time-saving techniques with the disadvantage of environmental damage and additional costs for farm input. Intermingled with these explanations are both a firm belief in the traditional and accustomed practice of burning among local people and the lack of alternative practices offered by scientists and government officials.

In this respect, the recently launched GEF/UNDP project on Alternatives to Slash and Burn provides in interesting perspective. Although mainly motivated by the ecological consequences of slash-and-burn agriculture (visible and invisible) and by the loss of biodiversity and the amount of land used per production unit, this project actually pays attention to the other driving forces behind slash-and-burn agriculture (social, cultural, economic) and to the actors operating under different circumstances. Viable alternatives

to slash-and-burn cultivation will necessarily also address the economic (labour availability, technology), social and cultural aspects of shifting cultivation (Van Noordwijk *et al.* 1995).

The use of fire as a weapon has not received much attention in the literature. Biophysical scientists naturally have little to say about this kind of motivation apart from moral judgements. The government in the Philippines has always been quick to condemn this use of fire because of its undeniable impact on hundreds of reforestation projects. But it was urged to take a serious look at this matter because of the failure of so many of these projects. Gradually a new generation of reforestation and social forestry projects was designed, addressing some of the issues which gave rise to the revengeful use of fire in the past (Pasicolan 1996). It is expected that these projects will gradually reduce the use of fire because some of the grievances have been taken away by newly designed projects. To some extent, however, the use of fire is related to the political climate in the rural areas with overlapping claims to the land, competing ethnic groups on the forest frontier and non-simultaneous use of fire as a management tool by various groups. Within this context, fire will for some time remain a powerful and threatening weapon in the process of arranging access to natural resources and the distribution of their fruits.

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NOTES

1. One of the exceptions can be found on the Indonesian island of Siberut, where the local people expand their agricultural fields by cutting down the trees after they have cleared the undergrowth and planted seedlings of fruit trees and other crops. Only then do they cut the trees, which are left to rot. Gradually the leaves, branches and trees will whither while the seedlings start to grow. The vegetation cover protects the seedlings from extensive sunshine and heavy rainfall. Moreover, erosion is limited because the top soil is never exposed directly to the heavy rains, wind and sunshine. The micro-climate under the vegetation cover stimulates the growth of

the planted seedlings. Gradually these crops will start to dominate the vegetation and a natural forest will be replaced by a domesticated forest (Persoon 1994). A similar system has been described from Papua New Guinea by Schieffelin (1975).

2. The common characteristic of fire is the process of oxidation of fuel for which three elements are essential: fuel to burn, oxygen, and heat to bring about ignition.
3. In 1995, for instance, the communication tower of the regional capital, Tuguegarao, was destroyed by a grassland fire, causing enormous damage.
4. Lightning is very rare during the months when most grassland fires occur. 'Lightning' and 'fire from neighbouring fields' must probably be understood in such a way that they bring about the desired effect without anyone being responsible for their ignition.
5. We have the impression that fire in the Philippines is a much more commonly used instrument for these social purposes than in many other countries with similar ecological circumstances.
6. Organic matter has a high cation exchange capacity (CEC), i.e. a soil property which refers to the ability of organic and also clay particles to store nutrients temporarily in the form of cations, which protects them from leaching. Once in the subsoil, which is generally dominated by degraded clay minerals of low CEC, nutrients are easily moved out of the system.
7. The dry season, which is particularly pronounced on the west side of the Sierra Madre Mountain Range, varies with altitude from 0–1 month in forests at 1200 m.a.s.l. or above to 4–5 months at 500 m.a.s.l. or below.
8. For example, the nutrient content of biomass from evergreen forests with a dry-matter content of 200–400 t ha^{-1} may amount to 700–2050 kg N ha^{-1}, 33–137 kg P ha^{-1}, 600–1000 kg K ha^{-1}, 650–2750 kg Ca ha^{-1}, 400–3900 kg Mg ha^{-1}; Sanchez 1976.
9. Nitrogen varies between 0.03 and 0.29 percent and potassium between 0.03 and 0.58 meq 100 g^{-1}, whereas phosphorus contents vary from very low to medium (0.07–19.40 ppm) for Nueva Vizcaya to medium and very high (7.31–181.0 ppm) for Isabela.
10. Efforts to restrict the use of fire while still allowing the conversion of forest land to agricultural land and to plantations for industrial crops are thought to entail great difficulties. In Indonesia, for example, still with a vivid memory of the damage caused by the enormous forest fires in Kalimantan in 1983, again in 1994/1995, and in particular in 1997 in Kalimantan and Sumatra, efforts are being made to restrict the use of fire by a wide range of measures. It is stated, for instance, that no one is allowed to use fire in the process of land conversion, whether farmers or companies charged with clearing land to make room for either transmigration settlements or estates for industrial crops. Alternatives to the use of fire are very costly and labour intensive and therefore not attractive (Riau Pos 1997).

APPENDIX 1

Presidential Decrees/PD. and Departmental Administrative Orders (DAO)

PD 705, 1975, Forestry Code of the Philippines

Republic Act (RA); The Kaingin Law, RA No. 3701, 1963

DAO 24; August 23, 1986. Socialized Industrial Forest Management Agreement (SIFMA)

DAO 60; 1993. Industrial Forest Management Agreement I and II (IFMA I, II)

DAO 31; June 24, 1991. Contract Reforestation (CONREF)

Letter of Instruction (LOI) 1260; August, 1982. Integrated Social Forestry (ISFP)

DAO 2; February 15, 1993. Certificate of Ancestral Domain (CADC)

DAO 96–29; October, 1996. Community Based Forest Management Strategy (CBFMS)

DAO 123; Nov. 25, 1989. Community Based Forest Management (CBFM)

APPENDIX 2

Government Provisions About Fire

Some of the developmental programmes of the government with specific provisions about fire protection, prevention, control, responsibilities and accountabilities are enumerated below.

1. Socialized Industrial Forest Management Agreement (SIFMA): Department Administrative Order No. 24 dated August 23, 1996.

   Under condition 11 of the Terms of Reference (TOR) provision says that SIFMA holder shall protect the SIFMA area from FOREST FIRES and other forms of forest destruction, as well as from encroachment.

   Condition No. 20 also states that a SIFMA holder shall submit to the DENR an Annual Report of activities which shall include, but will not be limited to…the maintenance of boundaries of SIFMA AREA; the maintenance of an ability to PREVENT, DETECT AND SUPPRESS FIRES and other forms of forest destruction.
2. Industrial Forest Management Agreement (IFMA I, II)
   Section 7.8.1 of the Comprehensive Development Plan outline of IFMA states that the holder should prepare a FIRE PROTECTION PLAN for the entire project which should include

the location of FIRE TOWERS, EQUIPMENT needed and the dimensions of FIRE LINES or FIRE BREAKS to be constructed.

Number seven of the 24 responsibilities of the lessee in the contract states that the LESSEE shall protect the leased area from FOREST FIRES and other forms of forest destruction and to place his employees or workers under the direction of foresters or authorized agents…whenever required.

3. Contract Reforestation. Department Administrative Order No. 31 June 24, 1991.
   Section 18 (Site Preparation) of the revised guidelines says that where the reforestation site contain cogon *(Imperata cylindrica),* talahib *(Sacharum spontaneum),* bagokbok *(Themeda triandria and* other FIRE-PRONE grasses, site preparation shall include cultivation followed by removal and or exposure of their roots.

   Under the protection section of this programme, contractors whether individual, family, community, corporate shall protect the area from all forms of destructive agents and required to make a FIRE MANAGEMENT PLAN.
4. Integrated Social Forestry (ISFP)
   Letter of Instruction No. 1260, 1982.

   Under its 'Rights and Responsibilities' of the Certificate of Stewardship Contract Holders, on section 8.5 clearly stipulates that CSC HOLDERS shall PREVENT and SUPPRESS UNAUTHORIZED FIRES within the project area and other areas immediately adjacent…they are not allowed to expand their clearings or make another KAINGIN.
5. Community Based Forest Management (CBFM) Department Administrative Order No. 123, November 25, 1989.

   The number five responsibility of peoples organization (POs) is to protect and rehabilitate and conserve the natural resources in the CBFM area and assist the government in the protection of adjacent forest lands.

   Section 6.1.1.5 of the Community Resources Management and Development Plan requires the HOLDER to state how the FIRE LINES and FIRE BREAKS are to be established. Section 12.3.a of the Terms of Reference (TOR) states that where feasible, established and man a LOOK-OUT TOWERS at strategic locations to DETECT, OCCURRENCE of FIRES and other incidence of forest destruction.
6. Forest Land Grazing Lease (FLGL);
   Terms and condition No. 15 of the contract: KAINGIN and squatting are absolutely prohibited and the LESSEE, with the assistance of the DENR, shall take the necessary measures to secure the leased area against the entry and the occupancy of the land by the KANGAROOS or squatters. Terms and condition No. 18; When FIRE is used in disposing of dried areas, the LESSEE shall schedule the time of burning such

that a representative of the CENR Office concerned could be present, who will supervise the CONTROLLED BURNING of the section to be burned, in order to PREVENT the FIRE from spreading to areas outside the scheduled section.

In the said contract burning is not allowed without approval from the DENR and the presence of its representative. Burning should be properly supervised and initiated, if grass is still partially green, during the late afternoon when winds are low and humidity is high. The fires should be set along firebreaks opposite the wind direction or, if no wind, on the uphill site of the area to be burned so that the fire will move down the slope. Burning should be done only at the onset of the dry season when conditions are still favourable for rapid regrowth of grass. Violations resulting in the spread of fire to adjacent areas shall be sufficient ground to cancel the lease agreement.

7. Certificate of Ancestral Domain Claim (CADC)
   DAO 02, series of 1993 dated February 15, 1993.
   Under section 2. B.5 Rights and Responsibilities of Ancestral Land Claims,...holders shall PREVENT and SUPPRESS DESTRUCTIVE FIRES within and in the vicinity of the ancestral land claim.
8. Community Based Forest Management Strategy (CBFMS), DA No. 96–29, October 1996.
   Under Contract Obligations 2.1: The CBFMA HOLDER shall immediately assume responsibility for the protection of the entire forest lands within the CBFMA area against illegal logging and the other unauthorized extraction of forest products, SLASH AND BURN agriculture (KAINGIN) FOREST AND GRASSLAND FIRES, and other forms of forest destruction, and assist DENR in the prosecution of violators of forestry and environmental laws.
9. Survey Mapping and Planning (SMP)
   Section 2.6.4 of the Components of the Resource Development Plan under Forest Protection of the Maintenance and Protection. A forest protection plan should include early detection of destructive agents whether FIRE, insects, diseases, animals or human.
10. Forest Land Management Program (FLMP) 1994.
    Under letter C section IV of the Manual for Operation for turned-over Contract Reforestation (CREF): Maintenance and protection activities such as, establishment of FIREBREAKS, patrol works, detection of occurrence of pest and diseases... shall be conducted both by family and community FLMs based on the approved Maintenance and Protection Plan which are parts of both the FLP and CFLMDP.

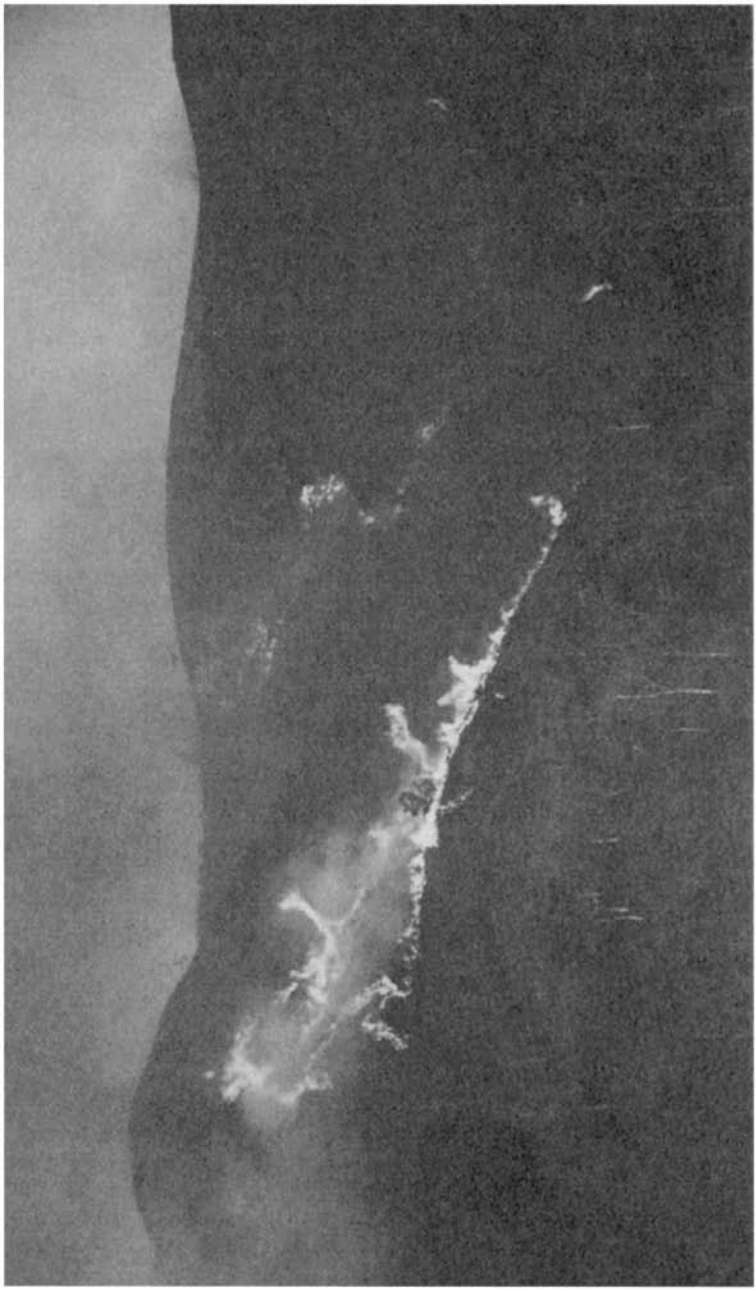

PLATE 7.1 THE USE OF FIRE IN THE CAGAYAN VALLEY

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Chapter 8
THE LIFE-CYCLE OF INDIGENOUS KNOWLEDGE, AND THE CASE OF NATURAL RUBBER PRODUCTION

Michael R.Dove

> How is it that at certain moments and in certain orders of knowledge, there are these sudden take-offs, these hastenings of evolution, these transformations which fail to correspond to the calm, continuist image that is normally accredited? (Foucault 1977:112)

Practically since its inception as a discipline, anthropology has interested itself in the knowledge systems of indigenous peoples. This interest can be traced from early ethnographic work on local patterns of environmental relations and systems of resource-use to more recent work in, for example, ethnoscience and ethnobotany. Within the past two decades, however, the object of this interest has been redefined and reified as 'indigenous knowledge'. Anthropologists have been joined in its study by other social scientists, as well as development scholars, planners and activists, and it has become the focus of newly established institutes and publications (cf. Warren, Slikkerveer and Brokensha 1995). This burgeoning interest in indigenous knowledge is premised on the belief that many failures of development and under-development are due to the privileging of modern, global, scientific knowledge over local, traditional indigenous knowledge. A corollary premise is that a reversal of this imbalance, based on the study and utilization of indigenous knowledge, will have salutary effects. The challenge of successful development, therefore, is seen as ethnographic and pedagogical in nature: ignorance of knowledge that lies outside modern scientific traditions is seen as the problem, which can be remedied through the unearthing and study of this knowledge. This critique of the dominant paradigm of development was initially heralded as a great step forward, but within the past five years in particular, questions have been raised regarding its genuineness.

Both perspectives are reflected in a recent issue of *Current Anthropology,* in which the lead author, Paul Sillitoe, refers to this new study of indigenous knowledge as a 'revolution', whereas one of the commentators, Carmen Ferradás, calls it just another 'self-privileging antinomy' (Ferradás 1998:240; Sillitoe 1998:223, 246).[1] My purpose in the present analysis is to consider the truth in both these views of indigenous knowledge. I will base this analysis on my own study of one system of indigenous knowledge, that of smallholder cultivators of Pará rubber in Southeast Asia.

Smallholder rubber cultivation appears to be a quintessential system of indigenous knowledge, in particular as it pertains to the environment, and it has been heralded as such by scholars. Alec Gordon writes as follows of the environmental virtues of smallholder rubber cultivation in Asia in a 1993 volume entitled *Asia's Environmental Crisis:*

> It is encouraging surely to find a large commercial smallholder crop that is environmentally tolerable.... An appreciation of why people in society do these things for reasons other than environmentalism...is called for. (...)Were the research and development programs and extension services based on smallholder needs and practices, instead of the assumption that what is good for estates should work for small farmers as well, then an ecologically sound prospect would be in view. (Gordon 1993:152, 145)

I have made similarly laudatory statements about smallholder rubber cultivation in a series of articles written in recent years (Dove 1993, 1994, 1996). In one I wrote as follows (Dove 1993:145):

> The great value of the rubber-swidden combination is that it achieves not just minimal competition for resources but mutual enhancement of resource use. This, in turn, enables politically and economically marginal farmers to participate in the market economy to a remarkable extent on their own terms as opposed to the market's, thereby avoiding many of the risks that the latter entails.

The apparent characteristics of this system of agricultural knowledge and practice typify many of the systems that are labelled and studied as systems of indigenous knowledge. It appears to be age-old, local, functional in economic and ecological terms; and it is also, almost by definition, largely unknown and largely invisible.

I suggest that this last characteristic, invisibility, is not merely coincidentally associated with indigenous knowledge. In the introduction of this volume Ellen and Harris note that 'the epistemic origins of much knowledge, whether folk or scientific, are hidden'. I

suggest that this is especially true of folk knowledge and that this contributes to the perceived indigeneity of such knowledge. When the actual origins of such knowledge are revealed, the validity of the label 'indigenous knowl edge' becomes questionable. In the case of smallholder rubber cultivation in Southeast Asia, closer study shows that, whereas this is indeed an impressive system of economic and ecological knowledge, it could hardly be less indigenous in nature. Pará rubber itself, Hevea brasiliensis, is not indigenous to the region: it is a new world exotic, introduced from its native habitat in the Amazon (wherein lies the port city, Pará, from which this rubber took its name). Moreover, the current system for cultivating and exploiting this plant is a historic, hybrid product of developments carried out by both smallholders and state-supported plantations in both the Old and New Worlds. Such a history is in fact not atypical even for what appear to be localized, indigenous systems of resource-use.

This conclusion is supported by much of the recent ethnography on systems of local resource-use. Thus, Frossard (1998) aptly characterizes the admixture of local folk knowledge and extra-local scientific knowledge in some modern Philippine systems of peasant rice agriculture as 'peasant science'. Gupta (1998) similarly calls peasant theory and practice concerning the use of herbicides in contemporary Indian peasant agriculture a 'mix of hybridity, mis-translation, and incommensurability'.[2] In many cases, indeed, the use of the concept of indigenous knowledge in the agricultural sector is not supported by historic patterns of movement of plant genetic resources and social construction of knowledge about their use. As Agrawal (1995:422) writes:

> Certainly, what is today known and classified as indigenous knowledge has been in intimate interaction with western knowledge since at least the fifteenth century. In the face of evidence that suggests contact, variation, transformation, exchange, communication, and learning over the last several centuries, it is difficult to adhere to a view of indigenous and western forms of knowledge being untouched by each other.

Scott (1998:331), referring to the spread of New World maize to Africa in the nineteenth century, similarly suggests that 'the term "traditional", as in "traditional knowledge"…is a misnomer, sending all the wrong signals.'

The inadequacy of the concept of indigenous knowledge has to do not just with hybrid histories, however; it also has to do with contested histories. This analysis of smallholder rubber cultivation in Southeast Asia will show that the actual indigeneity or even validity of knowledge is in many cases less important than the authority and authenticity that is publicly accorded it. The

relationship between smallholders on the one hand and agents of the state on the other has been dominated for almost one century by a contest over who knows how to manage this resource properly and who does not, which is in turn part of a wider contest between local communities and central bureaucratic authorities over who has the right to manage such natural resources. Little light is shed on this contest, or on the role of knowledge construction and representation within it, by the concept of indigenous knowledge. In this case, where knowledge came from (even if this could be determined in any meaningful way) is less important than how it is represented.

My purpose in this analysis is not merely to show that the concept of indigenous knowledge is flawed, however, but also to suggest that this identification of a flaw is itself part of a larger intellectual process. No one involved in current debates about the utility or lack of it of indigenous knowledge has accorded any significance to the fact that this concept was first welcomed and then only subsequently critiqued—yet this fact may be the most important part of the debate. I will suggest that the concept of indigenous knowledge has gone through a sort of developmental cycle, in which it was first more useful and then subsequently less useful-not atypical but just the reverse in this respect. Many recent conceptual innovations in rural development have experienced similar cycles. Examples include 'sustainable development', 'community-based conservation' and 'participatory development', all of which were originally conceived as radical conceptual breakthroughs, but all of which seemed to succumb over time to appropriation by the interests they initially opposed. I have two distinct but related purposes in this analysis, therefore: the first is to critique the concept of indigenous knowledge, and the second is to try to locate this process of critiquing in a wider intellectual process. The premise that underlies the latter purpose is that the way we conceive of indigenous knowledge also tells us something about the way we conceive of knowledge.

In this analysis, I will draw on data I have gathered in Kalimantan (Indonesian Borneo) over the past twenty-five years, plus comparative and historical data I have drawn from the literature. I will begin my analysis with some background on the history of the rubber market and rubber production in South America and Southeast Asia. I will then discuss the historical construction of rubber knowledge in South America and then Southeast Asia, by smallholders and then the contemporary state. Next I will discuss three aspects of this construction: the separation of the knowledge system from its origins, the diversification of the knowledge system and experimentation in the knowledge system. In the succeeding section I will discuss the disutility of the concept of indigenous knowledge for understanding the history of smallholder rubber production in Southeast Asia, especially given the role of chance in

this history. I will conclude by suggesting that the concept of indigenous knowledge originally had heuristic value, which has fluctuated during a conceptual 'life-cycle', and I will explore the significance of this history for modern conceptions of the west and western knowledge.

RUBBER IN SOUTH AMERICA AND SOUTHEAST ASIA

Beginning with the discovery in 1839 that the elastic properties of natural rubber could be fixed by the application of heat and sulphur (i.e. 'vulcanization'), what had previously been a minor tropical forest product became the focal point of a global boom. The best source of natural latex eventually proved to be Pará rubber *(Hevea brasiliensis [Willd. ex Adr. de Juss.] Muell.-Arg.),* a tree occurring naturally in the tropical forest on the right bank of the Amazon, in Brazil, northern Bolivia and Eastern Peru. With the nineteenth-century boom, rubber eventually accounted for nearly 40 percent of the Brazilian economy and brought a level of prosperity to the Amazon not seen before or since (Dean 1987:4). Toward the end of the nineteenth century, Pará rubber was successfully transplanted to Southeast Asia, with the result that, as Dean (ibid.: 4–5) writes, 'Brazil, the original and major supplier of wild rubber, suffered disaster. Its economic growth diminished and its vast Amazon region relapsed into stagnation and despair.'

EXPLOITATION OF NATURAL FOREST RUBBER

Hevea or Pará rubber grows wild in its native forests of South America, at maximum densities of 1–2 trees per hectare. The boomera native tappers or *seringueiros* cleared winding paths several kilometres in length through the forest to 100–200 trees, which they tapped every 1–3 days in season (Barlow 1978:17; Romanoff 1992: 124). The tappers worked under traders or patrons, whose authority was based variously on land rights, coercion, or credit and debt, especially for food (Murphy and Steward 1956; Romanoff ibid.; Weinstein 1983: ch. 1). The lot of the *seringueiros* in this system was sufficiently bad to have drawn critical comment from outside observers almost as soon as the system developed in the mid-nineteenth century (Weinstein ibid.).[3]

There was a historic counterpart to this system of gathering Pará rubber (albeit of somewhat less importance to global trade), which involved the gathering of the indigenous rubbers of Southeast Asia (Dove 1994). A major element in this region's ancient trade in forest products has been plant 'exudates', including gums and hard and soft resins (intra-regional trade in which may date back to neolithic times according to Dunn 1975:120–37), and latex.[4] Within the

trade, the latex gathered in Borneo were divided into three categories: 1) caoutchouc (India rubber, or simply rubber), which refers to rubber from *Willughbeia* spp. *(Apocynaceae)* in Borneo and *Ficus elastica Roxb. (Moraceae)* in the rest of Southeast Asia (Burkill 1966, 2:2300–4; Purseglove 1968:146–47); 2) gutta percha, which refers largely to latex from trees of the family *Sapotaceae,* especially the genus *Palaquium* (in particular *P.gutta (Hook.) Burck.*), whose native habitat ranges from India to the Central Pacific, and Payena, which ranges from Burma to New Guinea (Burkill 1966, 2:1651, 1708); and 3) jelutong, or gutta jelutong, referring largely to latex from trees of the genus *Dyera (Apocynaceae),* in particular *D.costulata (Miq.) Hook.f.,* which are native to Malaysia and Indonesia (Burkill 1966, 1:889–90; Eaton 1952:63). Gathering of all of these native rubbers experienced booms during the latter half of the nineteenth century.

Rubber Cultivation and the Plantation-Smallholder Contest

The extent to which these booms stimulated efforts to cultivate natural forest rubbers varied. Very little cultivation of South American rubbers in South America took place historically. Some observers argue that biological factors (primarily the native rubber disease, South American leaf blight, *Microcyclus ulei (P.Henn.) v. Arx.)* were completely limiting (Dean 1987:5; Purseglove 1968:165); whereas others argue that political-economic factors suppressed any possibility of cultivation long before the biological factors could have become relevant (Bunker 1985:68–9; Weinstein 1983:32). Much more cultivation of Southeast Asia's own native rubbers was carried out, primarily by state and state-supported entities, but even this was insignificant compared with the cultivation that eventually developed in Southeast Asia based on the cultivation of the transplanted *Hevea.* The transfer of *Hevea* to Southeast Asia was so successful that, whereas Southeast Asia produced just one percent of the world's rubber in 1906, it produced 75 percent just fifteen years later, in 1921 (Keong 1976:181).

Rubber was initially an estate crop in Southeast Asia. Estates held a commanding share of (e.g.) Indonesia's rubber production during the industry's early years in the second decade of this century, but they have steadily lost ground to the smallholders ever since. In the past decade, with 2.6 million hectares being held by over 1 million households, smallholders were responsible for three-fourths of total production (CPIS 1993:3; GOI 1992:230–2). Moreover, the smallholders' historical success has been attained without support from successive central governments in Indonesia and often in spite of active government hindrance. Until recently, the Indonesian government directed all its technical, material and

regulatory support to the estate sector (see Booth 1988:206, 225); the only attention that it gave to the smallholder sector was punitive in nature.

The historic competitiveness of the smallholders is based on the 'composite' character of their economies, in which they cultivate food crops—usually by extensive swidden agricultural technology—to meet their subsistence needs, while cultivating rubber to meet their market-oriented needs (Dove 1993).[5] In the case of the Kantu', an Ibanic-speaking Dayak people of West Kalimantan (Indonesia) whose agricultural system I studied in depth, the primary subsistence crops are dry rice (as well as some swamp rice) and a wide variety of non-rice cultigens, including a second cereal, maize, a number of different cucurbits, and a number of different tubers, including cassava and sweet potato and, to a lesser extent, taro. When the rice crop fails to meet subsistence requirements (as it may three years in ten), the market crops are sold to buy rice. Pará rubber is the most important market or cash crop for the Kantu', with pepper *(Piper nigrum L.)* being a distant second.

THE HISTORICAL CONSTRUCTION OF RUBBER KNOWLEDGE

The history of rubber exploitation in the New and Old Worlds as just summarized is also a rich history of the migration, alteration, invention, combination and contestation of knowledge, a history that aptly illustrates the problem with the concept of indigenous knowledge.

South America

In the 1870s, England made four separate attempts to ship rubber plants out of the Amazon Basin, involving three different species (*Hevea, Castilloa,* and *Ceara*). The most successful attempt was made in 1876, by an Englishman by the name of Henry A.Wickham. He collected 70,000 *Hevea* seeds and brought them to the Royal Botanic Gardens in Kew, England, where 2,700 were successfully germinated, 2,500 of which were then shipped to England's colonies in Asia and became the literal foundation of the region's rubber industry. Wickham became famous (in some quarters infamous) for this one deed.[6] Less well-known is the fact that he spent much of the rest of his life trying to ensure that what was transferred to Asia was not just the genetic resource, *Hevea,* but also the characteristic New World system of knowledge for exploiting this resource, about which Wickham claimed to be an expert and on which he wrote a book in 1908 (entitled *On the Plantation, Cultivation, and Curing of Pará Indian Rubber).* This book—which represented Wickham's effort to adapt the native system of forest gathering to a plantation

system—already represented not the South American reality, therefore, but a reinter-pretation and reinvention of that reality.

Wickham lists a number of points in his book that he deems critical to the success of *Hevea* in Asia. First, he points out that *Hevea* is a forest tree and thus it should be cultivated ('on lines of forestry') in a forest-type environment, not, for example, in a garden (Wickham 1908:3–4, 33).[7] He was critical, however, of attempts simply to plant *Hevea* (as a 'self-elimination forest product') in standing natural forests (ibid.: 57–8, 63), as was the practice of the Netherlands Indies Forest Service, with both *Hevea* and *Ficus,* till 1912 (Cramer 1956:257).[8] Wickham (ibid.: 64) objected to this practice because he said that *Hevea* took at least three times as long to mature under forest shade as out in the open, so he recommended managing *Hevea* in plantations instead (which is indeed how all *Hevea* came to be managed). His specifications for plantations included wide spacing (which came to prevail on estates but not smallholdings), and also a no-till, no-burn policy (which was partially followed, in different ways, by both estates and smallholders; Wickham ibid.: 12–23, 65, passim). He also claimed (ibid.:56–7, 61) that *Hevea* plantations should not be established on swampy lands, an admonition that was widely ignored during the early years of the industry in Southeast Asia and then subsequently embraced when it was found that Wickham was right. His chief failure involved his advice for tapping *Hevea:* he insisted that *Hevea* should only be tapped by means of a chisel and a mallet, following the native Amazonian system then in use (ibid.: 24–8). A far superior V-shaped or 'herringbone' style of cut, using a modified farrier's knife, was developed by Henry Nicholas Ridley while he was director of Singapore's Botanical Gardens.[9] Although Wickham (ibid.: 37–8) insisted that this 'excision instead of incision', as he put it, would lead to root failure and possible pest infestation, Ridley's system prevailed and was eventually universally adopted, causing his fame to surpass that of Wickham's (Purseglove 1956, 1957). Wickham's final recommendation (ibid.: 29, 38–39) was for the latex product to be preserved by an 'antiseptic smoke cure', which met with a varied response, being followed by most estates but only some smallholders (for example, I have observed smokehouses among Banjarese in South but none among the Kantu' of West Kalimantan). The transfer of rubber from the New to Old World illustrates, in short, a significant disjunction between the material resource and the attendant knowledge system for exploiting it.

Southeast Asia

It has been suggested that the colonial programme of transplanting *Hevea* to Southeast Asia was stimulated in part by the observation

by colonial officers of the abundance of native rubbers in this region (Wolf and Wolf 1936:152), and the colonial powers did experiment with a number of them before committing themselves exclusively to *Hevea*. Cramer (1956:226) lists the species experimented with as including *Castilloa, Ficus, Funtumia* and *Manihot* spp., and even lianas like *Willughbeia firma Bl.*[10] Cramer (1956:264) also suggests that a plantation of *Ficus elastica* in Java—established no later than 1864, and thus well before the introduction of *Hevea*—may be the first rubber plantation in the world.

Whereas the presence of indigenous latex may have exerted an influence on the colonial transplantation project, there is no evidence that the indigenous systems for exploiting them did so. Nor is there much more evidence of influence from the South American boom era system of exploitation, Wickham's book notwithstanding. This is not to say that there was no feedback from New World to Old, as, for example, is reflected in the fact that Ridley began his tapping experiments with the same mallet and one-inch chisel that Wickham recommended (Purseglove 1957:137). But the fact that Ridley did not finish there indicates that there was no compulsion to take that feedback to heart. Indeed, Wolf and Wolf (1936:166) write:

> Had the British Government's botanists at the Eastern gardens and experimental stations and their planter constituents been well versed in Amazon lore, had Wickham's report to the Government of India been broadcast as a Bible instead of bureaucratically being filed away to gather dust, things would have started off on a Brazilian basis. This would have meant a moderate success, and the heavy odds are that widely spaced trees and reckless and wasteful slashing in seringuero style would have prevailed....

The result was that the colonial states did a great deal of reinvention. Wolf and Wolf (ibid.) continue:

> Needed was the very plantation system that came into being in the East, and it came into being because men, knowing nothing whatever about the Hevea, blundered and experimented and tested through failure after failure until they hit on the methods of planting, of tapping, of coagulating, that gave the sort of results we know today.

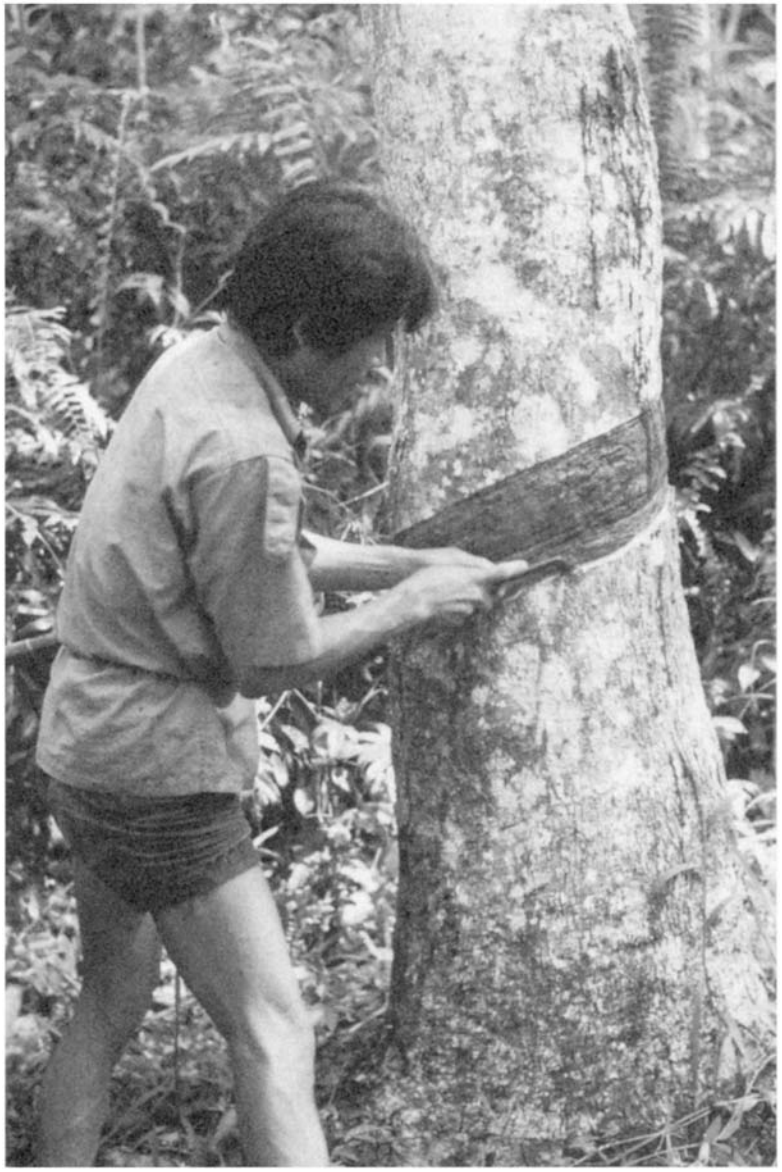
The results of some of these experiments were successfully passed on from the estate system to the smallholder system in Southeast Asia. Most notably, the broad outlines of Ridley's system of tapping —involving a spiral, V-shaped cutting of the bark with the modified farrier's knife—were universally adopted among smallholders in

Southeast Asia. Another notably successful transfer of technology involves the use of mechanical rollers to press water out of the coagulated rubber slabs. The five-nation, International Rubber Regulation Agreement of the 1930s altered the tax structure to favour rubber with lower water content (in an ultimately unsuccessful effort to preserve the estate sector from the competition of the smallholder sector [Dove 1996]), as a result of which cast-iron 'rubber mangles' spread in a few years into even the remote interior of Borneo. On the other hand, smallholders did not adopt the system of clean weeding that was initially favoured on the estates. (The estate sector eventually reversed itself and followed the smallholders' lead on this). Perhaps even more importantly, the smallholders did not adopt the economics of the estate system (and this helped to give them their historical advantage vis-à-vis the estates). Thus, most smallholders adopted rubber cultivation as part of a portfolio of activities and not as their sole source of livelihood. In part as a result, their production of rubber tended to be more consumption- than production-driven. That is, they tended to produce as much rubber as they needed to produce, not as much as they could produce.

SOUTHEAST ASIAN SMALLHOLDERS

Contrary to widespread belief (e.g. Cramer 1956:292; Keong 1976: 182), the smallholders of Southeast Asia did not simply model their systems of rubber management after the estates (Missen 1972: 214; Pelzer 1978:282–3). The smallholders drew to some extent on their experience of exploiting the region's indigenous forest rubbers (which was part of the indigenous knowledge base of smallholder rubber development in Southeast Asia). I have suggested elsewhere (Dove 1994) that the linkage between the cultivation of *Hevea* and the earlier gathering of wild rubbers was in effect one of 'domestication': a trade based on gathering wild rubber became a trade based on cultivating rubber, albeit not of the same species.[11] Whereas the smallholders engaged in some cultivation of indigenous species, they did much less than the estates did; nor did the smallholders experiment with as many different species as the estates did before settling on *Hevea* (Cramer ibid.: 294). In important other ways, however, the smallholders engaged in a considerable amount of independent reinvention, and the result is a unique contribution to agricultural development.

A key, perhaps *the* key to this development was the linkage that the smallholders developed between rubber cultivation on the one hand and the swidden cultivation system on the other. Cramer (1956:292–4) suggests that this was the main factor in the rapid spread of *Hevea* in Indonesia after 1915 (cf. Pelzer 1978; Dove 1993). This linkage is based on both temporal complementarity



PLATES 8.1 KANTU' SMALLHOLDER TAPPING ONE OF HIS RUBBER TREES.

(smallholder rubber can be tapped during idle periods in the swidden cultivation calendar, and during busy periods in the swiddens it can be left alone to recuperate; Dove ibid.: 139–41) and

spatial complementarity (the relative intensity of smallholder rubber ensures that it will occupy very little of an extensive swidden territory, and even then it is usually possible to confine it to areas less suited for swiddens; ibid.: 141–2). Spatial and temporal factors combine in perhaps the most important complementarity of all: multiple and dispersed rubber gardens can be made at little cost, which allows the smallholders actively to tap only that one garden in a given year that is nearest to that part of the swidden territory that they wish to farm (Dove 1985:63–4). The colonial powers in the region also invented joint swidden and cash crop systems—the tobacco-swidden system of Deli Sumatra and the teak-swidden *(taungya)* system of Burma are perhaps the most famous—but in these cases it was the estate or forestry sector that profited from the complementarity (treated as a subsidy of the state, not the smallholders [Bryant 1994]), whereas in the case under discussion it was the smallholders that profited from it. When the smallholders profit from the complementarity, they are empowered by the production system; but when the state (or parastatal sector) profits, the smallholders are disempowered by the system.

A second, important aspect of the cultivation system devised by the smallholders was its agro-ecology. The plantation sector (especially in the British colonies [Cramer 1956:286]) spaced their trees widely and clean-weeded their estates to maximize production and minimize the threat from pests and disease, especially root disease. In contrast, the smallholders planted their rubber two or three times as densely (Bauer 1948:56; Cramer ibid.: 305) and permitted natural secondary growth to spring up among the rubber trees during periods of non-tapping. Even during tapping they only lightly cut back this growth. We now know that these smallholder practices raise the air temperature and humidity within the rubber grove, which favours latex production and the quick recovery of tapping scars and also inhibits pests and disease (which actually found the clean and open character of the estates more to their liking; Bauer ibid.: 58). Recollecting that *Hevea* is in origin a forest species, it makes sense that it would find a forest-like environment (which 'mimicked' the forest, as Wickham [1908:33] had recommended) more hospitable.[12] The smallholder practice of encouraging natural secondary growth among the rubber trees has another advantage as well: this growth includes naturally seeded second- and successive-generation rubber trees, which thereby extend the use-life of the rubber garden (viz., the new trees replace old trees that cease to be productive).[13]

A third distinctive aspect of the production system devised by the smallholders involved its socio-economic structure, which encompassed a number of innovations.[14] One was the participation (in most parts of Indonesia and Malaysia) of women in production, which contrasted with the global tendency for women to be marginalized by the introduction of cash-cropping.[15] Another

innovation was the transactional character of rubber production: as suggested earlier, most smallholders adopted rubber as just one element in a portfolio of economic activities. Rubber production was typically distinguished from the other components of the portfolio in being more monetized and focused on the market needs and short-term reproduction of the household in contrast to the region's systems of rice production, which tended to be less monetized and to focus more on the subsistence needs and long-term reproduction of the group. A related innovation involves the intensity and timing of production: given rubber's role in the household economy, smallholders could produce more, if they chose, when market prices fell (i.e. an 'inverse production curve' [Boeke 1953:125–6; Lindblad 1988:71, 117]), or they could produce less, or they could not produce anything at all and just live off their subsistence activities. A final, related innovation consisted in the creation of a new and distinctive set of tenurial rules for rubber gardens, which were also oriented more toward household than community reproduction, and which in addition addressed the need to be able to defend property rights against the threat of appropriation by extra-local actors, including the state.[16]

A fourth and final area of smallholder innovation involved the ideology of production. The most important innovation of all may have been the development of a mechanism for rationalizing the combination of the two distinct transactional orders: on the one hand market-oriented cash-cropping, and on the other hand subsistence-oriented food production. The reconciliation of the two orders is exemplified in the dream of the rice-eating rubber tree that swept through the interior of Borneo in the 1930s, catalyzing an effort by Dayak smallholders to balance their involvement in the two types of agriculture (Dove 1996). The resultant ability of most smallholders to weather a crisis like the depression in better fashion than the estates shows that some of the most creative and successful production of rubber knowledge took place among smallholders, not estate managers. This fact has not been accepted by the plantation sector, however.

On the contrary, during the colonial as well as post-colonial eras, the estate sector focused its attention on protecting itself and deprecating the smallholder sector. During the 1920s and 1930s, for example, competition from the smallholder sector was regarded as an unwholesome 'survival of the fittest', which was deemed prejudicial to capital and empire, and against which the estate sector invoked international regulatory protection (Dove 1996; Drabble 1973: 167–9).[17] The Dutch, British and other partners in the International Rubber Regulation Agreement of the 1930s claimed that they were only after a 'reasonable return to the average efficient producer' (Bauer 1948:200), but they would not explain how they defined this category (ibid.: 195), and in practice it was clear that it excluded all smallholders by definition, notwithstanding

the fact that they produced the most rubber for the lowest cost. The colonial estate sector justified its hostility to the smallholders by interpreting the smallholders' inverse production curve as a disruptive phenomenon that belonged to an entirely alien system. Boeke's (1953) thesis of the dual economy of a European-dominated plantation sector and a native subsistence-oriented sector epitomizes this kind of thinking. The belief in a dual economy of unlike and unmixable elements became state policy in Malaysia during the first decades of this century, when the state actively tried to keep Malays involved in rice production and uninvolved in rubber production (Barlow and Drabble 1990:197).

Since it was potentially difficult for the estate sector to justify its opposition to the smallholders on the grounds of the latter's competitiveness (given the fact that the rubber-poor and rubber-hungry US was ever on the look-out for signs of price-busting market manipulation), the colonial estate sector framed much of its critique of smallholder agriculture in terms of various alleged threats from smallholder cultivation practices.[18] This included threats to the smallholders themselves: thus, the colonial estate sector claimed that the smallholders' productivity and competitiveness were due to over-tapping, which threatened the long-term sustainability of their own resource-base (Bauer 1948:37, 68).[19] When investigated in the field, however, this charge proved to be without foundation.[20] The estate sector also was concerned about threats to itself, especially from the diseases that were thought to be promoted by smallholder practices. Again, however, field studies showed that this threat was without basis.[21] Experience showed that the greatest threat of disease was posed by the cultivation practices of the estates, such as clean-weeding. But when the estate sector finally recognized this and adopted the smallholder innovation of permitting the growth of natural ground cover in the rubber groves, this innovation was not credited to the smallholders but was appropriated by the estate sector. Thus, the estate sector glossed its no clean-weeding 'innovation' as 'rubber forestry' (cf. Pelzer 1945:78), while it continued to denigrate smallholdings with related but more negatively-loaded phrases like 'rubber jungles'.

Contemporary Southeast Asian Estates

The contemporary plantation sector in Southeast Asia, especially in Indonesia, persists in this pattern of locating all innovation, knowledge and value in itself as opposed to the smallholder sector. The stakes in the competition between plantation and smallholding are at least as high as they were during colonial times, affecting as they do not just market share but the wider issue of control of rural land and labour resources. This competition is most evident when

smallholdings are physically cleared to make way for parastatal plantation projects. Smallholdings are regularly appropriated today, typically without choice and with inadequate compensation, for timber concessions, pulp plantations and nucleus estates. It is far from rare—and is probably the norm in the case of rubber plantations—for the parastatal enterprise that appropriates the land to plant the same cash crop that had been growing there on the erstwhile smallholding. (For example, in 1993 I was told by the managers of a combined nucleus estate/transmigration project in West Kalimantan that most of the land that they cleared for their plantation had been *hutan karet/hutan sekonder* [rubber jungle/secondary jungle].)[22]

The state's principal development programme for smallholders has been the so-called 'nucleus estate', which consists of smallholdings (the so-called plasma) surrounding a central parastatal nucleus. This spatial design reflects the explicit premise of the programme that the 'repository of experience' of the parastatal plantation is critical to smallholder development (Barlow 1991:100). The possibility that other, more relevant repositories of expertise exist, as among the rubber smallholders themselves, is thus denied out of hand. This spatial design also reflects the perduring estate desire to ensure that any smallholdings in its vicinity are under its control. Smallholdings not under estate control, which are called 'enclaves', are seen as a threat to estate management and the control of processing and marketing. The nucleus estate is yet another reinvention of the system of rubber cultivation, therefore, and one that privileges the model of (and control by) estates as opposed to smallholders.

There are additional bureaucratic mechanisms that achieve the same end by making smallholdings appear insignificant, if not, indeed, invisible. These include government bureaucratic structures that prioritize the gathering of data on rubber products as opposed to rubber production (i.e. smallholder rubber exports are carefully tracked and taxed, but smallholder rubber acreage is under-counted in national statistics[23]) and the use of language like 'rubber jungle', which, as previously noted, deprecates the quality of management involved in smallholder cultivation. The impression of primitiveness associated with smallholdings is preserved and enhanced by a policy of focusing government research and development resources on estates or estate-like hybrids such as tha nucleus estate (Gouyon, De Foresta and Levang 1993:199). The clonal rubber that has been the focus of so much Indonesian research, for example, is not well suited to conditions on smallholdings (ibid.: 199–200). Occasional experimental projects have shown that it is in fact relatively easy to address smallholder conditions and needs, but that it is very difficult to win government support for anything that does not favour the parastatal sector.[24]

The Dayak smallholders of Borneo actively contest this denial of the importance of their system of rubber cultivation. A recent publication by a prominent Dayak NGO in Pontianak reports the following assertion made by a Dayak leader in Pontianak to the vice-Governor of the province:

> *Ada ratusan calon sarjana dari Simpang Hulu. Mereka bukan karena perusahaan HPH atau HTI atau PIR melainkan karena karet. Jadi tidak ada alasan jika kami mau menerima HTI atau PIR atau sejenisnya di Simpang Hulu.…* There are hundreds of holders of Bachelors' degrees from Simpang Hulu. This [is] not because of logging concessions or pulp plantations or nucleus estates but rather because of [smallholder] rubber. Thus there is no reason for us to accept pulp plantations or nucleus estates in Simpang Hulu…. (IDRD 1994:24)

Dayak assertiveness regarding the value of their system of smallholder cultivation is reflected in their demands for compensation whenever their rubber gardens are appropriated for government projects and in their continued planting of rubber, all of this negative feedback notwithstanding. Indeed, continued planting and the resultant increases in the amount of land under rubber have enabled Indonesian smallholders to match the research-driven increases on productivity in the parastatal plantations and so maintain their share of national rubber production: smallholders held at least 85 percent of Indonesia's rubber acreage in 1993 (probably more, given the chronic under-recording of smallholder rubber acreage [Gouyon, De Foresta and Levang 1993:182]) and produced 75 per cent of its rubber (GOI 1994:231–4).

KNOWLEDGE PRODUCTION

This history of the construction of knowledge of rubber cultivation is not consistent with the concept of indigenous knowledge. This history shows movement, invention and contest that are inconsistent with the whole idea of indigeneity. This inconsistency stems, in particular, from three critical 'realignments' involved in the transplanting of *Hevea* from South America to Southeast Asia: first, the separation of rubber not just from its biological but also from its cultural environment; secondly, experimentation with the system of rubber production; and thirdly, the diversification of rubber stake-holders.

Cultural Versus Biological Constraints on Production

It has long been known that removing a plant from its native habitat confers the advantage of freeing the plant from the pests and diseases with which it evolved, and this advantage is often invoked to explain why so many tropical crops were developed outside their natural ranges. As examples of such crops, Purseglove (1957:128) mentions, in addition to rubber, cocoa, quinine, coffee, cloves, nutmeg, sugar, bananas, lime and vanilla. Some rubber scholars, most notably Dean (1987) in recent years, have thus attempted to explain why efforts to cultivate Pará rubber were so much more successful in Southeast Asia than in South America in terms of the fact that Southeast Asia is free of rubber's most serious native pest, namely leaf blight *(Microcyclos ulei)*.[25]

However, I believe that this explanation overly privileges biological variables at the expense of equally if not more important political and economic ones.[26] Whereas market-oriented tapping of South American trees dates from the 1840s and the first private plantations in Southeast Asia from the turn of the century, the first large-scale attempt to establish rubber on plantations in South America was not made until 1928, by the Ford Motor Company (Purseglove 1968: 147–8, 150–1). The fact that this first effort succumbed to leaf blight—and gave prominence to the leaf blight explanation—does not explain why it took over three-quarters of a century to make the effort in the first place. Nor does it explain why no efforts at cultivation were made in the latter half of the nineteenth century, when a number of different trees were being exploited for rubber, including two members of the genus *Hevea* that are naturally resistant to leaf blight (namely *Hevea benthamiana Muell.-Arg.* and *Hevea nitida Mart, ex Muell.-Arg.*; *Hevea brasiliensis* was not established as the premier source for rubber until the turn of the century [Purseglove ibid.: 147].) As Weinstein (1983:32) writes:

> These 'ecological' factors cannot be cited as actually having discouraged hevea planting, since it was only after the decline that they were widely acknowledged by the scientific community. […]Their 'discovery' would have come much earlier if a concerted attempt had been made during the rubber era.

Other obstacles to cultivation—including the development of a more productive and sustainable system of tapping—were successfully overcome in Southeast Asia. The contrasting failure to overcome the problem of leaf blight in South America suggests that different incentives were at work.[27]

I suggest that the benefits of removing a plant from its biological environment may be no more important than the benefits of removing a plant from its social, economic, political and conceptual

environ ments. I have already suggested that this removal made possible the development of a far more efficient technology of exploitation. Wolf and Wolf (1936:166) claim that it was historical good fortune that resulted in the Southeast Asian system of rubber being created from scratch instead of being modelled along Amazonian lines. I suggest that this removal also made possible additional, subtler innovations that were key to the future success of its cultivation by Southeast Asian smallholders. One of the foremost of these was in tenurial regimes. The possibility of tenurial innovation (mentioned earlier) was raised as soon as Pará rubber was transplanted out of its native habitat. Within this native habitat, Pará rubber could be planted but it did not have to be (nor was it often);[28] outside of its native habitat, in contrast, as in Southeast Asia, it had to be planted. This distinction is significant because in general in Southeast Asia, as in South America, 'Cultivated crops, not wild rubber trees, served as proof of possession' (Weinstein 1983:35). Pará rubber was a wild rubber tree in South America; it became a cultivated crop in Southeast Asia. By planting or not—and thus by raising or not issues of public versus private domain and of nature versus culture—the potential for control by state elites versus smallholders is very different.[29] The fact that smallholders in Southeast Asia planted their Pará rubber trees empowered them in a way that was not true for their prior exploitation of native rubbers or the prior exploitation of Pará rubber by the native *seringueiros* in South America.[30]

Experimentation

The second and related type of 'realignment' associated with the transplanting of rubber from the New World to the Old involved prolonged experimentation in rubber cultivation. Because *Hevea* was transferred to Southeast Asia largely without reference to the South American experience (Wolf and Wolf 1936), a good deal of experimentation was necessarily carried out (cf. Dean 1987:7). Indeed, the introduction of *Hevea* itself was preceded by considerable experimentation with other species, as noted earlier. Even once the choice of planting stock had narrowed down to *Hevea,* the introduction still had a very experimental character. Ridley initially had little success in persuading Malaysian planters even to consider planting *Hevea.* Indeed, his continued promotion of *Hevea* earned him the sobriquet of 'Mad Ridley' among the planters. Even his own government was dubious: according to Ridley himself, he was 'carpeted by the Governor [of Malaya], Sir Frank Swettenham, who admonished him to waste less time on an uneconomic product such as rubber' (Purseglove 1957:135). This situation did not change until cyclic disease outbreaks and market reversals led planters to become disillusioned with coffee and tea

and more willing to experiment with rubber (Davidson 1927:677–9; Keong 1976: 35–6; Purseglove 1957:135).[31] In addition, as cultivated rubber spread out into the smallholder population in Southeast Asia, a separate tradition of experimentation was begun and carried on. Just as the system of estate rubber in Southeast Asia was created from the nearly 'clean slate' that was brought from South America, the Southeast Asian system of smallholder rubber was created from the nearly 'clean slate' that was taken from the estates.

The biggest experiment of all in the transplanting of rubber to Southeast Asia was an unexpected one, to determine whether the estate or the smallholder would be more competitive—and the answer was the latter. In essence, the smallholders did to the estates in Southeast Asia what Southeast Asia as a region did to South America. In both cases the loser of this experiment was associated with the status quo (and in both cases it was similarly unappreciative of the outcome). This experimentation therefore seemed to privilege the new versus the old. Indeed, each reinvention of the rubber system of production was associated with a politico-economic realignment (first between South America and Southeast Asia, and then again between Southeast Asia estates and smallholders), and each reinvention was inimical to the status quo. The process of reinvention is obviously highly sensitive to competitive factors, the 'survival of the fittest' for which the estate sector wisely professed such distaste (Drabble 1973:167).

The experimental character of the transplanting of rubber, the sundering of the material resource from the body of knowledge previously associated with it, is reflected in the angst this engendered in the colonial figure most associated with the material resource—Wickham, the initial agent of the transplanting. His writings are laced with criticisms of the 'experimenting' being done with *Hevea:* he writes that the transfer of *Hevea* to Asia 'can hardly be called an experiment [and] is calculated to be of the greatest value to practical planters in all the Equatorial colonies', who can be furnished (presumably by Wickham himself) 'with authoritative data…of a nature to be depended upon' (Wickham 1908:71). He even (ibid.: 59) supports his opposition to experimentation with the claim that South American natives had already carried out the necessary experimenting and already perfected *Hevea* (which is an unexpected invocation in this context of indigenous knowledge).[32] He writes:

> There is really nothing experimental about 'fine Pará.' It is, and was (probably generations before the advent of the Spaniard into North America), made more durable—of more climate-resisting quality—than any factory-made, by certain of the Indian forest tribes (such as the Guyangomo and the Piaroa).

Wickham's (1908:58–9) criticism of experimentation has a self-aggrandizing quality about it: 'Much time, doubtless, has been lost in "experimenting", and it would seem a pity that experience and recommendations, as set forth in my India Office Reports, was not made effective and available for the practical man—the man on the spot.' It seems clear, therefore, that Wickham's antipathy toward experimentation was based on the fact that experimentation is inimical to the South American status quo, including its cultural as well as its biological aspects, to which his status was tied. The truth of this linkage is reflected in the fact that whereas Purseglove (1956: 17) credits Wickham among others for the introduction of *Hevea* to Asia, he states that 'its exploitation and establishment as a plantation crop was due almost entirely to Ridley'. The separation between the material resource and the knowledge of the resource that is implicit in Purseglove's observation was inimical to Wickham's authority, and Wickham appears to have anticipated and lobbied against it.

Diversification

The third 'realignment' involved in the transplanting of rubber to Southeast Asia pertains to a re-shuffling between the major stakeholders. My effort in the preceding section to separate knowledge from indigeneity helps to break down an overly simplistic local-extra-local dichotomy, helping us to see that the actors in this game are not monolithic. One major axis of differentiation that I identified was between the New and Old World industries.[33] Another dimension of the Old World-New World division involved the differences that have been described between Wickham and the Southeast Asian plantation establishment over how to grow rubber. The other major axis of differentiation described in the preceding section was between the estate and smallholder sectors in Southeast Asia. On the other hand, some divisions that might have been expected to exist did not. Kew gardens included in the distribution of Wickham's rubber seedlings not just the British colonies in Asia but some non-British ones as well, including Indonesia (Cramer 1956:237; Dove forthcoming).

Some unexpected related alliances also were formed. Wickham's arguments with the Southeast Asian estates led to his unlikely alignment with native Amazonian tappers, who, he insisted, had already done all of the experimentation that needed to be done. Similarly, Wolf and Wolf (1937:237) say that the Asian smallholder became the greatest ally of the rubber-hungry US in its battle against the Southeast Asian estate rubber cartel.[34] And whereas the estate sector presented a largely united front during the 1920s and 1930s (the era of international rubber regulation), this is less true today. For example, Malaysia raised the average yields of its

smallholders by 126 per cent between 1965 and 1980 by means of a simple low-cost programme of technological assistance (cf. Barlow and Tomich 1991:50). This greatly altered the dynamics of its estate-smallholder relationship compared with Indonesia, where no such assistance was provided and where yields rose just 17 per cent during the same time period (Booth 1988:211–12).

DISCUSSION: KNOWLEDGE AND POWER

The three 'discontinuities' central to the historical production of rubber knowledge, which were discussed in the preceding section (that is, separation from its origins, experimentation and changes in production technologies, and diversification of stake-holders), are all inconsistent with the concept of indigenous knowledge, undermining its premises of localization, continuity and homogeneity. By the same token, the concept of indigenous knowledge 'writes over' the aforementioned historical discontinuities. The purpose of this section is to ask what the implications of this over-writing are for relations of power.

'Dividing Practices'

The concept of indigenous knowledge implies that the system in which knowledge is embedded is isolated and outside history, which does not hold even for the most remote of the smallholder groups (for example, the tribal Kantu') that have been discussed here, who have been engaged with the wider world for a century now (just in terms of rubber) in both the reception and reciprocation, adoption and adaptation, of genetic materials and technological systems. The concept of indigenous knowledge not only suggests that there is no outside knowledge in the indigenous community, it also suggests that there is no indigenous knowledge in the outside community—an unreal dichotomy that, again, is not illuminating (since it obscures not only the fact that smallholders are using a tapping technique developed in the government estate sector, for example, but also that the latter sector is itself following a ground-cover strategy developed in the smallholder sector). The history of rubber production suggests that both sides of this equation are false and that all knowledge systems always represent a confluence of local and extra-local experience.[35]

The vision of a chasm instead of a confluence between local and extra-local systems of knowledge is not sociologically neutral: it creates conceptual space for the exercise of central bureaucratic authority in 'bridging' imaginary divides, which thus privileges such authority (cf. Ferradás's [1998:240] earlier cited comment that indigenous knowledge is a 'self-privileging antinomy'). The constructed division between indigenous and non-indigenous

knowledge is an example of what Foucault (1982:208) calls 'dividing practices', referring to the many ways by which societies objectify the other and privilege the self (for example, by distinguishing between the mad and the sane, the sick and the healthy, criminals and law-abiding citizens). The concept of indigenous knowledge is self-privileging not only because it emphasizes the positive things that extra-local bureaucracies can do, but also because it draws attention away from the negative things that they might be doing. By problematizing the division between the local and the extra-local, the concept of indigenous knowledge obscures existing linkages between local and extra-local systems; and by emphasizing the need to bridge the divide, this concept obscures the possibility that the divide may actually need to be not bridged but negotiated (that is, the vision of a non-relationship makes it difficult to recognize the presence of a contested relationship). In short, the separation of local and extra-local knowledge systems implicit in the concept of indigenous knowledge leads to the eliding of interaction and contestation between them.

Such interaction and contestation was integral to the history of rubber knowledge surveyed in the preceding section. This survey revealed a history rife with struggles over power and authority, many of which encompassed a struggle over knowledge (of rubber), and in particular over public representations concerning who had knowledge and who did not. Historically (and still today, to some extent), the rhetoric of the Southeast Asian estate sector concerning smallholders has been dominated by a contest over knowledge. The estate- promoted debates concerning good versus bad practices of tapping, weeding, and so on all represent an attack on smallholder knowledge and an explicit privileging of estate knowledge. These debates turn not on the indigenous versus non-indigenous nature of knowledge, but on its authority—whether estates or smallholders know best how to exploit natural resources and, therefore, which has the greatest right to do so.

This suggestion, that knowledge systems are not so much separate and different as they are competing and contested, runs counter to one of the major premises of the concept of indigenous knowledge, which is that local communities (like the Southeast Asian rubber smallholders) hold autonomous bodies of knowledge that are unknown to the wider society, and that the study of this knowledge by the wider society is a key to local empowerment and development. The data presented here on the historical production of knowledge about rubber suggest, to the contrary, not only that the knowledge system of Southeast Asian smallholders has not been autonomous, but also that the wider society (that is, the state-supported estate sector) has not been interested in studying it because it has had its own competing system of production and knowledge. What we see in the rubber case is therefore not a case

of misunderstanding or ignorance of indigenous knowledge, but a case of unwillingness to accord any validity to it.

In this and similar cases, the concept of indigenous knowledge glosses what are actually differences in self-interest as differences in knowledge, it glosses what is largely a political challenge to accept indigenous knowledge, authority and rights as a pedagogical challenge to reveal the unstudied indigenous knowledge. Whereas the concept is predicated on the belief that recognition of indigenous knowledge will promote local development and empowerment, these goals are likely to prove elusive in the absence of a recognition of indigenous authority and rights. The concept overly privileges the power of knowing versus doing and the authority of scientific versus political projects.

Discontinuity and 'Mad Ridley'

The political implications of perceived continuity versus discontinuity in knowledge systems can be further illuminated by examining the way that different actors perceive the role that chance versus determinism has played in the history of rubber. Historic accounts of the development of the Southeast Asian rubber industry tended to empha size the role in it of chance. For example, Allen and Donnithorne (1962:106–7) report a 1910 observation within the industry to the effect that 'the chances that existed in cultivated rubber were chances "which exist only once in a hundred years and very likely…once in a thousand years"'. This 'millenarian' tone was set by the initial accounts of Wickham himself, with his overweening (and indeed, as subsequent research has shown, highly inventive) emphasis on the challenges, risks and dangers of his expedition to gather the seeds upon which the Southeast Asian industry was founded. In an explicit counter to this quixotic image of the rubber transplanting, Dean, the rubber historian has critiqued the idea of a 'sudden, dramatic transfer' of rubber to Asia (1987:7). In an explicit effort to replace the 'myth' of Henry Wickham (as 'hero and rogue', 'bestower and thief of rubber seeds) with a more prosaic image (cf. Dove forthcoming), he writes: 'Alas, it was not so much an adventure as it was a complex bureaucratic project, some fifty years in the execution' (Dean ibid.). I suggest that the transplanting of rubber was both more and less than this, and that Dean's revisionist view, while purporting to diminish the authority of the state, still greatly overprivileges its authority. Whereas at one level Dean takes power away from the colonial regime by saying that this great project of rubber transplanting was not instantaneous, at another level he returns power to the colonial regime in that he represents it as a project at all. To characterize the complex, contested and multi-faceted rubber history that was summarized earlier as the 'project' of just one of its participants is to impose a

post-facto teleology that privileges the role of some (that is, the colonial regime) and not others (that is, the local Southeast Asian smallholders).

A good example of the need to resist this teleological tendency is provided by the case of the father of the modern system of tapping, the above-mentioned Henry Nicholas Ridley. As noted earlier, Ridley's pioneering work on rubber cultivation initially earned him the derisive epithet of 'Mad Ridley'. This sort of deprecation is, of course, not unusual in the early history of pioneering technological advances, but neither is it without relevance for the nature of these advances. We cannot treat as simply amusing the fact that what eventually proved to be a hugely successful endeavour (for at least some of the parties involved) was nonetheless first seen as 'mad'. This epithet suggests that there was not historic continuity here but discontinuity; and as Foucault (1977) notes in the epigraph to this chapter, discontinuities are illuminating—and so, I would add, are the ways that discontinuities are represented.

Representation of continuity in rubber history privileges the aforementioned colonial (and to some extent post-colonial) estate project at the expense of local smallholder projects. It also privileges the estate project at the expense of individual 'heroic' projects like that of Wickham. This helps explain the many differences of opinion between Wickham and the Southeast Asian plantation establishment: Wickham's representations were all about self-aggrandizement.[36] What it does not explain is the fact that the colonial society as a whole seems to have preferred Wickham's version of history; although this preference only developed in later years, ironically precisely at the time that the vision of the Southeast Asian plantation establishment established its final ascendancy over Wickham's vision (see Dove forthcoming for further analysis of the perceptions of Wickham and his 'theft').

CONCLUSIONS

I began this analysis by questioning the premises of the concept of 'indigenous knowledge', based on my case study of a seemingly exemplary system of indigenous knowledge, contemporary smallholder rubber cultivation in Southeast Asia. Analysis of this system shows that it is, like many other such systems, neither indigenous nor exogenous but rather hybrid in character and, further, that representation of this hybridity is strongly contested by the parties involved. I proposed not just to critique the concept of indigenous knowledge, however, but to examine its 'life-cycle' of initial reception and utility followed by subsequent rejection and disutility. I summarized the historical development of the technology of rubber cultivation, looking first at the exploitation of natural forest rubbers, then at the transplanting of Pará rubber

from South America to Southeast Asia, and finally at the subsequent cultivation of Pará rubber on the region's estates versus smallholdings. Next I examined the construction of knowledge of rubber cultivation both during and following this transplanting, in the Old and New Worlds, on estates and smallholdings, and historically and in contemporary times. This examination illustrates a pattern of strategic mixing of the local and the exotic by smallholders, problematizes the notion of indigeneity in knowledge systems and demonstrates that the most critical—and contested—dimension of knowledge between local communities and over-arching political-economic structures pertains not to the authenticity of knowledge but to its authority and to the way that this authority is publicly represented or misrepresented. I suggested that this history of knowledge construction was characterized by three critical discontinuities, involving the separation of the rubber plant from its original conceptual context, extensive experimentation with rubber production technologies and diversification of the number and type of rubber stakeholders. In light of this history, I concluded that the concept of indigenous knowledge is a type of self-privileging 'dividing practice', which posits much more continuity in this knowledge tradition than there has in fact been.

Heuristic Use of the Concept of Indigenous Knowledge

I have not always viewed the concept of indigenous knowledge in the way I have presented here. Earlier in my career, I utilized the concept of indigenous knowledge myself, notably in writings in which I attempted to contest the then-orthodox deprecation of the ecology and economy of marginal peoples (for example, Dove 1985). The subjects of these writings were local systems of interpreting and exploiting local natural resources. Today, along with a number of other scholars (as reflected in the genesis of this volume), I am re-thinking the implications of the concept of indigenous knowledge. For the purpose of this re-thinking in the present paper, I selected a seemingly quite different sort of subject from my earlier studies. Whereas my earlier studies emphasized more static analyses of more localized systems of resource-use, the present study emphasizes a diachronic view of a transnational project. This distinction may be more apparent than real, however, since even seemingly localized systems of resource-use like swidden agriculture, the subject of my earlier studies of indigenous knowledge, incorporate extra-local genetic resources (for example, new world cultigens like maize), show evidence of continuous local borrowing and experimentation (for example, with dry rice varieties) and are responsive to outside factors (including the introduction of Pará rubber). On the other hand, my emphasis of some aspects of

these data over others is an inescapable part of ethnographic description: on any given occasion, we cannot tell all of the possible stories contained in our data. The present analysis of the concept of indigenous knowledge may shed some light on how we decide to tell one story as opposed to others. Whereas in my earlier use of the concept I emphasized data that I thought it would illuminate, in my current critique I emphasize data that I thought would be difficult for the concept to accommodate. This personal about-face is partly explained, I suggest, by the fact that use of the concept of indigenous knowledge is in part heuristic—a dimension that is missing from some current discussions of the concept.

Agrawal (1995), in his pioneering critique of the concept of indigenous knowledge, likens the dichotomy between indigenous and non-indigenous to dichotomies drawn a generation ago in anthropology, notably by Lévi-Strauss (1966). Agrawal (1995: 414, 424) writes:

> Taking Lévi-Strauss as an exemplar, I suggest that the contradictions in contemporary writings about indigenous knowledge echo those in earlier attempts of anthropologists to study 'savage minds' and 'primitive cultures'. […] Neo-indigenistas seem to have advanced little beyond Lévi-Strauss. In an enduring image dividing science from the knowledge systems of the primitives, Lévi-Strauss described the difference between the engineer and the bricoleur.

Agrawal's analogy is an apt one, and it illuminates many of the problems with the concept of indigenous knowledge that I raised earlier in this analysis. Left unanswered, however, are the further questions whether constructed dichotomies like that of engineer-bricoleur or indigenous-non-indigenous may play productive (as well as unproductive) roles in scholarship and whether they are, in any case, not inevitable? These additional questions are raised by Derrida's work on this same subject in particular.

In Derrida's commentary on Lévi-Strauss' work, he concludes, like Agrawal, that the distinction between savage and civilized minds, or bricoleurs and engineers, is a 'myth'. He writes that The notion of the engineer who supposedly breaks with all forms of bricolage is therefore a theological idea; and since Lévi-Strauss tells us elsewhere that bricolage is mythopoetic, the odds are that the engineer is a myth produced by the bricoleur' (Derrida 1978:285). Derrida is not dismissive of such myths, however, because he sees them as the product of a fundamental and universal epistemological problem, which he characterizes as 'the problem of the status of a discourse which borrows from a heritage the resources necessary for the deconstruction of the heritage itself (ibid.: 282). Derrida is suggesting that there is a fundamental

contradiction at the heart of all deconstruction or criticism, which he examines with respect to some of the conceptual dichotomies employed by Lévi-Strauss, like that between the engineer and the bricoleur or between nature and culture. Referring to the latter, he writes that 'Lévi-Strauss simultaneously has experienced the necessity of utilizing this opposition [between nature and culture] and the impossibility of accepting it' (ibid.: 283). Lévi-Strauss's work is exemplary, according to Derrida, because he does not simply elide this contradiction. As Derrida (ibid.: 284) admiringly writes, 'Lévi-Strauss will always remain faithful to this double intention: to preserve as an instrument something whose truth value he criticizes.'

Life-Cycle of the Concept

The contradiction between a conceptual 'heritage' and its 'deconstruction', as illuminated by Derrida, has implications for the way that concepts are transformed over time. Just as this contradiction encompasses the deconstruction of the heritage, so it also encompasses the incorporation of the deconstruction into the heritage. The contradiction contributes, in short, to what amount to conceptual 'life-cycles'. We intuitively know, from the serial faddism of current scholarship, that such cycles exist. I suggest that the intellectual history of the concept of indigenous knowledge, which has traversed the conceptual space from innovative tool to hackneyed dichotomy in two decades, is an example of one such cycle. (The cyclic dimension of the concept is aptly summarized in Ellen and Harris' ironic comment in the introduction, that 'indigenous knowledge is dead, long live indigenous knowledge.')

In short, I suggest that it is not just that I have changed since I first employed the concept of indigenous knowledge in my studies of local systems of resource-use, but that the concept itself has changed—in part as the intellectual context in which it is employed has changed. When the concept was first developed, it represented a useful counter to the customary denial of any such possibility (that is, the possibility that indigenous knowledge could even exist). To the extent to which the concept succeeded in this counter-discourse, however, the intellectual context was transformed and the concept was transformed with it. Whereas the concept was initially a deconstruction of a heritage in Derrida's sense, it later became less deconstruction and more heritage. (Some such transformation explains why almost as soon as concepts come into use, they seem to outlive their usefulness.) This conceptual routinization and retrenchment eventually sets the stage for another cycle of deconstruction, and so on.

The life-cycle of the concept therefore consists of a sort of dialectic, and one of the keys to its dynamics is conceptual 'excess'.

Excessive denial of the possibility of indigenous knowledge set the stage for the development of the concept of indigenous knowledge. The development of this concept in turn erred in the opposite direction (that is, excessive affirmation of indigeneity), which set the stage for the backlash and critique that led to the present analysis and the wider conference that produced this volume.[37] Conceptual excess at each stage of the dialectic is therefore reproduced at subsequent stages. Such excesses should be regarded as important revelatory and diagnostic tools.

This discussion of the conceptual life-cycle, including the dialectical role of excess, has so far assumed that it is a monolithic process, operating similarly for all of the actors involved. This is an over-simplification: the cycle does not take place in the same way or at the same time for all actors, and this difference is another key to its dynamics. In particular, there is often a time-lag in the cycle between different actors. For example, as a conceptual innovation begins to wane in academia, it may still be waxing in the policy arena or among activists; or a concept may be abandoned by Northern scholars just as it is being taken up as a useful tool by Southern scholars. The latter discontinuity surfaced during the conference that produced this volume, with some Southern scholars objecting to the critiques being levelled at the concept of indigenous knowledge on the grounds that the concept can still serve them well in representing indigenous communities to national bureaucracies (cf. Cooper and Packard 1997:28). The irony of Northern scholars concluding that concepts like indigenous knowledge are disempowering, at the very moment that these concepts are being embraced as an empowering weapon by (or on behalf of) indigenous peoples, merits our attention (Brosius 1999; Dove 1999). This irony should focus critical attention both on the relations between North and South and, more generally, on the relationship between the academy and the rest of the world.

Implications of Indigenous Knowledge for Knowledge

The existence of conceptual life-cycles suggests that the meaning of a concept like indigenous knowledge will be intimately bound up with the meaning of the concept in opposition to which it was originally defined, namely non-indigenous knowledge or simply knowledge. And indeed, post-structuralists like Foucault suggest that a concept often can be best understood through opposition, resistance or antagonism to it. He writes:

> I would like to suggest another way to go further towards a new economy of power relations, a way which is more empirical, more directly related to our present situation, and which implies more relations between theory and practice. It consists

> of taking the forms of resistance against different forms of power as a starting point.... Rather than analyzing power from the point of view of its internal rationality, it consists of analyzing power relations through the antagonism of strategies. For example, to find out what our society means by sanity, perhaps we should investigate what is happening in the field of insanity [etc.]. (Foucault 1982:210–11)

Just as the study of crime/illness/insanity can illuminate law/ health/ sanity, then, following Foucault, our study of the concept of indigenous knowledge may be most important for what it tells us about knowledge. A similar sentiment is expressed in Derrida's analysis, discussed above, of Lévi-Strauss' distinction between the engineer and the bricoleur, and between the scientific mind and the savage mind. Derrida regards these distinctions as 'myths'; he suggests that the bricoleur is in fact like the engineer and that the savage mind is in fact like the scientific mind. In the mythologized or imagined distinction, however, the essence of the engineer and the scientific mind may be better captured than is otherwise the case. The concept of the bricoleur and the savage mind thus potentially tell us something important about the concept of the engineer and the scientific mind. In similar fashion, I suggest that our conception of indigenous knowledge may tell us something about our conception of knowledge.

As to what the concept of indigenous knowledge tells us about our concept of knowledge, another way to ask this question is, What sort of a concept of knowledge would produce (in opposition) a concept like that of indigenous knowledge? And why, as Agrawal (1995:419) asks, would it produce such a concept now? In fact, the concept of indigenous knowledge is only the most recent in a long line of concepts constructed in polar opposition to the concept of western, scientific knowledge.[38] The antiquity and ubiquity of these constructions suggest a persisting tendency in this knowledge tradition to imagine the 'other'; as well as a persisting tendency in western society to use knowledge as a focal point for reiterating the myth of itself (that is, the west) in contradistinction to the other (that is, the non-west).[39] What is distinctive about this current reiteration, using the concept of indigenous knowledge, is its emphasis on locality, on the boundary between the local and the extra-local. This suggests in its turn first, that this boundary (read as the boundary between 'the west and the rest') is central to the current, western myth of itself, and secondly, that it is currently being severely challenged (as is in fact suggested from what is currently being written about transnational relations and processes).

This view of the construction of knowledge and indigenous knowledge opens up novel and potentially productive areas of

study. It helps us, for example, to understand better the differences cited above in conceptual cycles between Northern and Southern scholars. It offers, in general, a greater likelihood of transcending the circular debates that characterize so much of the scholarly activity in our field today and that have afforded us little else than 'reciprocal destruction' (Derrida 1978:280–1).

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NOTES

1. Ferradás (1998:240) writes: 'Indigenous knowledge is a contested concept. "Indigenous knowledge" here is the knowledge of an other who becomes defined in opposition to an authoritative 'we', vaguely presented as scientists from the west…. Even though anthropology and other social sciences have been addressing for some time the problems entailed in thinking of the world in terms of antinomies such as the one presented here—scientific (Western) knowledge versus indigenous knowledge—this paper is a good example of how well-entrenched these dichotomies are. Each pole is assumed as a totality with an internal logic and independent of the other.'
2. I disagree with Gupta's suggestion, however, that this 'hybridity, mistranslation, and incommensurability' characterizes 'postcolonial modernity'. Rather, as I shall show in this analysis of the history of rubber, hybridity is equally a characteristic of much earlier, colonial-era traditions of knowledge. I suggest that a view of hybridity as uniquely characteristic of the contemporary era, with its corollary implication that non-hybridity or homogeneity has been lost from this era, is an example of misplaced 'nostalgia' (cf. Derrida 1978:292).

3. The boom-era system for exploiting rubber in the Amazon was a modern invention. Prior to the nineteenth-century boom, an older system of exploitation was in place, which focused less on trade and more on local subsistence uses of the latex as well as the fruit of the rubber tree, and which shared none of the brutal, exploitative character of the modern system (cf. Schultes 1956).
4. Indonesia is still today one of the world's largest exporters of these products: in 1993 it exported almost 42,000 tons of natural gums, resins and latexes with a value of almost $25 million dollars, and an additional 1.3 million tons of natural and semi-processed Para rubber with a value of more than 1.1 billion US dollars (Coppen 1995:1,9; GOI 1994:233–4; GOI1996:153).
5. This combination of market- and subsistence-oriented agricultural activities is quite common in Indonesia (and indeed among forest-dwellers throughout the tropics). Other examples are swidden agriculture and rattan gathering/cultivation in East Kalimantan (Lindblad 1988: 59–60; Weinstock 1983), and sago palm and spices in the Moluccas (Ellen 1979).
6. Sir Clements Markham of the India Office actually credits another Englishman, Robert Cross, with first collecting Hevea seeds (Davidson 1927:674–5), which were subsequently sent to Ceylon and reportedly 'throve well.' Cramer (1956:266) also reports that four trees originating from Cross's seedlings were discovered on a private estate in Java. (All of this is contra Burkill [1966:15], who says that none of Cross's seedlings survived.) Wickham (1908:45) characteristically claimed credit not just for gathering the seeds but for the very idea of cultivating Hevea: 'I was at that time as one before my time—as one crying in the wilderness. Dead weight of inertia, not to say opposition, prevailed. The idea of cultivating a 'jungle forest tree' was looked upon as not less than visionary.' Wickham even discounts the fact that all such transfers of plant genetic material were modelled after Markham's successful transfer of the quinine-producing cinchona tree (Eugenia caryophyllus) from South America to India. Thus, Wickham writes, 'The Cinchone tree, productive of the valuable drug quinine, was introduced for the Government of India by Sir Clements Markham some time before Sir Henry Wickham's introduction of the Hevea; but as Wickham knew Sir Clements well he took occasion to benefit from his adverse experiences' (cited in Davidson 1927:676). Wickham also conveniently ignores the fact that the initiative for his own seed-gathering came from the India Office: Markham asked Joseph Hooker, Director of Kew Gardens, to ask Wickham to gather rubber seed. And this initiative was in any case preceded by other efforts along similar lines, including two different collecting trips by Cross under Markham's direction, and at least one prior collection that was coordinated by Markham and Hooker (Davidson ibid.: 675–6; Purseglove 1957:134). Moreover, the idea of transplanting Hevea to Asia and cultivating it there had been in print for over three-

quarters of a century by the time of Wickham's collection. Wolf and Wolf (1936:154) write: 'It was an old dream, this idea of transplanting and cultivating the American rubber tree, a dream as old as Europeans' knowledge that caoutchouc was yielded by plants native to the eastern hemisphere. In writing we encounter it for the first time in the March 23rd, 1791, issue of *The Bee* or *Literary Weekly Intelligencer* of Edinburgh.'

7. Wickham (1908:3–4) writes: 'It does not seem to have been sufficiently remembered that this Hevea is by nature a large forest tree, and therefore should be treated on lines of forestry rather than those adapted to tea or garden cultivation.'
8. Wickham (1908:63) writes that *Hevea* should 'be regarded as a plantation—a cultivated product rather than as one to be planted with view [sic.] of being widely disseminated under canopy of an area covered by primitive standing forest.'
9. The common English term 'tapping rubber' actually better describes the machete-based 'incision' of South America than the knife-based 'excision' of Southeast Asia. The common Indonesian/Malay term for tapping rubber, *motong/mutong,* which translates as 'to cut,' more accurately represents the Southeast Asian technique (Echols and Shadily 1992:434; Richards 1981:293; Wilkinson 1959/11:913–14).
10. Cramer (1956:267–8) maintains that the British committed to *Hevea* sooner than did the Dutch, which he attributes to 'the British tendency to simplify—I would almost say to schematize things….'
11. Smallholders in most of Borneo call rubber *getah,* which is derived from the colonial trade name *getah* or *gutta* (i.e. gutta percha) for the native latexes (Dove 1994:385; Wilkinson 1959/II:885).
12. Wickham (1908:33) writes: 'If a plantation crop is from forest or jungle, then its plantations conditions should mimic forest or jungle.' And Gouyon, De Foresta and Levang (1993:187) write: 'The structure of old jungle rubber is similar to that of a secondary forest, with rubber trees holding the ecological place of pioneer trees found in spontaneous secondary forest in the area….'
13. This natural replication does not make the effective use-life of the rubber grove open-ended, however, because the effect of shading lowers tree-density in each successive generation, gradually moving it toward the natural but uneconomic density of rubber in the Amazon (cf. Gouyon, De Foresta, and Levang 1993:194).
14. Cf. Murphy (1978:177), on the incompatibility between traditional social structure and the exploitation of natural rubber in South America.
15. Colonial Dutch observers suggested that the involvement of women 'is generally not favourable for the plantings' (Cramer 1956:301). Cf. Murphy's (1978:142) comment, that rubber-tapping was largely a male activity among the Mundurucu of Brazil.
16. Additional smallholder innovations involved development—in collaboration with downstream traders—of means of monitoring

market prices, transporting their product to market, marketing it, managing credit and payment-in-kind in only partially monetized economies, etc.

17. Drabble (ibid.: 168–9) writes that 'The main fear in commercial circles was that laissez- faire would lead to loss of labour and perhaps the entire capital investment.'
18. Ghee (1974:109–10) describes the baseless stories spread by government officials regarding problems of disease and abandonment on smallholdings. These charges were being repeated in print as late as the 1950s. Thus, Cramer (1956:303), completely reversing the empirical association between disease and conditions in the rubber groves, writes: 'One sees everywhere the 'mouldy rot', a disease which on estates can be kept under control by applications of desinfectants *[sic]* on the tapping panel, but against which the native does nothing, while the exaggerated density of his plantings, which creates a moist atmosphere between the trees favorising *[sic]* the development of the disease, would make appropriate measures against the disease still more urgent than on estates.'
19. This was a repetition of the earlier attack by the colonial regimes on the purported over-exploitation of forest rubbers by local natives prior to the introduction of Hevea (Dove 1994:386–7). In the contemporary era too, the parastatal plantation sector exhibits a perduring concern for over-exploitation of rubber by smallholders (as noted, for example, during a visit to a combined nucleus estate/ transmigration project in West Kalimantan [Field notes 29/9/93]). This history suggests that the intensity of tapping/exploitation has been a continuing lightning rod for fears in the parastatal estate sector concerning smallholders.
20. When Malaysan smallholdings were surveyed in 1931–33, the rate of bark usage was found to be well in line with the rate of bark production (Bauer 1948:36).
21. The Malayan smallholder survey concluded that only eight out of nine thousand smallholder trees examined had succumbed to root disease (Bauer 1948:58).
22. When I asked for a definition of *hutan karet,* the managers told me that it is old rubber planted *tanpa peraturan* (without regulation). The managers added, ingenuously, that *hutan karet/ hutan sekonder* was locally called *kebun karet* ('rubber garden'; field notes, 29/9/ 93).
23. Gouyon, De Foresta and Levang (1993:182) write that 'No accurate, reliable census of jungle rubber exists to date in Indonesia….'
24. This is exemplified by the government's reaction to one potential alternative to the nucleus estate projects, the North Sumatra Smallholder Development Project. This project was carried out on a pilot basis in the mid-1970s. It differed from the nucleus estate projects in that it was not tied to a government estate, management was more decentralized and there was more scope for farmer

decision-making; it was also very successful. It was nonetheless terminated by the government after its pilot stage, with the admonition that The government-owned estate groups…should be used for future smallholder development' (Dillon 1985:121).

25. Dean (1987:5, 163) writes: 'Why did the Brazilians not take up rubber cultivation themselves in response to the Southeast Asian threat? […] Essentially, as rubber specialists are well aware, the problem is ecological. There is a certain plant fungus that attacks the rubber tree within its native range. Up to now, adequate and economical defenses against this fungus have not been devised. […] Thus did a fungus deflect the course of a nation's history. And yet, of course, it is not the case, nor is it the thesis of this book, that it was the fungus itself that prevented rubber cultivation. Rather, it was human ignorance of a means to prevent or attenuate fungus attacks that rendered rubber cultivation uneconomic.'
26. It is interesting that contemporary Brazilians lean in this direction themselves. Dean (1987: 164) writes: 'Brazilians, who possess collectively the admirable trait of daring to express openly their self-doubts, have…examined themselves for character flaws to account for their [own] failure to cultivate rubber.'
27. It suggests that the attractions of exploiting natural rubber through the *seringueiros* were—for the elites involved in the industry—so great as to inhibit movement toward the cultivation of rubber. The political economic basis of this attraction also is attested to by the observation of some rubber historians, that the reproduction of this labouring class on the plantation was not easy: thus, Melby (1942: 465, 467–8) argues that the difficulty in procuring a 'large supply of fairly efficient and cheap hands' was the chief obstacle to rubber plantation development in the Amazon (surpassing in seriousness disease, even on the Ford plantation mentioned in the text). It seems no accident, therefore, that the first serious South American interest in cultivating Pará rubber coincided with the explosion of competition from cultivated Pará in Southeast Asia (Weinstein 1983: 219–30) nor that contemporary interest coincides with efforts to empower the *seringuieros* (Cowell 1990). Note too that today over one-half of Brazil's domestic demand is met by rubber from cultivated plantations, albeit located in eastern Brazil, outside of Pará rubber's native range in Amazonia (Browder 1992:176).
28. Cf. Schultes (1956:140–1): 'I have never seen a Hevea tree growing—either planted or as a survival from felling—in the garden of the house of any primitive Indian anywhere in the Amazon valley, including the northwestern part. Here, we must distinguish between the primitive aborigine and the civilized rubber tapper (be he pure Indian, white or half-breed), who, in felling a few square feet of virgin jungle for his temporary shack, where he lives in the dry season only whilst tapping rubber, will almost never sacrifice a wild Hevea tree.'

29. The act of cultivation would have had other consequences as well. As Weinstein (1983:31) writes: 'The entire system of production [in South America] would have undergone basic changes if the aviadores and seringalistas had invested in the cultivation of rubber instead of relying on the natural source', but this investment was not made.
30. The act of planting on its own does not, of course, explain all of the differences between resource-use histories in South America and Southeast Asia. For example, a recent comparison of sites in Southeast Asia (West Kalimantan) and Latin America (Peten, Guatemala) attributes differences in patterns of exploitation of rubber and other forest products to differences in ecological factors (i.e. tree density, fruiting phenology and sustainability) as well as socioeconomic and political factors (i.e. tenurial patterns and incentives for conservation, physical and social infrastructure, product demand and political pressures for alternate uses; Salafsky, Dugelby and Terborgh 1993).
31. Keong (1976:35–6) writes that indecision about which species of rubber was best, uncertainty whether Hevea was suited to Java and planters' preference for coffee delayed the introduction of Hevea into the Netherlands East Indies.
32. It is unclear what Wickham thinks the 'forest tribes' actually did with *Hevea,* but it was probably not cultivation. Schultes (1956:142) says that cultivation of a magnitude sufficient to affect the evolution of Hevea did not occur: 'The unadorned facts about cultivation are these: a) primitive Indians have not cultivated and do not now cultivate or care for rubber in any special way in their farms; b) what little cultivation there is has been done by civilized inhabitants engaged directly or indirectly in rubber tapping; and c) such cultivation on the Rio Negro is of relatively recent incipience and is extremely limited and localized.'
33. Even this distinction between South American donor and Southeast Asian recipient is rendered more complex by the fact that Brazil itself 'stole' plants from others, for example, coffee from Cayenne (Dean 1987:23).
34. Wolf and Wolf (1936:237) write: 'It is, then, the native of the tropics, exploited since the birth of the caoutchouc industry, who looms today as the controlling figure in the market, an act of poetic justice long delayed but now particularly welcome to the American consumer to whom the brown man represents his best guarantee against highway robbery prices in the future.'
35. For an example of this confluence in the field of crop pest management, see Winarto 1996.
36. It is ironic that, in Wickham's efforts to privilege his individual project against the institutional project of the colonial regime, his interests became at least partially aligned with those of the native Amazonian rubber-tappers, as reflected in his earlier cited statement

that the latter had done all of the experimentation with rubber that needed to be done.

37. Another example of such excess is the 'frenzy' of interest in *sasi* described by Zerner, which provoked a similar backlash. Another example involves the romaticization of 'primitive environmentalists' by global activists, as discussed by Ellen and Harris (Introduction).
38. Contemporary examples, in addition to the concept of indigenous knowledge, range from Lévi-Strauss's (1966) *bricolage* to James C.Scott's (1998) *métis.*
39. I am grateful to Carol Carpenter for this insight.

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Chapter 9
ENCLAVED KNOWLEDGE: INDIGENT AND INDIGNANT REPRESENTATIONS OF ENVIRONMENTAL MANAGEMENT AND DEVELOPMENT AMONG THE KALASHA OF PAKISTAN

Peter Parkes

'NO MORE NGOS!'

> The main problem that we are facing right now are those actions taken above our heads, without asking the people: for example, when well-wishing foreigners create their own NGOs for the 'protection' of our people and our valleys.... These outsiders just involve a few people [in their projects], so the rest of the people stay away. They just say: 'There is an NGO at work, so why should we do anything for nothing?' Or when political groups [i.e. factions] are involved in a project, they say: 'We don't belong to that party, so why should we do it?' So the unity is gone...in this way, the people stop working together. (Saifullah Jan n.d)

Saifullah Jan is an indigenous activist and spokesman for over three thousand non-Muslim Kalasha ('Kalash Kafirs') inhabiting three mountain valleys in the Chitral District of northern Pakistan.[1] His words cited above opened a polemical speech to regional specialists attending a session on Developmental and Environmental Issues at the Third International Hindu Kush Cultural Conference, held at Chitral in August 1995. After criticizing several projects for needlessly interfering with Kalasha religious culture, Saifullah Jan targeted a range of related 'well-wishing' programmes aimed at local education in the Kalasha language on topical issues of hygiene, local medicine, indigenous tradition, and environmental understanding. His wry rejoinder was again: 'We don't need to be told what we already know ourselves! We don't need to be shown pictures of what we can see every day! *We need no more* NGOs!'

The Kalasha have indeed suffered a surfeit of such projects and programmes for their cultural protection or economic improvement, which have recently concentrated on issues of local environmental management.[2] One of several such organizations, for example, is the Kalash Environmental Protection Society (KEPS), instigated by an energetic British environmental campaigner in collaboration with regional government and development officers.[3] Focusing attention on imminent environmental catastrophe, Kalasha are typically represented in the promotional rhetoric of such NGOs as the innocent, childlike victims of outside exploiters:

> First came the roads, then the merchants, the hunters, the woodcutters, the entrepreneurs. …The Kalash, although wily and resilient, were uneducated, innocent of modern ways, and they were easy prey for the unscrupulous. Walnut trees were mortgaged, land was lost to outsiders who wanted to open up the valleys to tourism, and the great cedar forests plundered.… The hillsides became vulnerable with the increase in soil erosion, and the fields constantly in danger of being washed away.… Aid agencies through ignorance brought in fertilisers and pesticides, endangering the natural organic methods, posing dangers to the unsophisticated inhabitants. Tour groups proliferated, exploiting their naivety and vulnerability.… Afforestation, protection of the environment, better medical facilities, and simple latrines: these are the priorities! (Lines n.d.)

Kalasha leaders might endorse such diagnoses of environmental devastation being made on their behalf, albeit scorning some of the prioritized remedies. But they are more strategically preoccupied with prior questions of legal entitlement and the assertion of customary rights to control local resources. Beyond simply decrying a culture of dependency created by ill-conceived interventions, and far from dismissing all development encounters, their underlying preoccupation rather concerns the local organizational implications of such development schemes—their effects on communal 'unity' or 'disunity'. A barely euphemized subtext is that development funding has become insinuated with Kalasha factional politics, feeding into the competitive political ambitions of local leaders, while undermining their broader campaigns to wrest communal control of environmental resources. Saifullah Jan has himself been engaged in such a long-term struggle to mobilize collective support for Kalasha forest rights. His career therefore offers a privileged personal perspective on a relatively neglected issue of indigenous environmental knowledge: that is, how practical or habitual knowledge may be evoked, translated or variously transformed

through adversarial debate into local environmental *consciousness,* and even further implemented as collective action.

I shall therefore concentrate on *intentional* policies of Kalasha resource management, including its acknowledged failures or apparent mismanagement. Yet I also address broader problems of the intentional *mis*communication of Kalasha customary knowledge, whose various interpretations by insiders and outsiders are rhetorically deployed by all parties in the legitimation of environmental control. Under situations of 'enclavement' characteristic of small minorities, local resource management necessarily entails a practical political knowledge of outside interested parties (non-indigenous claimants, local government officers, development agents, foreign advocates), as well as of internal dissensions and the adversarial tactics of political opponents within any community. Beyond noting and deploring a common mismatch of indigenous 'rhetoric' and 'practice' (Ellen 1993; cf. van den Breemer 1993), we might therefore further examine the actual political speeches and mobilizing practices of representative indigenous leaders—including their failures of persuasion, and their voiced apprehensions of the causes and consequences of such failures—together with the external discourses of their developmental assessors (cf. Grillo 1997).

KALASHA ENCLAVEMENT AND DEVELOPMENT

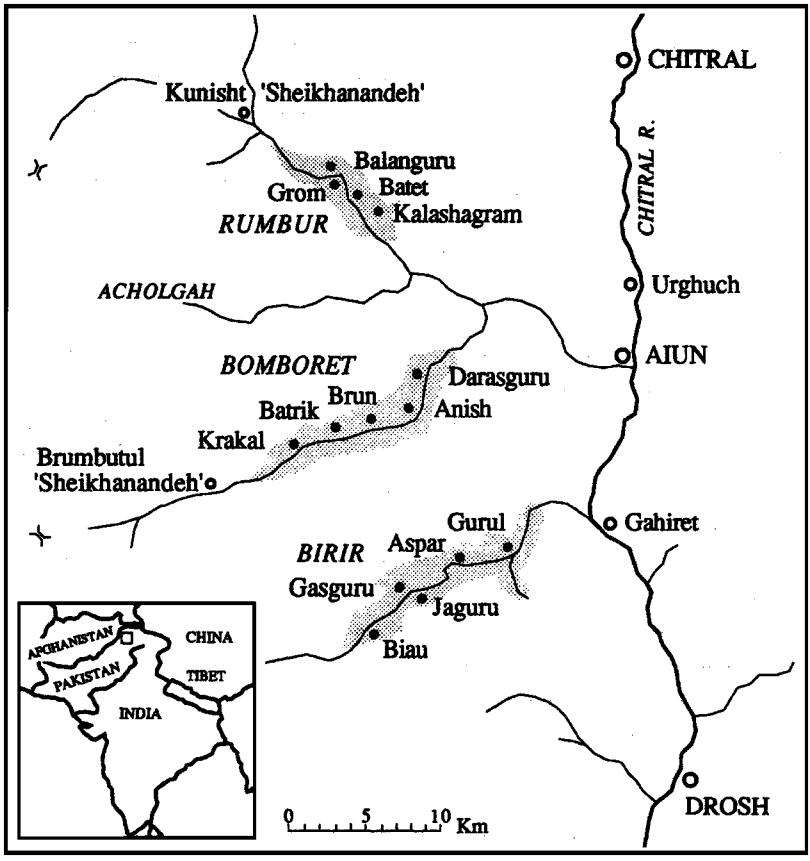
Despite increasing concern with the global-political implications of development intervention (e.g. Escobar 1995, Ferguson 1990, Hobart 1993), rather less attention has been paid to its variable *micro*-political reception as a resource for internal competition within indigenous communities.[4] Here 'indigenous knowledge'—comprising rhetorical representations of local subsistence practice—also becomes an internally contested resource for political mobilization, especially within minority communities enclaved on the periphery of dominant polities. Some of the recurrent institutional predicaments faced by such communities are vividly conveyed in Mary Douglas's ideal-typical depiction of what she calls an 'enclave culture':

> Neither smallness nor intimacy is enough to explain the peculiarities of enclave culture.... I ascribe its distinctive culture to its egalitarian organization, which in turn I see as a result of its weakness in holding its membership and resisting the seductions of the larger society.... An enclave starts to polarize its world when it has to worry about the defection of its members. The big organizational problem and the distinctive anxiety of the enclave is about defection; yet there can be no show of power, and authority has to be exerted with

> great care.... Equality plus weak leadership make for poor co-ordination...[and] the main disadvantage of the enclave is that it is prone to internal factions...with difficulty in ensuring support for long-term policies. (Douglas 1996: xx–xxii; cf. also Douglas 1987:38–43).

Several of these features of enclavement seem evident as underlying symptoms of organizational problems alluded to in Kalasha political discourse concerning communal 'unity' and 'disunity' (Saifullah Jan 1996). A chronic preoccupation with defection, for example, is experienced in conversions to Islam, entailing a relentless attrition of local communities, once subject to common ritual and moral rules, which become less enforceable as the majority Muslim population expands (Ahmed 1986). Kalasha leaders can only weakly attempt to stem the tide of such defections, either by relaxing customary sanctions, or else occasionally reinforcing ritual rules of purity and pollution that at least symbolically demarcate their embattled constituencies. In a broader context of outside encroachments, suspicions of treachery are inherent in all personal relations established beyond the community, fuelling mis-trust of political leaders mediating with outside authorities. As Douglas indicates, factionalism is thus a corollary of enclavement, where such resentments tend to accumulate in response to any strong assertion of personal authority. For most of this century, Kalasha communities have indeed been riven by periodic factional antagonisms, although one should note that such political animosities are contextually circumscribed and only episodically manifest in everyday life.[5] In this essay, I shall explore the manner in which such political conditions appear to have structured both institutional practices and discourses of environmental management, also examining their effects on the *mis*communication of local environmental knowledge to outsiders. This requires an initial consideration of Kalasha historical experience of enclavement and development over the course of this century.

After the legendary conquest of Kalasha kingdoms in southern Chitral around the sixteenth century, conversions to Islam reduced the indigenous non-Muslim population to its present refuge of three valleys (Rumbur, Bomboret and Birir; see Map. 9.1). Non-Muslim Kalasha were then enserfed, as well as regularly 'farmed' for their yield in children and young widows sold into slavery (Müller-Stellrecht 1981:415–17). Each community was also subject to heavy tributary taxes in subsistence goods and arduous corvée labour services, levied through a locally appointed 'headman' *(asakal).* This oppressive regime of serfdom and tributary extraction persisted until the early 1950s, still bitterly recalled by Kalasha as 'the time when the rulers were eating the very skin off our backs'.



MAP 9.1 THE KALASHA VALLEYS IN CHITRAL, NORTHWEST PAKISTAN

Factional alignments had already been apparent in local competition for the lucrative office of *asakal* 'headmanship.' But an eruption of opposed 'parties' *(dala, patti)* especially marked the end of the feudal era in the early 1950s, when the principality of Chitral began to be absorbed into the new nation of Pakistan. Each valley community was then riven by opposed 'royalist' and 'populist' factions, who alternatively argued for the maintenance of reduced feudal dues, or for their replacement by Islamic tithes (Saifullah Jan 1996:240). Enmeshed with contemporary national and district party politics, Kalasha factionalism then became so intense that attendance at funeral feasts, and even the daily grinding of grain at village water-mills, was dichotomized according to party allegiance.

Repercussions of this dichotomy have persisted with periodic eruptions until the present. A major reorganization of local politics in Rumbur valley, for example, occurred during my fieldwork there

in the mid-1970s, when the increasingly tyrannical authority of a successor of the last *asakal* 'headman' of the valley was opposed by a rival politician. Rallying resentment against the former leader's monopolization of new development contracts, and inflaming rumours of his alleged corruption, this rival leader accumulated an oppositional following under the nativist banner of recovering 'Kalasha tradition' *(Kalasba dastur),* clinched by his own lavish sponsorship of a traditional feast of merit (Darling 1979; Parkes 1992). But despite his success in wresting power, the lingering allegiances of these factions still underlie contemporary political competition. They have even expanded into opposed coalitions or 'parties' embracing all three valleys, whose leaders compete as distinct lobbies for development contracts.

Enfranchisement from feudal servitude in the 1950s was also accompanied by the onset of forced conversions to Islam and the appropriation of Kalasha property by outsiders. With the protective authority of the Chitrali rulers in eclipse, zealous mullahs organized proslytizing raids into the valleys, from whose forced conversions the majority of Muslim Kalasha now derive.[6] Debts owed to nearby store-keepers for loans of grain, extended at exorbitant rates of interest, also led to the widespread mortgage or sale of walnut trees and of some plots of land to outsiders (as discussed below). But from the early 1970s, these adversities began to be ameliorated through national government action becoming aware of the growing visibility and value of the Kalasha for foreign tourism. Taxes were then lifted, medical dispensaries and primary schools founded, and rough jeep-roads built into all three valleys. Development aid was also initiated through the personal intervention of President Z.A.Bhutto, who twice visited Kalasha by helicopter in the early 1970s, distributing welfare donations and inaugurating several minor projects. Under the Ministry for Minority Affairs, fifteen newly created posts of *kazis* or 'traditional ritual experts' were established on small stipends equivalent to those paid to village mullahs elsewhere. Appointed by valley leaders as much to reward factional allegiances as for their traditional knowledge, several of these *kazis* have subsequently established themselves as quasi-'priests,' who are presented to outsiders—tourists, anthropologists and development agents alike—as representative authorities on Kalasha indigenous knowledge *(Kalasha dastur).*

Development intervention further escalated under Zia ul Haq's military regime during the 1980s. Provincial and district level funding for local community projects—mainly irrigation channels, bridges, and flood-protection walls—was administered through Kalasha representatives on the Chitral District and Union Councils, which became open to local election (and hence intense factional competition) from 1982. In response to calls to safeguard Kalasha from the zealous excesses of his Islamization policy, Zia also arranged for their separate electoral enrollment within a national

minority constituency of non-Muslims, thus divorcing them from normal participation in district political elections. Although this crippled the local bargaining power of Kalasha leaders within Chitral, the Ministry of Minority Affairs otherwise proved a cornucopia of development funding for their disbursal, amounting to some ten million rupees by the end of the 1980s (Alauddin 1992:25–7).

The most important development intervention of this period, however, was the arrival of the multinationally funded Aga Khan Rural Support Programme (AKRSP) in Chitral in 1983. This established several 'showcase' minority projects in the now easily accessible and well-visited Kalasha valleys.[7] As part of its strategy for encouraging the formation of cooperative village organizations, Kalasha were first invited to propose 'Productive Physical Infrastructures' that would demonstrably enhance income generation. After demonstrating the formation of a cooperative society with a small savings fund, such projects are discussed and approved through a series of 'diagnostic dialogues' between programme officers and participants, after which a survey and estimate is made of the project, which is then awarded to the group. By 1990 over twenty Kalasha village organizations had been formed, almost all for the construction of new irrigation channels, amounting to a total donation of over four million rupees.[8] A distinctive aspect of AKRSP's policy is the budgeting of generous daily wages for labour (a primary incentive for the initial formation of many Kalasha village organizations), as well as an allowance for surplus profits to accrue to each organization's savings fund. Indeed, these initial donations are calculated 'catalysts' intended to entrench village organizations as essential 'mediating structures' of collective self-management, which should then apply for further development credit on more strictly accountable conditions of loan repayment (Husain 1992:677; cf. Dani 1988). A second phase of intervention (initiated in 1987) was thereby intended to galvanize such groups into a more ambitious programme of entrepreneurial training, with a further emphasis on instilling 'gender equitability' and 'integrated resource management' with reference to local cultural institutions and knowledge (AKRSP 1987; Husain 1992: 677–78; World Bank 1996). Among Kalasha, this included the foundation of several women's organizations for the market gardening of vegetables and tree-planting or 'social forestry' (Clark 1995), as well as technical assistance and credit supplied for chemical fertilizers and pesticides, the introduction of new high-yielding varieties of wheat and maize, and various innovations of livestock breeding or pastoral range management (Khan and Khan 1992:95–112).

While the initial productive projects were enthusiastically embraced by Kalasha, these latter 'environmentalist' innovations have as yet been limited to a small coterie of 'model farmers,' largely from one factional party. A similar scheme instituted as part of the

Chitral Area Development Programme (CADP 1990), funded by the Asian Development Bank, has also suffered problems of implementation beyond initial projects sponsoring irrigation channels and flood protection walls (Babar Jamal n.d.).[9] I shall suggest that most such environmentalist projects misapply remedies, more appropriate to other farming communities of the Hindu Kush, to the peculiar cultural economy of the Kalasha. Yet outside ignorance of Kalasha environmental knowledge has also been a peculiar product of 'enclaved' conditions of *mis*communication operating from *within* Kalasha communities.

EVERYDAY FORMS OF 'INDIGENOUS IGNORANCE'

Within less than half a century, Kalasha have thus experienced a remarkable reversal of fortune: from abject feudal servitude to ever-increasing patronage through government subsidies and NGOs. These now compete eagerly to establish rival projects among their fifteen hamlets, which are prominent destinations on the scheduled itinerary of development tourism provided for foreign aid agencies in Pakistan. Despite some adverse effects in further inciting factional competition, all Kalasha have without doubt benefited very substantially from opportunities to gain local employment through such projects.[10] But many of these projects are recognized to have been less successful in their actual implementation: irrigation channels are discovered to be so misaligned as to conduct little or no water by gravity-flow; pipes for drinking water have been buried insufficiently deep and are ruptured by winter frosts; suspension bridges are washed away with the first summer floods; and flood protection walls have subsided within a few months of construction. Yet Kalasha were formerly employed for their exceptional engineering skills in building irrigation channels, aqueducts and cantilever bridges throughout Chitral. Many other 'religious minority' funded projects are further-more felt to be both unneccessary and undesirable, such as the needless rebuilding of altars with dressed stone and cement, or the construction of new concrete 'clan temples' or tin-roofed 'dancing pavillions', which both flout ritual tradition and even impede ritual performance (Saifullah Jan 1996:241). Yet all these projects were specifically requested by Kalasha leaders or local contractors. Environmentalist programmes, such as 'afforestation' through planting exotic broadleaf sapplings along irrigation channels, are similarly disparaged as either useless or harmful to traditional subsistence, although these were again apparently introduced through a series of 'participatory dialogues' with village and women's organizations. As a deputy commisioner of Chitral lamented, 'tens of lacs [i.e. millions] of Government money have been wasted in Kalash valleys alone as I have seen myself (Durrani 1981:2).

Many of these problems or misconceptions of local needs undoubtedly stem from the personal ambitions of factional leaders, whose political support now crucially depends on gaining maximal financial contracts for development projects, irrespective of their practical outcome (cf. Butz *et al.* 1991; Sahibzada *et al.* 1992). Yet examination of particular cases also indicates intentional *mis*communication occuring in consultations concerning Kalasha subsistence needs—a tendency to misrepresent local conditions, sometimes for no very obvious personal advantage. Such dissimulation is apparent in household census records collected for development assessment, wherever these can be identified, as well as in some very odd proposals for programmes apparently derived from group consultation.[11] But a similar miscommunication of Kalasha indigneous knowledge, including mischievous 'inventions of tradition' for foreign consumption, is also familiar to anthropological fieldwork.

As an oppressed minority, disparaged by their dominant Muslim neighbours, Kalasha have in fact long depended upon an intentional cultivation of misleading knowledge about themselves. This has served as a basic tactic of survival against exploitation, employing that sly repertoire of 'everyday forms of peasant resistance' documented by James Scott:

> dissimulation, false compliance, pilfering, feigned ignorance… the slow grinding, quiet struggle over rents, crops, labour, and taxes in which submission and stupidity are often no more than a pose—a necessary tactic. (1985:xvi, 37)

Such is the ploy of cunning *(chalaki)* celebrated in oral traditions concerning the feudal era, where an enactment of stupidity—the 'simpleton Kalasha' *(sada Kalasha)*—is hilariously shown to have out-witted creduluous and greedy Chitralis (Parkes n.d.). As another observer noted:

> The Kalash generally are very aware of the need for techniques specifically intended to beguile outsiders…. Kalash language is particularly rich in idiomatic expressions of the type which describe these subterfuges. An example is [a] pejorative word which means someone who outwardly is as sweet as 'candy'… and inwardly is manipulative and inquisitive in intent. In this same vein is an expression…meaning a person who, being unnoticeable as 'water flowing between the roots of wheat plants', works his or her way into another's good graces. Similarly, someone…who cleverly works himself into favour with an unsuspecting person [is] like 'water being blown through the coiled intestines of a slaughtered animal'. (Darling 1979:10)

Such habitual strategies of dissimulation undoubtedly served to protect Kalasha material interests in the past, as well as ensuring that a hidden sense of dignity survived beneath an obligatory facade of servility. Presentations of a persuasive appearance of wretched indigence and ignorance have also served to attract lucrative subsidies, having a complicity with the promotional programmes of NGOs concerned with 'redistributive justice' and the economic 'uplift' of disadvantaged minorities. Yet with more active intervention in Kalasha subsistence and local resource management, such continuing miscommunication of indigenous knowledge as ignorance entails unforseen collective consequences, whose adverse implications are only now beginning to be grasped by a younger generation of educated leaders such as Saifullah Jan.

INDIGENOUS INSTITUTIONAL KNOWLEDGE: KALASHA RESOURCE MANAGEMENT AND ITS TRANSFORMATIONS

Despite their cultural distinction as a non-Muslim minority, Kalasha subsistence is comparable with that of the majority of other (Muslim) peoples of northern Pakistan, who all practise a classic 'mixed mountain economy' of small-scale agriculture combined with transhumant livestock husbandry.[12] Grain crops, together with fruit and walnut trees, are cultivated on tiny irrigated and terraced fields at an altitude around 1800 metres, while herds of goats are taken to high mountain pastures in summer, returning to winter stables around evergreen oak woodland above their villages. A wide range of natural resources at different altitudes is thus exploited, enabling most households to be largely self-sufficient with half a hectare of arable land and a few score goats.

Compared with neighbouring regions, the Kalasha valleys seem well endowed with natural resources for this agro-pastoral subsistence. Most noticeable to visitors are the thick forests of holm oak *(Quercus baloot)* covering the scree slopes above Kalasha villages, which elsewhere in Chitral are largely denuded. These provide essential winter fodder for goats, as well as firewood for households, and they are therefore carefully harvested by pollarding. Kalasha are thereby able to maintain far larger herds of livestock than most of their Muslim neighbours, which in turn make a vital contribution to cereal production through the regular application of manure to fields. Combined with a highly labour-intensive tillage of hoeing, weeding and watering, performed exclusively by women, Kalasha crop yields are thus many times higher than those reported of other small farmers in Chitral, despite comparable average holdings of cultivated land (ca. 0.6 ha).[13] The valleys are also adequately furnished with arable terraces and alluvial fans occuring at altitudes below 2000 metres, where double-

cropping is feasible, within easy access of irrigation channels fed from the rivers. At higher altitudes, from around 2,300 metres, occur dense forests of pine and Himalayan cedar *(Cedrus deodara),* comprising perhaps half of the total conifer forests remaining in Chitral (Haserodt 1989:66; Sheikh and Khan 1983). Beyond these forests are alpine pastures of rough grasses and sedges, which easily provide sufficient browsing for Kalasha goats. Despite frequent reports of their destitution, Kalasha subsistence thus appears to be more productive than that of many of their neighbours, as well as being associated with an unusually richly resourced natural environment. The dense concentration of current development projects concerned with 'sustainable resource management' among Kalasha thus seems objectively (in comparative economic or ecological terms) ill-justified, especially in view of genuinely acute problems of agricultural viability and environmental degradation long recognized elsewhere in Chitral (Haserodt 1989: 134–41; Israr-ud-din 1967).

The isolation of the valleys prior to road building in the 1970s, combined with meagre population growth until then, evidently facilitated a subsistence economy placing low demands on natural resource consumption. Yet this has also been a product of *intentional* collective management, organized through traditional institutions. Most prominent is the annual appointment of a 'constabulary' of youths, the *roi* (see Plate 9.1), responsible for coordinating ritual offerings and subsistence activities throughout the year.[14] Among their duties are the supervision of household contributions to the clearing of irrigation channels in spring, the regulation of the ascent and descent of the goat herds, and the imposition of a 'closed season' on fruit and walnut harvesting in summer. The *roi* constabulary were also formerly responsible for overseeing communal oak forests on upper valley slopes. In the 1970s, however, visible overcutting of these forests in two valleys (Bomboret and Rumbur) encouraged elders there to innovate a stricter rotational system of 'bans' *(den)* on cutting in specific regions for four to six years. This more rigorous supervision was entrusted to a senior constabulary of older youths, the *den-wal,* adopted from a comparable regulatory institution of Nuristani neighbours.[15] Similar communal arrangements also regulate access to alpine pastures through the use of cooperative herding companies, who pool their resources to form a joint camp, sharing the tasks of herd management and dairy production among their male members.[16]

It is significant that most of these collective institutions are related to goat husbandry, a sacred activity, restricted exclusively to men, which underpins a 'pastoral ideology' inherent in Kalasha religion (Parkes 1987). The culturally distinctive 'indigenous knowledge' of male Kalasha is indeed focused almost exclusively on goats.[17] Development programmes purporting to reorganize their

pastoral economy rationally, including repeated attempts to encourage the optimal slaughter of young goats for commercial sale, have been notably unsuccessful. Kalasha herdsmen continue to accumulate livestock for a primary goal of sacrificial feasting, maintaining mature bucks up to an age of nine or more years (Parkes 1992:44, Table 2), even though they fully recognize that these prestige animals may adversely compete with reproductive and immature stock for scarce winter fodder. Development agencies lament such an irrational 'ritual attitude' towards goats (Cossins and Rehman 1990:14), which vetinerary experts find themselves powerless to correct—despite concerted attempts to delimit funerary feasting or to instill efficient marketing skills through exemplary 'model farmers' (usually educated factional youth leaders, who tend to be inexperienced and incompetent herdsmen).

The regulation of pastoral resources has been more seriously hazarded by the encroachments of other ethnic groups, who cannot be controlled by Kalasha ritual sanctions or communal fines. In upper

Bomboret and Rumbur valleys, these include the large 'Sheikhanandeh' villages of Kati-speaking Bashgalis, settled as non-Muslim refugees from Afghanistan in the 1890s, who have since encroached on Kalasha pastures (see Map 9.1). In mustering support against these encroachments, Rumbur leaders in the 1960s invited other Muslim Chitralis from the nearby bazaar village of Aiun to join their herding companies. But this turned out to be a rash decision, since subject to bitter factional accusations, which subsequently enabled these more distant Aiuni neighbours to litigate as 'local rightholders' to all forest resources in Rumbur (as discussed below). Further incursions of Gujur professional herdsmen employed by these Aiuni neighbours have also rendered the reallocation of pastures among herding companies more difficult, while the Gujurs are accused of overgrazing pastures.[18] In Bomboret valley, where such outsiders predominate, the harvesting and pastoral regulations of the *roi* constabulary proved unenforceable by the 1980s, and their role has since been limited to ritual services.

According to a ritually enforced sexual division of labour, Kalasha agriculture is largely undertaken by women. Kalasha men plough and sow fields with grain, and male household heads usually decide what crops should be cultivated in consultation with their wives, who are otherwise responsible for organizing field labour. Kalasha have extensive knowledge of many local varieties of cereals, adapted to microclimatic variations of their scattered fields at different altitudes; but they have also adapted quickly to new varieties of grain (probably introduced unwittingly through the purchase and re-seeding of government subsidized cereals). Up until the late 1970s, several local varieties of millet, maize and winter wheat were grown in equivalent proportions. By 1990, however, maize had

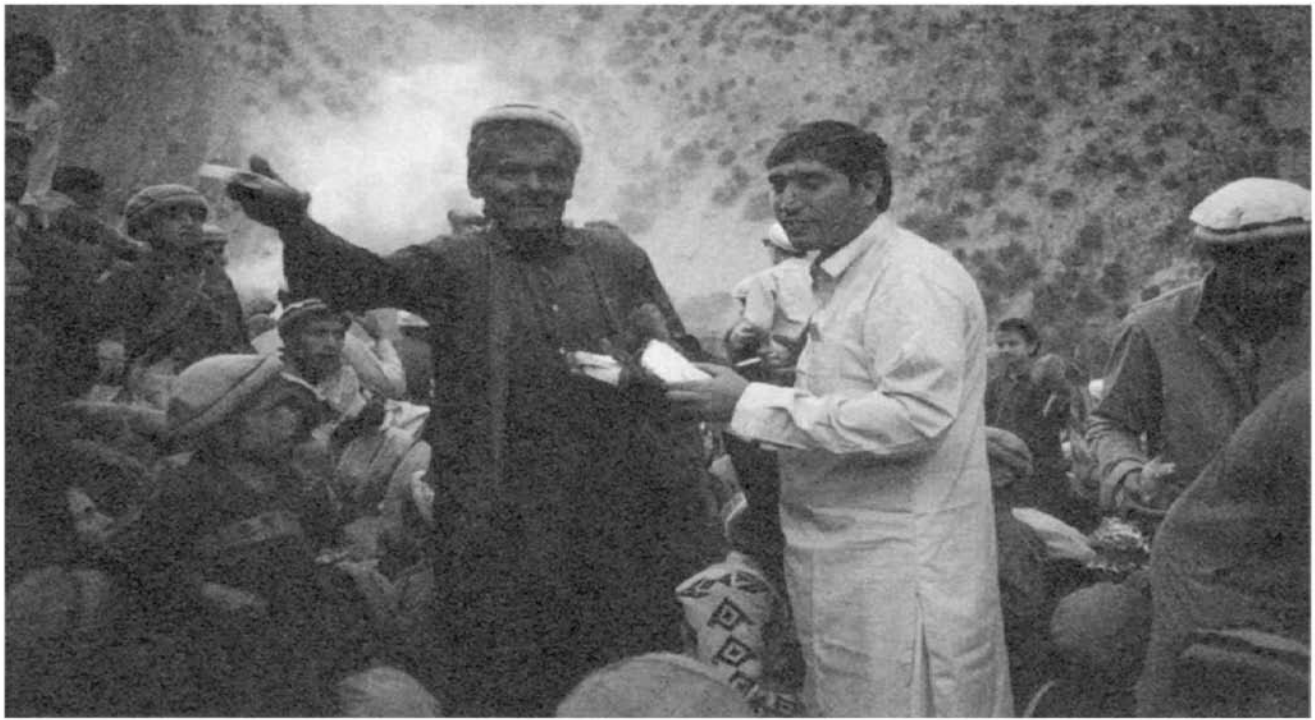


PLATE 9.1 RITUAL APPOINTMENT OF THE *ROI* CONSTABULARY DURING THE SPRING JOSHI FESTIVAL IN RUMBUR VALLEY, MAY 1989. SAIFULLAH JAN (CENTRE RIGHT) ASSISTS THE *DEHAR* SHAMAN (LEFT) DISTRIBUTING PORTIONS OF A CONSECRATED 'CHEESE OF THE *ROI*' AT THE SANCTUARY OF THE GOD MAHANDEU. FIVE SELECTED YOUTHS ACCEPTING THIS CHEESE ARE THEREBY INSTALLED AS *ROI* OFFICIALS, RESPONSIBLE FOR COORDINATING RITUAL OFFERINGS, CONTROLLING THE HARVESTING OF FRUITS, AND REGULATING SEASONAL SCHEDULES OF AGRO-PASTORAL SUBSISTENCE. (PHOTO: P.PARKES)

almost entirely displaced millet, being grown at altitudes where it had never before been feasible, where it was now regularly double-cropped with wheat.[19] Supposedly improved new varieties of wheat and maize seeds, introduced by the AKRSP, have as yet been restricted to 'model farmers', while the use of chemical fertilizers, allowing perpetual maize and wheat double-cropping without fallow, has been similarly restricted to a few village organizations granted agricultural credit. But many Kalasha remain sceptical about the supposed higher yields of these new grain varieties, as well as having sufficient livestock to be less dependent on chemical fertilizer.[20]

Apart from cereal tillage, Kalasha women cultivate several varieties of beans and pulses, often intercropped with cereals, as well as gourds planted around the terraced walls of fields. The. encouragement of further specialist vegetable growing by women, pioneered by a Women's Organization nursery in Bomboret in 1989, is still limited by scarcity of arable land, as well as some understandable resentment by husbands that their wives are thereby encouraged to neglect their normal field cultivation.[21] Kalasha women are also responsible for harvesting and drying fruit and walnuts, which form a substantial part of the winter diet. Both fruit and walnut trees may also be transferred to daughters as dowry *(jez-mut).* Being thus lineally 'alienable property' (unlike arable land), many walnut trees have also been sold or mortgaged to Chitrali traders in the past, particularly for grain in years of famine. As we shall see, the sponsored redemption of such trees in the 1980s plays a crucial narrative role in contemporary developmental representations of Kalasha indigence, ignorance and irrationality.

The most important transformation of Kalasha subsistence in recent decades, however, has been the sponsored construction of new irrigation channels. The subsidizing of some thirty major channels from the 1980s, many of two to three kilometres in length, potentially offers a huge increase in landholding, forseeably accomodating an annual population growth of over three per cent nowadays. However, few of these channels have as yet been completed, and, as mentioned earlier, many have encountered problems with construction. Despite programmatic intentions to employ 'culturally relevant skills and institutions' (AKRSP 1987), all of these channels have been built according to an outside engineer's survey and use roughly dressed stones set in poor cement rather than the traditional dry-stone walling constructed by gradual trial-flow, for which Kalasha were renowned artisans. As Saifullah Jan, a major contractor for government sponsored channel-building throughout the 1980s, ruefully explained:

> We all know that the old dry-stone channels worked well; they even got stronger year by year, bound by the roots of trees and grass. But for a contractor there is no profit. So we call in the

> engineer, and we make it *pokhta* ('pukkah') with cement, even if it may collapse in a year or two. But then, there will be another contract....

Large profits have thus been made by a handful of factional leaders through such projects, subsequently invested in the purchase of jeeps and the building of tourist hotels. The membership of village organizations also appears frequently to be aligned by factional allegiance around such leaders (typically including sons and grandsons within single households as independent members), thus further fuelling enclaved animosities. In Saifullah Jan's (1996:241) regretful words: 'Some of our senior elders...hold attitudes as if they were still living under the Kator rulers. And so, together with progress, new problems have also appeared.' But these new problems of development have equally emerged through a curious dialogical complicity of enclaved indigenous *presentations* and exogenous *representations* of Kalasha 'indigent knowledge'.

INDIGENT KNOWLEDGE: ARCHAIC WISDOM, CONTEMPORARY IGNORANCE

> Kafiristan, the land of Kalash, romanticized by the visiting foreign researchers and tourism promotion agencies in the country, has been fast moving towards the brink of bankruptcy. (Alauddin 1992:217)

Contemporary accounts of the Kalasha, including ethnography, development prospectuses and travel journalism, reiterate a handful of stock romantic motifs: mysterious 'Aryan' origins, or legendary Greek descent from Alexander the Great, ancient shamanic mysteries, prehistoric 'children of nature' and an arcadian 'lost world' (cf. Jettmar 1975:327–8). These familiar tropes of Shangri-la, earlier applied to the Afghan Kafirs or the Burusho of Hunza (Frembgen 1989), are in fact recent configurations for the Kalasha. George Scott Robertson, one of the first European visitors to their valleys, wholly disparaged what he called 'an idolatrous tribe of slaves' (1896:50–2); and similar perjorative comments on Kalasha subjugation and servility, reflecting conditions of abject serfdom as well as local Chitrali prejudices, characterize other frontier memoires of the colonial era (e.g. Biddulph 1880:132–3). But after the conquest and conversion of the neighbouring Afghan Kafirs at the turn of the century, European representations of the Kalasha were gradually redeemed. They now replaced the Afghan Kafirs as a pagan foil for anti-Islamic irritations and as a specular vitrine for fantasies of archaic (Indo-) European origins. Carleton Coon (1951: 68–73) even went so far as to suggest the survival of Eurasian 'Bronze Age' conditions here, 'if the reader will overlook a few iron

tools'. This romanticization was already tentatively developed in Colonel Reginald Schomberg's travel book *Kafirs and glaciers* (1939). But its florescence emerged with Fosco Maraini's (1964:242–71) grandiloquent Epilogue on the Kalash Kafirs, 'On the Trail of Dionysius in Asia', since much emulated in travel literature and tourist documentaries.

As Frembgen (1993) disturbingly suggests, contemporary anthropological treatment of Kalasha culture has also ambiguously drawn upon these archaizing themes; and such scholarly amplifications have then been fed back again into ethno-touristic literature, sometimes to be re-enacted as a 'staged authenticity' by Kalasha:

> If the Kalasha live up to the expectations of travel agencies and tourists such as these, then they are on their way to degenerating into a collection of odd people. This is what most tourism planners apparently would like for marketing purposes…. The foreigners are fascinated by the 'paradise experience' of a jointly performed ritual in which the mythical prehistoric times become present again…. [And] to the inhabitants of a paradise on earth, where people live together happily, naturally, simply, and in harmony, belong the shamans. (Frembgen 1993:50, his manuscript translation from the original German)

Like the beguiling 'simple Kalasha' of the feudal era, there are indeed staged 'shamanic Kalasha' ready to become entranced for a fee, as well as elders prepared to arrange extra-seasonal performances of women's festival dances. Anthropological representations of Kalasha traditional knowledge have also developed a peculiar life of their own through semi-scholarly and popular redactions, which are now sensed and reproduced by *kazis* or 'wizards' as revealed tradition (cf. Fussman 1991). Such complicity of popular anthropological accounts with exploitative tourism has been even more angrily denounced by Rovillé (1988: 158):

> academic descriptions of the Kalash are basically false…a myth of the Kalash noble savage has been created which has fuelled the tourist agencies looking for exotic material to provide for their clients.

Yet even if ethnographers have unwittingly contributed to such romanticized 'ecosophical' representations (cf. Brosius, this volume), they have at least indicated that Kalasha traditional subsistence is evidently quite situationally efficient and 'sustainable' within a comparative regional context.[22] Development and

government agencies, on the other hand, pressed by their sponsors to intervene with environmentalist minority programmes, alternatively need to *justify* their showcase projects in the Kalasha valleys. Romantic representations, also richly evoked to advertise their programmes and solicit sponsorship, thus need to be *counter*-balanced by a more sobering apprehension of indigenous helplessness. Here again, enclaved conditions of Kalasha knowledge and self-presentation may have well served the immediate political and financial interests of factional leaders, in collusion with philanthropic NGO and government benefactors, while their less desirable long-term consequences were not so readily forseen.

Reviewing a substantial grey literature concerned with Kalasha development programmes, one encounters a familiar 'apologetic' acknowledgement of the verdant *appearance* of well-wooded valleys and a *seemingly* sufficient subsistence, often combined with lyrical evocations of rustic and exuberant festival celebrations. To quote from a well-researched UNDP-FAO project identification mission:

> Within these valleys live [people who] follow the rites and celebrations of an ancient religious culture.... Life is hard for all in Chitral, and to single out the Kalash for special treatment may seem unfair. The Kalash may even seem environmentally advantaged, particularly when compared with the bleak landscapes of upper Chitral.... Even the least favoured of the three Kalash valleys seems no worse, and may even be better than many other village niches in Chitral.... The Kalash appear to be good farmers.... (Cossins and Rehman 1990:1, 12, 19)

The necessary sobering antithesis, however, is an 'invisible cultural wall' comprised of both external prejudice and indigenous ignorance, where 'an additional helping hand is required.' But such helplessness, which crucially justifies intervention, still needs to be demonstrated through identifiable cases of 'indigent knowledge':

> Shakil Durrani, now Commissioner Malakand Division, argued in a paper in 1982 [Durrani 1982; see Deputy Commissioner Chitral 1982] that the lot of the Kalash in times past was pretty miserable...[but] is the situation any better now than it was at the turn of the century? Many Kalash scholars and observers believe it is not.... Whatever happened to the 'Kalash Foundation' formed at the urging of Shakii Durrani to buy back rights to the now valuable walnut trees from Muslim neighbours who had bought these for a song a generation ago? Have the Kalash also again been exploited by clever cash-rich businessmen who have purchased for small payments future royalty for trees to be logged by the F[orest] D[evelopment] C

> [orporation]? Indeed, how could they be so foolish as to again sell such rights in the first place, or is it simply that for hungry people the lure of immediate cash to buy food or other goods is irresistable? (ibid.: 12–13)

The proposal then presents a portfolio of urgently needed remedies, based upon 'Kafir Kalash priorities' who 'seemed very sure in drawing up a list of the most important shortcomings of life within their valleys' (p. 23).[23]

A critical explication of these exemplars of Kalasha indigence and ignorance will be a major task of the remainder of this essay. The latter reference to Kalasha forestry royalties is our concluding topic (treated in the following section); but the earlier reference to the mortgage and redemption of walnut trees is arguably more significant, occurring repeatedly as an exemplification of Kalasha indigence in Alauddin's gloomily dystopic compilation *Kalash: the Paradise Lost* (1992), as well as in other recent writing concerned with Kalasha development problems. This case refers to a survey of mortgaged walnut and fruit trees undertaken by a deputy commissioner of Chitral in 1982, who subsequently arranged a Minorities Welfare Fund interest-free loan for their redemption (Alauddin 1992:26, 32–3). Although the expropriation of such trees had long been recognized as a Kalasha grievance, its extent and inexplicable persistence had not been so apparent before this survey. The report itemized 493 walnut trees (Birir 191, Bomboret 201, Rumbur 101) mortaged over a period of five to eighty years. Items reportedly taken by Kalasha on the security of a tree range from quite substantial sums of money to such trivial items as 'one bread', 'one shirt', 'one packet of tea', 'one cap', or (not infrequently) 'nil' (Durrani 1981; cf. Alauddin 1992:234–6). On face evidence, Kalasha thus appear to have let themselves be persistently swindled for over a century, posing perplexing problems for any reasonable understanding of individual or collective rationality, and hence perhaps irrefutably confirming their 'indigenous ignorance'. But this easy inference requires ethnographic scrutiny.

Many of these mortgaged trees *were* undoubtedly expropriated through the usurious imposition of rates of double or more annual interest, demanded on loans of food in times of acute shortage, causing irretrievable debts for subsistence farmers that are also widely documented elsewhere in this region (e.g. Edleberg and Jones 1979: 106; Jones 1974:246; Kreutzmann 1996:275f.). But one should recall that, in contrast to arable land, which is subject to residual lineal claims, walnut trees are considered alienable personal property. The total extent of mortgaged land claimed for redemption in fact amounted to just 'two fields' of altogether less than half a hectare. So Kalasha seemed at least sufficiently sensible to hock their alienable assets rather than their productive arable

base whenever possible.[24] Furthermore, walnut trees are quite plentiful, and their escalating value (due to market demands created through international export from Peshawar) is relatively recent.[25] Only with hindsight is a tree valued at Rs 5000 in the early 1980s exploitatively stolen 'for a song' for a typical loan (or sale) of a few hundred rupees in the 1960s. Yet this still leaves the bizarre 'caps' and 'loaves of bread' unaccountable. A conceivable solution is simple: that the trees rendered in many of these 'exchanges' were contractual *gifts,* donated to customary bond-partners in Aiun, who were thereby tied to visit their fictive kin in order to harvest their walnuts, while the latter might reciprocally expect basic board and lodging in an otherwise hostile Chitrali environment. Such bond partnerships have been notoriously exploited by their Aiuni partners, as Kalasha are well aware; yet they have been an indispensible strategy of survival, ensuring islands of hospitality and networks of allegiance beyond the enclave.[26]

If this rationalized reconstruction is plausible—and this is apparently confirmed by Baig (1994:106–12) on Aiuni perspectives, corresponding with Kalasha accounts in Parkes (1983:67–8)—then many quite 'reasonable' gifts and sales have been wittingly misconstrued for purposes of redemption as instances of 'brutal expropriation' *that also entail an exaggerated depiction of Kalasha gullibility.* This depiction of victimization may well have been confabulated with the connivance of both Kalasha mortgagor and Aiuni mortgagee, who could easily settle a mutually inflated price for the sponsored 'redemption' (or actual repurchase) of mortgaged or sold property.[27] In any event, while the loans were supposed to be repaid through subsequent commercial sales of walnuts, forming a revolving fund to sponsor further repurchases, many Kalasha reportedly defaulted, while others apparently pocketed their 'loans' without any attempted 'redemption' of sometimes barren old trees (Alauddin 1992:32–3; 234–5). A few years later, the Chitral Area Development Programme even proposed a further Rs. 2 million for more repurchases of these trees.[28]

Hence traditional cunning under a guise of 'simplicity' may have again served its immediate strategic purposes, i.e. a further welfare distribution for factional leaders to disburse to their supporters. No doubt former Kalasha destitution had been unfairly exploited, so that 'affirmative restitution' (albeit more substantially rewarding the alleged exploiters to sell old trees at any price they wished) was considered justifiable. Yet the ultimate cost of this materially profitable 'redemption' has been arguably the symbolic legitimation of a renewed serfdom—to be instituted under specific *environmental* as well as cultural government protection—where the old human farming of slaves may now be replaced by a more 'developed' cultivation of human assets for commercial tourism. For the deputy commissioner, distressed by this now documented evidence that the 'Kalash were poor and this poverty was further impoverishing

them,' subsequently campaigned for a 'Kalash Foundation' to be established with foreign philanthropic funding, but under strict government supervision:

> It is felt that the Kalasha people can only be guaranteed their rights and their economic plight can only be ameliorated if a high powered Foundation/Trust is set up on their behalf. Such a Foundation would be their only way out. It could be presided over by the Federal Minorities Affairs Minister and could comprise senior officials of the NWFP Government and Tourism Division, the Deputy Commisioner Chitral and a couple of enlightened Kalash, specially men like Saifullah Jan, Kalash of Ramboor *(sic).* The function of the proposed Foundation would be to help find remedies to the pressing problems the Kalash face and to act on their behalf. (Durrani 1982:3)

The inclusion of tourism development officers as presiding patrons is explained by an initial argument that 'on the more pragmatic level we must recognize that the unique Kalash people are a foreign exchange resource of the country. Nothing in Pakistan, not even the Khyber, holds the fascination for the western or the Japanese tourist as the Kalash Kafirs.' Hence, with subsistence immiseration and economic incompetence evinced in those litanies of mortgaged walnut trees, 'the best way to improve the economic conditions is to encourage them to profit from the foreign and the local tourists to the valleys' (ibid.: 1).[29]

A further proposal was then sent to scholars and journalists, evidently appealing to postcolonially troubled consciences:

> You will appreciate that in the past tens of thousands [of] tourists and hundreds of other experts/scholars have visited and studied the Kalash people.... [But] they continue to live in misery. The reason for this is obvious. Most of the foreigners have only wanted to use the Kalash for their own purposes, displaying a superficial concern for them.... I think it is high time the people who are genuinely concerned about the welfare of the Kalash should do something positive in this regard with the approval of the Government. (Durrani 1990)

The proposal was initially for 'Community Centres' to be established in each valley:

> These Centres would also be utilized by adult Kalash people, particularly the women, in imparting adult literacy, hygiene, basic health course, use of fuel-efficient cooking-stoves, community development, priorities and awareness of the environmental issues. A lady Social Organizer...would be

> appointed to organize and operate the programme. She would liase with the Deputy Commissioner and the Kalash Foundation and the regular line departments of the Government to help resolve the problems faced by the people thereby mitigating their hardships. She would require a Suzuki jeep to tour the valleys, to transport the sick of all communities to Chitral, etc., etc. The Deputy Commisioner Chitral would coordinate the programme and would look after the disbursement of the money collected for the Kalash funds from tourists, (ibid.)

Despite a reluctant response from many of its addressees, this proposal was precisely adopted with the foundation of the Kalash Environmental Protection Society, with a duly appointed foreign lady social organizer, and with Saifullah Jan an enlisted indigene.[30] Ironically, it was Saifullah Jan himself who had personally campaigned for the redemption of Kalasha walnut trees—and who would later indignantly denounce all such 'well-wishing' protectionist programmes.

INDIGNANT KNOWLEDGE: THE STRUGGLE FOR RUMBUR FOREST RIGHTS

> In those times [of President Ayub Khan in the 1960s] the appointed [Basic Democracy] Members did good work for us. Yet some were still ignorant and mistaken. Their fault was this: outsiders were coming and taking our property, yet they did not say a word against it. People took our trees, and they did not say a word. Because of that we now have serious problems. And with outsiders entering our valleys, our customs began to get weak, becoming mixed with theirs. With this mixing of customs, even our Members began to think: 'Perhaps our custom is wrong, since other people say it is bad!' Like that our customs became endangered, even until now. (Saifullah Jan 1996:241)

Saifullah Jan belongs to a generation of emerging elders and leaders, born after feudal enfranchisement, who sometimes harshly criticize their predecessors (and factional opponents) for too weakly defending or betraying Kalasha interests in the past, a past of oppressed compromises difficult for them now to comprehend. Stirred by the socialist rhetoric of Z.A.Bhutto's Pakistan People's Party in the early 1970s, it was young members of this generation who actively mobilized factional opposition to earlier leaders, whom they accused of gross treachery and corruption, 'eating the wealth of the people' and dishonouring Kalasha dignity. Adopting a more militant stance, newly educated members of this generation keenly

assimilated and disseminated radical discourses of 'people's rights' and of the distinctive 'indigenous rights' of the Kalasha as Pakistan's 'aborigines' (as once rather unwisely proclaimed by Bhutto himself in Muslim Chitral). This potentially aggressive assertion of indigeneity was prominent in Rumbur valley (perhaps emboldened by the sympathetic interests and ideals of visiting young anthropologists such as myself in the 1970s). Here it combined a concerted revival of traditional institutions, such as feast-giving, with a rallying of collective defensive action against further outside encroachments on Kalasha natural resources, especially the forests.

Prior to the late 1970s, the cedar forests were not considered a particularly valuable resource by Kalasha. Until the dissolution of the principality of Chitral in 1969, all forests were claimed by the State's rulers, who contracted forestry work to Pakhtun timber merchants, while local communities had customary rights only to cut down trees for housebuilding and other subsistence needs, supervised by a local 'forest guard' *(jangalwal)*.[31] After Kalasha enfranchisement from serfdom in the 1950s, previously forced labour in logging became open to paid employment, and throughout the 1960s and 70s, such state forestry work was a welcome source of small income to many households. In 1977, however, the settlement of a Pakhtun tribal insurrection over forest rights in nearby Dir Kohistan (Keiser 1991: 69) led to an amendment of provincial law concerning state forests, whereby 'local rightholders' who could demonstrate customary usage of forest resources would be entitled to a 60 percent 'royalty' of the commercial value of any timber extracted (Knudsen 1996:7–9). By 1980, when a newly instituted Forest Development Corporation started commercial logging in southern Chitral, many local communities there became embroiled in legal disputes over claims to 'local rightholder' entitlement (Masud-ul-Mulk 1994). In the Kalasha valleys, this was signalled by an onslaught of many jeep-loads of Aiuni neighbours, who began cutting down oak forests in the lower valleys as an assertion of their right-holding status, which they claimed on the grounds of their 'traditional' usage of pastures in these valleys. Kalasha leaders in Birir and Bomboret were persuaded to reach an accomodation of variously shared royalty rights with these neighbours, enabling extensive commercial logging of the cedar forests to begin. In Rumbur valley, however, concerted resistance was organized by Saifullah Jan together with his father-in-law, the 'progressive' factional leader and feast-giver:

> The work was like this, brother: we saw from the very beginning that people from Aiun were coming here and they started cutting down our oak forest [for firewood]. When they did that, with a few other elders I started to talk about it. I went

> down to Gombayak [at the junction of the Acholgah side-valley] and arranged a 'check post' there: it was the responsibility of people from every household to take turns, like the *den-wal* oak-forest guards; they would not allow timber to be taken down from there. Then the real dispute started.... I called my father-in-law together with all the others who are elders [i.e. leaders of both factional parties]. I said, 'We must make plans. Those Aiunis are ready to make a dispute with us. First we must go and look at the documents [royal land deeds of the former principality]; and once we get those we can begin.' So later we went [to Chitral] and we got out those documents... and they clearly showed the interests of Kalasha there. Those Aiunis were at fault. So I took a lawyer, and then the case began.... (Saifullah Jan, Granada Transcripts 1990:272)

The case persisted for over seventeen years, entailing more than twenty hearings in three separate courts within Chitral, referred thrice on appeal to the Provincial High Court at Peshawar and twice to the Supreme Court in Islamabad, where a decision in favour of Rumbur was eventually reached in February 1997. Adopted by Islamist political parties in Chitral as a test case of the government's Muslim credentials, its prosecution became increasingly violent from the late 1980s. Demonstrations of mullah-inspired Chitralis angrily intimidated the Deputy Commissioner's office and campaigned outside the courts of Chitral, whose record office was even set on fire. The Kalasha of Rumbur valley were also attacked on several occasions by heavily armed mobs from Aiun, with exchanges of gunfire ensuing before police intervened. In March 1993, a grenade-bomb attack on Saifullah Jan's guest-house injured several Kalasha youths and tragically killed his younger brother.

But such brutal intimidation only confirmed Kalasha solidarity, where earlier factional grumblings—that Saifullah Jan and his allies were 'eating the wealth of the people' through the subscriptions they were perpetually demanding for legal costs—were silenced by a stunned recognition of the risks and sacrifices they had undertaken. After the imposition of an emergency 'stay order' on all disputed property within the valley, which rendered any new cultivation of fields illegal, Saifullah Jan and his father-in-law even orchestrated a collective ban on all government development projects in the valleys as a public protest to embarrass the Deputy Commissioner into a reversal of his arbitrary legislation. For organizing this successful protest, they were twice jailed in Chitral prison.

With collective solidarity thus fusing in the face of external adversity, this concerted struggle against outsiders temporarily united Rumbur factions. At communal meetings I witnessed in 1989, it was surprising to hear senior factional leaders admitting

their mistaken policies in the past, such as allowing Aiuni villagers original access to Kalasha pastures, and even competing in rhetorical self-censure to persuade their followers to continue collective support of this campaign. As Saifullah Jan's father-in-law announced to the male ritual congregation of the community during the Joshi festival in May 1990, echoing Bhuttoist (PPP) popular political rhetoric as much as conventional Kalasha oratory:

> Being worried about our problems, perhaps thinking about our difficulties, I now ask of you a request: that we should all agree together. With the grace of God, up to now the whole community has agreed together…and you have generously rolled up your sleeves [to fight] for our dispute with outsiders. Within the valley also, you have kept peace with anyone making a noise [in factional disagreement]…. When God showed you this difficulty, he was testing your faithfulness, and he will fully return your rights, even in excess…. This is a poor, ragged country, and we are very backward. Yet we stand shoulder to shoulder with other men, even those [in Aiun] who are great landlords and wealthy people. We may be just poor Rumbur folk, simple mountain people, but we have God [on our side] to thank…and with this community [united], honour and justice will be given to us. (Granada Transcripts, 1990:195–7; filmed with subtitles in Sheppard and Parkes 1990)

Similar if more opaque calls for moral unity and greater respect for ritual regulations characterized shamanic revelations during this period, accompanied by concerted efforts by the *debar* shaman and *kazi* 'priests' in Rumbur to restore customary rules of ritual purity and pollution. Political speeches also began to debate explicitly environmental issues: the forests were part of the 'earthly roots' of Kalasha, which had to be safeguarded for future generations; pastures needed to be protected against further Gujur encroachments; while traditional conservational institutions, such as the *roi* 'constables' and the *denwal* 'forest guards', already novelly invoked for protection of the cedar forests, were to be reinforced. As Saifullah Jan is reported to have stated in anticipation of his victory:

> The government has cut 2 percent of the forest [for obligatory 'local supply' of timber in Chitral], but I will allow them to cut no more than 5 percent of the total. Then I will explain to the people of the valley that they must use some of the royalty money to re-create the forest that has been lost. But it will be their money, so they must decide…. (quoted in Rose 1992:12)

Grumbling concern about environmental damage caused by deforestation had already been voiced by Rumbur Kalasha during my earliest fieldwork in 1972, when timber logs left by the side of the river would be swept along by the first summer floods, causing escarpments to collapse and fields to be lost. The subsequent building of a road into the valley was also contested by several factional leaders as an inducement to further Chitrali depredations of the oak forests, but it was then felt that little effective resistance could be made against an agreed government policy. In Bomboret and Birir valleys, there is similar concern about the excessive logging currently operating there. Yet extensive deforestastion in Birir has continued for over a decade with the apparent complicity of its leaders, who have sold their royalty rights on speculation to timber contractors, sometimes at a fraction of the estimated value of the timber logged (Lines 1992, 1996).

Again, such apparent irrationality might be ascribed to indigenous environmental ignorance or 'indigent knowledge,' in contrast to the provocatively evoked 'indignant knowledge' of Rumbur Kalasha. In the earlier cited words of development consultants, 'How could they be so *foolish* as to again sell such rights in the first place, or is it simply that for hungry people the lure of immediate cash to buy food or other goods is irresistable?' (Cossins and Rehman 1990:13). Like those mortgaged walnut trees, blatant stupidity seems irrefutably documented in so many grubby thumb-prints that have signed away rights to an environmental heritage that no amount of ancient cosmological wisdom could mundanely insure against short-term greed. Hence a seemingly justifiable demand for further imposed government foundations or foreign NGOs to 'protect Kalasha' against their own apparently misguided economic intentions. And no doubt again there are Birir elders simulating the old 'simple Kalasha' of doleful ignorance, gravely shaking their heads with extension workers about environmental devastation, while lining their pockets with encashed royalty monies. But again, such persuasive enactments of indigence and ignorance may be ethnographically deceptive.

One should recognize, for example, that the speculative sale of royalty rights to timber contractors is widespread throughout southern Chitral (Masud-ul-Mulk 1994), as well as elsewhere in northern Pakistan (Treacy 1994). As Knudsen (1996) has argued, there are sound economic reasons for negotiating an immediate cash compensation for royalty dues in an institutional context of very high risk due to the maladministration of Pakistan's Forest Development Corporation (FDC) regulations:

> The reasons for selling royalty rights to forest contractors seem to be a combination of poverty (high discount rate), the uncertainty which afflicts logging operations, combined with

> the risks associated with future compensation. If the locals were to comply with FDC's harvesting regulations, they would neither be paid in advance nor assured of being paid later. (Knudsen 1996:12–13)

Hence to blame such environmental mismanagement on the 'environmental illiteracy of the population' (Dixon and Perry 1986: 304) is 'a distortion of facts and based on a superficial understanding of the situation facing rural people…[which] also perpetuates the mistaken view that people are not interested in conservation of natural resources' (Knudsen 1996:22).

It remains to be seen whether Saifullah Jan's ultimately successful campaign to claim full royalty rights in Rum bur will result in a more collectively rational indigenous management of Kalasha forests. In the short term, Rumbur Kalasha probably need to collude with timber contractors to ensure sufficient logging permits to cover the huge banking debts that have acrued in prosecuting their case over seventeen years. In the longer term, there are some hopeful indications that this costly struggle has evoked an 'indignant knowledge' of the persisting value of traditional institutions of conservation management and of coordinated action, which have elsewhere been hazarded more by the imposed encroachments of outsiders and ill-conceived schemes of developers than by any intrinsically 'indigent knowledge' of Kalasha themselves —*however they may have thus willingly misrepresented their indigenous knowledge as compliant ignorance.* Grounds for guarded optimism are also suggested by a similar struggle for local control of forest resources waged by another small community in the lower Hunza valley, which resulted in temporary government acquiesence in a system of dual (local and state) control over forestry, organized through traditional institutions ensuring a strict conservational regime of collective management.[32] This appears close to Saifullah Jan's envisaged ambitions for Rumbur, and those of perhaps many equivalent indigenous leaders throughout South Asia. In his indignant words again, 'We don't need money or technology from the outside, we need *legal protection'* (cited in Rose 1992:1), as yet seemingly forthcoming only through collective protest and lengthy litigation.

CONCLUSIONS: KNOWLEDGE AND IGNORANCE BEYOND THE ENCLAVE

Readers of this volume may be disappointed that I have managed to say so little about the culturally distinctive environmental and subsistence knowledge of the Kalasha. This is partly because it has been dealt with elsewhere (Parkes 1987; cf. Snoy 1994; Sperber 1995). But this chapter's particular neglect of Kalasha ritual ecology

was also motivated by an awareness that it is irrelevant to most practical issues of technical development that circumscribe the discursive domain of 'indigenous knowledge' (Marsden 1994; cf. Sillitoe 1998). Kalasha ritual attitudes towards livestock, or competitive feasting for renown, or the religious principles underlying sexual purity and pollution, which both orchestrate and motivate subsistence, are rather apprehended as irrational impediments of 'indigent knowledge' preventing enlightened economic and social planning; or else they are more respectfully consigned to a festive and folkloric dimension of cultural *performance* suitable for tourist development.

I have been equally apprehensive about a more sophisticated developmental embrace of practice theory, also filtering into NGO discourse: i.e. where 'indigenous knowledge' is represented as an improvizational *habitus* of 'skilled' but subliminal subsistence techniques, innately adjusted to practical or cultural reason. Bourdieu himself cautioned against the romantic aestheticization inherent in such phenomenological perspectives of what he termed 'participant' anthropology (1977:115; 1990:96). Yet subsequent anthropologists and development theorists, inspired by a Heideggerian mystical valorization of sensual praxis, rather easily slip into such an aesthetics of indigenous knowledge in properly combatting its dismissal or denigration by technical science. Practical knowledge, reduced to skilled reflexes of habit, is then redignified through aesthetic metaphors of athletic virtuosity, choreography, musical performance, social poetics or other 'blurred genres' of spectator connoisseurship, sometimes eerily recalling early modern nostalgia for rustic arts-and-crafts apprenticeship.[33]

While it is imperative to appreciate and respect intrinsic skills of traditional subsistence, including the situational rationality of indigenous farming regimes (e.g. Netting 1993), this neo-romantic valorization of embodied, tacit, subliminal or situationally embedded knowledge—in contrast to indignantly debated or argued knowledge concerning resource management—ultimately consigns Indigenous Knowledge to another cognitive limbo of 'enskilled' indigent ignorance (cf. Hobart 1993). An international seminar on 'Indigenous Knowledge Systems and Biodiversity Management in the (Hindu Kush-Himalaya) Region' even definitively pronounced that *'IK is what people do unconsciously'* (E.Mathias-Mundy in Gurung 1994:30). And so this buried nescience needs to be disinterred with a battery of 'participatory appraisal' techniques, in order to demonstrate, somewhat perversely, that 'poor people…have a far greater capacity to map, model, diagram, estimate, rank, score, experiment and analyse than outsider professionals have believed' (Chambers 1994: xv).

Like Sundar (this volume), I am yet to be convinced that outsider professionals really need this kind of interrogatively produced 'ethno-developmental' knowledge, inherently subject to distortions of

miscommunication and compliant echo-formations that we have witnesssed among Kalasha. And like Saifullah Jan, I doubt whether indigenes need to be told and shown (or 'empowered with') what they already know and see, and debate. In thus struggling against the grain of conventional representations of IK as 'indigent knowledge,' I have therefore alternatively emphasized issues of intentionality and rationality, as well as the unintended consequences of strategically motivated action, and the role of individual agency exemplified in the political career of Saifullah Jan —including the emergent 'indignant knowledge' of environmental consciousness that this has helped to evoke among Rumbur Kalasha. Although scarcely developed in this chapter, I hope to have indicated the pertinence of such 'rationalist' interpretive perspectives in constructing a critical-analytical anthropology of developmental communication, embracing *both* indigenous *and* exogenous knowledge dialogues.

In employing Mary Douglas's notion of the 'enclave culture' in attempting to reconstruct the sociogenetic conditions of Kalasha knowledge and (mis)communication, I should also endorse her systemic functional analysis of institutional cognition, one that includes analytical comprehension of counterfinalities (entailing self-entrenched *dys*functions) as much as the harmonic reproduction of communal solidarity or consensual consciousness (Douglas 1987: ch. 3). I must acknowledge, however, some reservations about her apparently adverse ideological colouring of the egalitarian enclave as a somewhat 'pathological' societal and cultural type of fractious sectarianism (Douglas 1993). Factional conflict might alternatively be defended as a necessary mechanism for enclaved minorities to ensure their cultural survival against internal tyranny allied with dominant external powers, otherwise easily constructed upon 'proto-hierarchical' frameworks of traditional authority.[34] This is certainly how indigenous leaders like Saifullah Jan interpret their local political struggles; and he would also vigorously defend factional debate, for all its institutional predicaments, in terms of a 'customary' communitarian democracy:

> It is also our custom to gather together and freely give our opinions about such matters [as concern the community], saying, 'We will do this!' or 'We won't do that!' In our custom we gather in one place to argue about what is good or bad for the community. (Saifullah Jan 1996:240)

It is perhaps largely through such adversarial debate, publicly invoking and questioning habitual practices, that 'indigent knowledge' (IK^1) is actively transformed into 'indignant knowledge' (IK^2). Such indignant debate certainly has a long history attested in Kalasha oral tradition, including occasional protests against unjust

rulers and internal rebellions against tyrannous local headmen (Parkes n.d.). Contemporary struggles for forest rights and debates about development thus rhetorically draw upon and feed back into earlier indignant memories of Kalasha narrative, oratory and song (Parkes 1994)—another vital dimension of IK as discursive *consciousness* that tends to be neglected (as in this essay) by a narrow focus on environmental or developmental praxis.

In conclusion, I might be expected to offer some constructive opinions on the subject of indigenous knowledge, anthropology and development policy, at least with application to Kalasha experience. But I would rather first reveal my discomfort in calumniating those who have been more actively and passionately engaged with Kalasha welfare—particularly since I well recognize my own ineluctably 'romantic' sentiments concerning Kalasha traditional culture, a shared disgust at the indignities of exploitative tourism, as well as sharing a common concern about irreversible environmental devastation stemming from commercial forestry (see KRC 1996). Adopting the internal perspective of Kalasha friends like Saifullah Jan, I also recognize the local value of responsible development initiatives such as the Aga Khan Rural Support Programme, while having obvious doubts about other well-intentioned NGO or government conservation projects.

From a more detached anthropological perspective, however, I feel obliged to conclude that, for such enclaved indigenous minorities, perhaps all imposed development programmes unwittingly amplify—with entrapped indigenous connivance—the socially deleterious processes outlined in Douglas's 'pathological' depiction of an enclave culture. That is:

- they tend to retrench indigenous knowledge as 'indigent knowledge' and conversely inhibit an 'indignant knowledge' demanding self-determined development
- they inevitably incite further acrimonious factional conflict and resentments over the political control of lucrative financial resources
- and they thereby instigate a socially corrosive economic differentiation of local factional leaders (as profitable project contractors), which ultimately undermines extant institutions of collective resource management and reciprocal support (Parkes 1997:58–9).

It is an unwelcome duty of an *un*applied ethnography of development to point out these unwanted processes, which nobody ever intended, rather than further collude in the benevolent dissolution of organizationally fragile local communities, with socially fragile yet functioning institutions of resource management, and with cognitively fragile local cultures of situationally quite

efficient—and intrinsically valuable—conscious indigenous knowledge.

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NOTES

1. Saifullah Jan of Rumbur, born ca. 1958, was the first Kalasha to complete a high-school education. After his matriculation in 1975, he was employed as my research assistant for fifteen months, and he has since worked with many subsequent anthropologists and writers visiting the Kalasha (see Denker 1981; Lines 1988; Loude and Lièvre 1984:60–61; Sperber 1995:143 n.15). In the early 1980s, he was appointed personal assistant to the Minority Member of the National Assembly, being locally responsible for most development projects introduced in this period. In November 1987, he was elected Member of the District Council of Chitral, representing all three Kalasha valleys. Saifullah Jan was a focal subject of Granada TV's Disappearing World film on the Kalasha (Sheppard and Parkes 1990), which visually complements this essay. It is also an expanded commentary on, and critical dialogue with, Saifullah Jan's (1996, n.d.) own indignant accounts of Kalasha development problems.
2. Cf. Babar Jamal n.d., Klimburg n.d., Sperber 1993. Alauddin (1992: 259–90) conveniently reprints several of the mimeographed development reports discussed here.
3. KEPS is sponsored by a 'Hindu Kush Conservation Association' based in London (HKCA 1997). Its constitution as a registered charity has the objectives of 'protection of the environment, particularly the forests; preservation of the socio-cultural life traditions of the Kalash; and providing health and education facilities to the people of the valleys' (KEPS 1993). See n. 30
4. Comparative ethnography of the local politics of development was raised prograrnatically by Curtis (1985). See now Grille and Stirrat 1997; Quarles van Ufford 1993; Li 1996.

5. Douglas's provocative model of the self-entrenched 'enclave culture' is an intentionally exaggerated caricature of an extreme 'cultural bias' perhaps better exemplified by schismatic religious sects than by minority communities (cf. Douglas and Wildavsky 1982; Douglas 1993). Its modified application to Kalasha political culture is treated in Parkes (forthcoming; cf. 1994: 159–60).
6. Observers of this period even predicted the imminent demise of the non-Muslim population, which had apparently reached a critical threshold of 1,391 people compared with 2,230 Muslims (Graziosi 1963).
7. The majority of AKRSP projects in the Kalasha Valleys have been funded by the UK Overseas Development Agency (now DIFD). On AKRSP's policy, see Husain 1992; Khan and Khan 1992. For an evaluation of recent programmes, see World Bank 1996. Since the completion of Phase Two of its programme in 1996, no new AKRSP projects have been inaugurated in the Kalasha valleys.
8. AKRSP Voluntary Organization Chitral Quarterly Report, March 1991, cited by Alauddin (1992:259–60).
9. Notably the lUCN-Sarhad Provincial Conservation Strategy for Chitral (Fuller and Mohammad Rafiq n.d.) and related regional programmes funded by the Asian Development Bank (1995), which all have environmentalist projects planned for the Kalasha valleys.
10. E.g. making redundant seasonal labour migration to lowland cities, a problematic trend of the early 1970s (Parkes 1983:635–36).
11. On misrepresented household data, cf. Alauddin 1992:53–74 with Parkes 1983:237, 611–14 on Rumbur. For odd project recommendations derived from consultation (e.g. rice-and-fish farming, poultry-raising and rabbit-breeding, onion and garlic cultivation—all inedible or polluting substances in Kalasha religion), see Naveed-e-Rahat 1988, cited in Alauddin ibid.: 279–82.
12. Cf. Edelberg and Jones 1979:31–40; Haserodt 1989:64–71; Staley 1982:10–15. Developmental misperceptions of the rationality of mixed farming strategies in this region are treated by MacDonald (1998).
13. Cf. Parkes 1983:75–82 with Masood-ul-Mulk 1992a: 52–3; 1992b: 490. The comparatively high productivity of Kalasha yields of wheat and maize is also recognized by Cossins and Rehman (1990:19).
14. On comparable institutions of collective resource management in the adjacent Nuristan region of Afghanistan, see Edelberg and Jones 1979:62; Jones 1974:40–59.
15. The *den-wal* or *ure* was first instituted by the Kalasha village of Krakal in Bomboret valley around 1970, modelled on the former *ure* institution of their Kati-speaking neighbours of 'Sheikhanandeh' (originally from Bashgal Valley in Nuristan) in upper Bomboret, and subsequently adopted by Kalasha in Rumbur. Cognate with Kalasha *roi,* the Kati *ure* institution had far broader executive powers. See Robertson's (1896:435–8) classic account of the 'Urir' magistrates of Kamdesh in Bashgal, and its discussion by Strand (1974:62–3).

16. On Kalasha *palawi* herding companies, see Parkes 1983:124–43. Equivalent *palai* companies in Nuristan are described in Edelberg and Jones 1979:74–5; Nuristani 1973; and Strand 1975. Cf. Snoy 1993.
17. This includes a large vocabulary of colour-and-horn terms, an extensive memory of breeding pedigrees, detailed classification of browsing resources (compared with indiscriminate knowledge of most other wild plants) and seemingly more elaborate diagnostic techniques and natural remedies for treating goat diseases than for human illness (Parkes 1983:96–103).
18. Such pastoral encroachments of Gujurs (or Gujars) are documented in Nuristan (Edelberg and Jones 1979:100–1; Strand 1975), as well as elsewhere in Chitral (Haserodt 1989:130–3; Masood-ul-Mulk 1992a:41).
19. This displacement of millet by new fast-maturing varieties of maize is documented elsewhere (Allan 1987; Haserodt 1989:115–18), but Kalasha farmers denied adopting new seed grain and ascribed these changes to an unprecedented (and perhaps implausible) local rise in summer temperature from the 1980s.
20. Reported yields of improved and artificially fertilized crops elsewhere in southern Chitral (Masood-ul-Mulk 1992a:53) are barely more than average for Kalasha in Rumbur, and well below those estimated for properly manured fields (Parkes 1983:76, 75).
21. I regret that I cannot treat developmental misperceptions of Kalasha gender relations here (Maggi 1998; Parkes 1997:53–7). Alauddin, for example, describes Kalasha women as 'ritually prescribed near-slaves' (1992:3) or 'beasts of burden' (ibid.: 247) whom development projects should determinedly 'liberate'; cf. Magrath n.d.
22. e.g. Cacopardo and Cacopardo 1977, Darling 1979, Loude 1980, Loude and Lièvre 1984, 1989, Parkes 1997.
23. i.e. 'irrigation systems, electricity, education, hospitals, hygiene, women's centres, handicrafts, communication and marketing, agriculture and livestock, forests and the environment [including ecotourism]'—all at an estimated cost of $1,275,000. I should state that this preliminary (two-week) survey seemed well conducted and no doubt reflected the perceived needs of Kalasha. It was submitted to me for review in September 1991 (UNDP Pakistan, Ref. PRO/300/Kalash).
24. No doubt many fields now cultivated by outsiders were similarly appropriated; yet there were no further claims for the redemption of mortgaged land. The purchase of Kalasha land by outsiders was formerly forbidden by a decree issued by Mehtar Shuja-ul-Mulk at the beginning of this century.
25. In 1975, mature walnut trees in Rumbur were being exchanged internally for two to three goats or an equivalent cash value of Rs. 500–1,000 (Parkes 1983:83), when prices of walnuts had already more than doubled over the previous decade (Mohammad 1972). By

1990, such trees were worth Rs. 5,000, with a typical two-maund annual yield of walnuts worth Rs. 400–500.

26. Kalasha *dari*, Khowar *bruk-brar* 'kidney brother', thus named after the partnership rite of being mutually fed with pieces of a goat's kidneys. Equivalent bond-partnerships are reported of the Afghan Kafirs (Robertson 1896:30–1) and contemporary Nuristanis (Jones 1974:139–40). Baig (1994:111–12) presents a candid account of the manipulative material interests of the Aiuni bond-partners of Kalasha.
27. As reported by Alauddin (1992:234–35): 'The Deputy Commissioner in his note in late 1981 estimated that on average if Rs. 500 per tree is paid to the mortgagees, they may be prevailed upon to settle… [but] in actual practice, some of the mortgagees refused to sell back for less than Rs. 5000 to Rs. 8000.'
28. Commenting on this passage in December 1998, Saifullah Jan vehemently denied that there had been *any* instances of Kalasha default in the installed repayment of loans for redeemed walnut trees as alleged by Alauddin (1992). Indeed, he challenged the author to scrutinize the official accounts of the Minorities Welfare Fund in Chitral in order to verify that such allegations were unfounded. These he ascribed to a concerted campaign by government officers in Chitral to portray Kalasha as 'irresponsible' development partners, the motive being to divert project funds to other (electorally valuable) regions. While this interpretation seems plausible, it remains puzzling that so many of the accounts of default reported in Alauddin (1992) appear to be the verbatim self-confessions of his Kalasha informants—pointing to even more involuted degrees of miscommunicated 'indigenous ignorance' or 'indigent knowledge' in self-representations to outside enquiries.
29. As a subsequent deputy commissioner stated in a filmed interview: 'the Kalash have a sort of mystery about them. The whole world is fascinated with them…and this potential needs to be exploited' (in Sheppard and Parkes 1990). In another DC's development report, it is curiously stated that while 'Kalash culture is slowly dying in the face of modern trends…a cultural development project [would]… evolve a method of packaging and marketing them to tourists so that locals benefit economically, thereby providing continuity to the ancient culture' (CADP 1990:18).
30. The Board of Governors of KEPS is an impressive muster of authorities presently governing Kalasha welfare, viz.: the Commissioner of Malakand Division; the Deputy Commissioner of Chitral; the General Manager and District Program Officer of AKRSP; the Head of Agricultural Coordination of the Chitral Area Development Programme (CADP); the Programme Officer of Development (CIDA) at the the Canadian High Commission; Ms Maureen Lines (KEPS); and Saifullah Jan, Kalash of Rumbur. Article 4.5 of its Constitution specifies that The Society shall function independently of any government department'; but the

registered address of the Society is c/o Deputy Commissioner Chitral (KEPS 1993). Saifullah Jan subsequently filed a signed statement of resignation and disassociation from KEPS.

31. A report from the 1890s already mentioned that the Chitrali ruler's 'greatest source of revenue is from timber which is floated down [from Kalasha territory to] the Oyun [Aiun] and Shishikuh streams and the Kunar…[ultimately to] Nowshera' (O'Brien 1895:ix).
32. On this Chalt-Chaprote forestry case, see Ali 1989; Dani 1988:480–4; 1989; Knudsen 1995; Mumtaz and Durr-e-Nayab 1992. The subsequent outcome of this case is unclear.
33. I should emphasize that these misgivings are not addressed to the heuristic employment of such performative metaphors by Bourdieu or, for example, Richards (1993).
34. Factionalism is also by no means distinctive of Kalasha political culture. Similar factional coalitions are reported of the minority Wakhi of upper Hunza (Knudsen 1995:115–18) and among the Nuristani neighbours of the Kalasha (Jones 1974:254–65), which suggests that processes of 'enclavement' may be more generally characteristic of this region. Husain (1992:691ff.) explicitly alludes to organizational problems of factional conflict in AKRSP projects throughout northern Pakistan.

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Chapter 10
ENDANGERED FOREST, ENDANGERED PEOPLE ENVIRONMENTALIST REPRESENTATIONS OF INDIGENOUS KNOWLEDGE

J.Peter Brosius

> Dawat took a deep breath and came wondrously alive. His eyes and arms almost danced as he made an impassioned plea for his forest and his people. For nearly an hour the power of the forest spoke through him, and when he ended there was an abrupt silence. For a few moments all of us sat quietly as the jungle sounds of distant birds and drumming cicadas filled the air. Although the details of what he said came only several months later when the interview was translated, we all sensed in our hearts that we had heard something both poetic and profound. (Henley 1990:94)[1]

In the early 1980s, timber companies in the Malaysian state of Sarawak, on the island of Borneo, began moving into interior upland areas inhabited by various groups of Penan hunter-gatherers. In 1987 the Penan began actively to resist these incursions by establishing a series of blockades. Since that time the Penan have become the focus of a broad-based international environmental campaign to assert their land rights and preserve the Sarawak rainforest. This campaign has been a very high profile one indeed, covered widely in the media and supported by numerous political figures and celebrities.[2] Environmental organizations in the United States, Canada, Japan, Australia, England, Germany, Switzerland, Austria, Sweden, Denmark, the Netherlands, Belgium and elsewhere have been involved in various aspects of the Sarawak campaign. What is perhaps most remarkable about this campaign is that it is not the product of central coordination, but instead developed almost spontaneously as the situation of the Penan became more widely publicized.[3] In a series of interviews I conducted with European and American environmentalists, Penan resistance to logging was repeatedly cited as exemplary of how

indigenous peoples can assert control over their own destinies and, in the process, halt the loss of global biodiversity. In short, the Penan have become icons of resistance for environmentalists worldwide.[4]

In the present discussion I consider the rhetoric of this campaign. In particular, I examine the ways in which western environmentalists have constructed Penan land rights with reference to Penan knowledge of the landscape and of the biotic elements which exist there. Further, I consider how environmentalists have drawn on ethnographic accounts in the process of constructing or describing certain domains of indigenous knowledge and how those accounts are transformed in the process of generating images deployed in the campaign. I focus on one text in particular, a book entitled *Penan: Voice for the Borneo Rainforest,* by ethnobotanist Wade Davis and environmental activist Thorn Henley (Davis and Henley 1990b).[5] Though focusing on the work of Davis and Henley and to a lesser extent on other works by Davis (1992 1993), this discussion applies to environmental and indigenous rights rhetoric more broadly: the Penan case is but one instance of a more general discourse.[6]

THE PENAN, BLOCKADES AND THE GROWTH OF THE INTERNATIONAL CAMPAIGN

The Penan of Sarawak are divided into two distinct populations, the Eastern and Western Penan (Needham 1972:177).[7] The Eastern Penan comprise all those groups living to the north and east of the Baram river, as well as on the upper Limbang watershed. The Western Penan include all those in Belaga District, as well as communities on the Silat River watershed and at Leng Beku. Though in broad outline the forest adaptations of Eastern and Western Penan are similar, there are significant differences between these two groups with regard to subsistence technology, settlement patterns, social organization and the tenor of social relationships.[8] Western Penan communities are characterized by long-term stability and a strong sense of internal cohesion. Eastern Penan bands, on the other hand, are much more fluid with respect to composition and much more ephemeral with respect to long-term historical identity. Western Penan communities tend to be much larger than those of Eastern Penan, with 60 to 200 members:[9] Eastern Penan communities average only 20 to 40 members. Western Penan bands occupy much larger foraging areas than Eastern Penan, of the order of 1500 square kilometres as opposed to 400 square kilometres for Eastern Penan. Both Eastern and Western Penan conceive of their territories as a shared corporate estate over which all members of a community have rights.

Logging has a dramatic effect on the lives of Penan, both nomadic and settled.[10] The most immediate effect has been on the forest resources upon which they depend for subsistence and trade. Sago palms *(Eugeissona utilis)* are uprooted by bulldozers, fruit trees felled and rattan destroyed, and severe river siltation occurs. It is this situation, and the blockades that have resulted from it, that have attracted world-wide media attention.

Almost without exception, all the communities that have resisted logging with blockades have been Eastern Penan. Western Penan by comparison have been conspicuous in their acquiescence in the activities of the logging companies. The reasons for this contrast are complex and derive from a mix of political, historical and social factors. One such factor has been that the Baram and Limbang Districts—those areas occupied by Eastern Penan—have been visited by numerous Malaysian and western environmental activists. This began in 1982, when the Malaysian environmental organization *Sahabat Alam Malaysia* (SAM, *Friends of the Earth Malaysia*) set up a field office in the up-river town of Marudi. Then, in 1984, Swiss artist Bruno Manser took up residence with a group of nomadic Eastern Penan in the upper Tutoh River area, remaining with various nomadic groups for over six years. It is Manser, along with *Sahabat Alam Malaysia,* who is mostly responsible for bringing the Penan's situation to world attention. Beginning in 1985, Manser began sending letters out to a range of environmental organizations, and it was not long before reporters, film-makers and environmentalists began to seek him out in the forest. As Manser was making the situation known outside of Sarawak, he was simultaneously acting as an instrument encouraging the normally retiring Eastern Penan to resist. Manser travelled widely throughout the Baram and Limbang areas and arranged large meetings which were attended by representatives from numerous communities. Along with SAM, Manser provided Penan with an opportunity to internationalize their cause.

It was after striking images of the Penan blockades began to circulate in 1987 that the Penan began to become better known, and a concerted international campaign began to be waged, both by Manser and by SAM.[11] The first Penan blockades were established not long after the founding of the *Rainforest Action Network,* which highlighted the plight of the Penan in its earliest campaigns. Numerous other rainforest groups were also forming in Europe, the United Kingdom, Australia and Japan in response to a more general awareness of the scale of tropical deforestation.[12] The Penan became iconic of forest destruction for many of these organizations.

Associated with the acceleration of the international Sarawak campaign were efforts by numerous individual environmentalists to visit Eastern Penan in order to gain first-hand information about their situation and document it for international distribution. A number of western environmentalists managed to sneak into what

had become a closed security zone. In their visits to Penan communities, these individuals frequently told Penan of the efforts being made on their behalf in Europe, Australia and the United States. Their mere presence (and in many cases it was indeed merely a presence, since Penan describe numerous visits by persons with whom they were unable to communicate) confirmed for Penan the legitimacy of their cause.

Davis and Henley were two such visitors. Henley travelled to Sarawak twice in 1989 in order to visit Penan. It was on his second visit that he was joined by Davis. Davis and Henley stayed with both settled Eastern Penan living in the vicinity of Long Bangan, Long Iman and Batu Bungan, and with nomadic Penan in the Ubung River. During this visit, Davis collected information on medicinal plants, and it was his wish to conduct further ethnobotanical research. This proved impossible because of the tense political situation in the area. In early 1993, Davis travelled to Sarawak again with a screen-writer from Warner Brothers in conjunction with plans to produce a film telling the story of Bruno Manser. On the basis of these brief trips, Davis and Henley published a series of items on the Penan (Davis 1992, 1993, Davis and Henley 1990b).[13]

THE REPRESENTATION OF PENAN KNOWLEDGE: RESOURCE MANAGEMENT, LANDSCAPE AND MEDICINAL PLANTS

In examining environmentalist discourse on the significance of indigenous knowledge, it is necessary to consider precisely what is meant by the word 'knowledge' itself. In fact, we can identify two rather distinct conceptions of indigenous knowledge, one which we might term the objectivist conception, the other the environmentalist conception.

As used by ethnoecologists, the word 'knowledge' is generally applied to discussions of indigenous understandings of the natural world: systems of classification, how various societies cognize or interpret natural processes, what such groups know about the resources they exploit, and so forth. Brush has suggested that the forms that the study of indigenous knowledge has taken have changed considerably and that four distinct, historically situated approaches can be discerned: descriptive historical particularism, cultural ecology, cognitive anthropology and human ecology (1993: 658). Each of these presupposes a different set of starting assumptions regarding the nature of indigenous knowledge and the purposes and epistemological bases for studying it. Central to the latter two approaches in particular has been a concern with the structural or systemic nature of indigenous knowledge (ibid.: 658) and its utilitarian or adaptive significance (ibid.: 659). Such is the objectivist notion of knowledge.

Brush also describes how, after 1980, the addition of the word 'indigenous' produced a more politicized discourse concerned with the issue of rights, which has culminated in contemporary controversies over indigenous intellectual property rights (ibid.: 659–60).[14] Politicized though it was (and is), the discourse of indigenous intellectual property rights has adhered strongly to the objectivist conception of knowledge. This is necessary, given the goal of defining indigenous knowledge as an entity subject to statutory recognition and framed with reference to metropolitan forms of legal textualization.

In certain other forms of environmentalist discourse, on the other hand, 'knowledge' is transformed into something quite different. My purpose here is to focus on the nature of that transformation by examining what it is that writers such as Davis and Henley have defined and represented to their audience as 'indigenous knowledge'.

In order to understand how this transformation occurs, it is first necessary to recognize the sources from which such representations of indigenous knowledge emerge. For the most part they derive from two sources. First, environmentalist representations of indigenous peoples and the landscapes they inhabit are often based on travel to these areas by activists, generally for periods of weeks or months. Such individuals often lack knowledge of local languages and are thus not able to communicate effectively with indigenous peoples. They are nevertheless able to document current conditions and, perhaps with the help of a translator, to record local perceptions and concerns and collect accounts of abuses by government authorities.[15] Secondly, environmentalists frequently draw upon available ethnographic information in order to enrich their accounts and lend them an aura of authority. In point of fact, environmentalist texts very often seem to result from a combination of personal and ethnographic accounts, producing a textual interweaving of personal travel narrative and ethnographic minutiae. This is the strategy employed by Davis and Henley.

Such texts and images, once produced, are dispatched. The course they may take thereafter is quite variable: they may go through numerous transformations as they are repeatedly produced, reproduced and at last distributed to a larger audience through the internet, faxes, documentaries picked up by television networks, fund-raising letters and books such as that by Davis and Henley.[16]

These are not texts or images produced for mere aesthetic appreciation: They are deployed to make an argument and mobilize support and are intended to empower those they represent. They are, in short, tools of persuasion: they may be asking us to write letters, send money or provide some other form of support. In order to serve as such tools of persuasion, they must *present* the Penan (or the Kayapó or the Asmat) in ways that make us care and want to

do something. They must also connect them to that other thing that is endangered: the forest.

There are any number of ways of achieving these ends. Arguments have been made about the value of the rainforest in terms of global warming, the preservation of biodiversity and the potential for discovering new medicines. This is still evolving: new arguments are continually emerging. Perhaps the most prevalent argument—the one in which the most direct linkage is made between the fate of forests and peoples—stresses the importance of indigenous knowledge in preserving biodiversity and raises the spectre of its loss. According to activist Alan Durning, indigenous peoples

> possess, in their ecological knowledge, an asset of incalculable value: a map to the biological diversity of the earth on which all life depends. Encoded in indigenous languages, customs, and practices may be as much understanding of nature as is stored in the libraries of modern science. (1992:7)

Another observer argues that

> The extinction of biological diversity is inextricably linked with the destruction of cultural diversity. With the loss of native cultures, there is also disappearing the vital and important knowledge of a way of living in balance with the earth and the value system in which it is encoded. To approach the process of restoration, it is essential to learn to see the earth through native eyes. (Ausable 1994:211)[17]

A second strategy is to link indigenous knowledge to the sacred or ineffable, partaking of a semantic shift that transforms 'knowledge' into wisdom, spiritual insight or some other such quality. This sort of shift is evident in a 1991 *Time* magazine cover story entitled 'Lost tribes, lost knowledge' (Linden 1991). The subtitle of this story is, 'When native cultures disappear, so does a trove of scientific and medical wisdom'. According to Linden,

> The prevailing attitude has been that western science…has little to learn from tribal knowledge. The developed world's disastrous mismanagement of the environment has somewhat humbled this arrogance, however, and some scientists are beginning to recognize that the world is losing an enormous amount of basic research as indigenous peoples lose their culture and traditions. Scientists may someday be struggling to reconstruct this body of wisdom to secure the developed world's future, (ibid.: 48)

Likewise, in *Millennium: Tribal Wisdom and the Modern World,* anthropologist David Maybury-Lewis states that

> Western science…is only now beginning to understand that peoples who had no 'science 'of their own could nevertheless have developed a profound knowledge of their corner of the natural world. This is nowhere more true than in the rainforests, yet it is in the rainforests that the clash between Western arrogance and traditional wisdom is most violent. (Maybury-Lewis 1992:46)[18]

Both these valorizing strategies—the one linking indigenous knowledge to the preservation of biodiversity, the other transforming 'knowledge' into 'wisdom'—require the deployment of a discourse that places indigenous knowledge at its centre. It is the latter strategy in particular that I shall examine here, by providing several examples of the transformation that occurs as ethnographic texts are transformed into environmentalist texts, showing how the substantive properties of indigenous knowledge are transformed in the process. In doing so, I focus on three examples: 1) Penan resource management, particularly as it applies to the *molong* concept; 2) knowledge of the landscape; and 3) the rhetoric of medicinal plants. I focus on these topics because, except in the case of medicinal plants, I myself first documented much of this and published it in a number of articles (Brosius 1986, 1988, 1990). This material was subsequently picked up and elaborated on by environmentalists, Davis and Henley among them, and incorporated into campaign materials. With respect to the case of medicinal plants, I provide this example because it illustrates the kind of rhetorical traffic that occurs when indigenous peoples themselves adopt and deploy transnational environmental rhetoric.

Resource Management and the Molong Concept

Sago, derived from the palm species *Eugeissona utilis,* is the carbohydrate staple of both Eastern and Western Penan. The factor which more than any other determines the nature of their distinctive settlement systems—the location of camps and the frequency and distance of movement—is the availability of sago. Penan have a clear idea of the relative abundance and location of sago groves throughout their foraging areas and locate themselves in proximity to sago concentra-tions. Rather than simply harvesting *Eugeissona,* Penan exploit it in a manner which maintains its long-term availability.

I first described the principles underlying Western Penan resource use in a 1986 article in the *Sarawak Museum Journal* entitled 'River, forest and mountain: the Penan Gang landscape' (Brosius 1986).

When I first wrote about these principles, in particular the *molong* concept, they had not yet been described. My primary purpose in writing this article, at a time when an increasing number of Penan communities were being dispossessed by the activities of logging companies, was to demonstrate that they did not wander aimlessly through the forest as was supposed by so many government authorities, but rather had well-established principles of land tenure and a sophisticated system of resource management. I deliberately published this article in a local journal so that it would be available to civil servants and government officials in Sarawak.

In this article, I described Penan conceptions of landscape, particularly with respect to the role that rivers play in organizing landscape knowledge. I also described the significance of trees, and it was in this context that I first described the *molong* concept:

> the Penan landscape is filled with particular trees which are either the property of the whole community or which are recognized as belonging to specific individuals. Of significance here is the concept of *molong,* to preserve.[19] This generally applies to fruit trees of various types, to sago clumps, or, for instance, to large trees which are suitable for boat-building. Frequently when travelling in the forest a person will spot a tree which has not been claimed and will then mark it in some manner, thus reserving it for future harvest or use. In the case of fruit trees, whether they are *molong* by an individual or by the community is dependent on the particular species.... Even young children actively claim trees and by adulthood may have accumulated several dozen fruit trees and sago clumps. Significantly, there are a large number of trees...which are specifically named.... Many of these trees are recognized as having been *molong* by long-dead ancestors and are thus a further source of continuity between past generations and the present. (1986:175–6)[20]

Having defined the *molong* concept, I then proceeded to describe the process of sago production, contextualizing this with reference to the reproductive ecology of *Eugeissona.* I described how *Eugeissona* reproduces through both seeds and vegetatively and concluded that:

> while the processing of sago in a particular area over a period of several months may lead to temporary depletion, this harvesting strategy does not negatively affect it long-term growth. It appears likely that the thinning of *Eugeissona* in the process of exploitation may actually enhance the production of starch and viable seed.... This is not to say that *Eugeissona* cannot be over-harvested and thus depleted. Indeed it can,

> particularly when the harvesting cycle in a particular sago stand is too short and clumps are not allowed to sufficiently recover before being re-harvested. For this reason the Penan are concerned to maintain a sound harvesting strategy which avoids a foreshortened harvest cycle. When the sago in one area has been depleted, it is left to recover over a period of years. The Penan attitude with regard to *Eugeissona* resources is one of explicit stewardship, (ibid.: 177)

Finally, I discussed the implications of Penan resource use for development policy. My purpose in doing so was to demonstrate 'the inadequacy of the notion of the Penan as a people without a sense of place, existing in an anonymous landscape' (ibid.: 179). I noted that 'a sense of stewardship constantly informs the manner in which they exploit their environment' (ibid.) and ended with the statement that 'the Penan are conscientious resource managers, fully aware of sustained-yield principles. They exploit their environment in a way that preserves its long-term ecological integrity' (ibid.: 182). Given the purpose of the article (which also contained a number of specific policy recommendations and suggestions for principles upon which Penan land claims might be legally encoded), I felt it was important to make a clear case for the validity of Penan principles of resource management. Whatever shortcomings this article might have, the information provided is firmly grounded in field research and constitutes an accurate description of Penan landscape knowledge and principles of resource use.

Let us now turn to the way that this description has been transformed in the process of Davis and Henley's (re)presentation. The issue of Penan resource management is addressed in Davis's individual essays (Davis 1990, 1992, 1993a) and the essay co-authored by Davis and Henley (1990a). In one essay, referring generally to the significance of Penan botanical knowledge, Davis states that 'For the Penan all of these plants are sacred, possessed by souls and born of the same earth that gave birth to the people' (1990:98–9). In reference to the usage of *Eugeissona,* Davis and Henley state that

> If there is a pattern to the Penan migration, it is determined by the sacred growth cycle of the sago palm. It is a journey that may take twenty years to complete, an itinerary first described by the ancestors at a time when the earth was young and still wet with the innocence of birth (1990a:106).

Broadening this description to general principles of resource use, they suggest that

> Their biological adaptation, together with their spiritual beliefs, demand that they exploit the forest in a sustainable manner. Central to their worldview is a sacred obligation to bequeath to the following generations a healthy forest fully capable of providing life to its human inhabitants, (ibid.: 107)

Finally, Davis and Henley provide a rather embellished description of the *molong* concept:

> This Penan notion of stewardship is encapsulated in *molong,* a concept that defines both a conservation ethic and a notion of resource ownership. To *molong* a sago palm is to harvest the trunk with care, insuring that the tree will sucker up from the roots. *Molong* is climbing a tree to gather fruit, rather than cutting it down, harvesting only the largest fronds of the rattan, leaving the smaller shoots so that they may reach proper size in another year. Whenever the Penan *molong* a fruit tree, they place an identifying sign on it, a wooden marker or a cut of a machete. It is a notice of effective ownership and a public statement that the natural product is to be preserved for harvesting at a later time. In this way, through time, the Penan have allocated specific resources—a clump of sago, fruit trees, dart poison trees, rattan stands, fishing sites, medicinal plants —to individual kin groups. The Penan acknowledge these as familial rights that pass down through the generations. In many cases the identifying mark on a particular tree takes the form of two parallel sticks—a sign that acknowledges ownership while inviting the wayfarer to share at the proper time in the bounty of the resource. It is the equivalent of a private property sign that reads 'please share wisely' rather than 'no trespassing', (ibid.: 114)

Close examination of the preceding statements reveals a number of inaccuracies: the fact that Davis and Henley do not acknowledge the distinction between Eastern and Western Penan, that they infer a system of direct inheritance, and that they include such things as fishing sites and medicinal plants in their discussion of the *molong* concept. More disconcerting, however, is an apparent need to embellish their description with reference to a form of ecological etherealism that is derived entirely from the Euro-American romantic tradition and has little relation to any set of ideas that would be recognizable to Penan.

Concepts of Landscape

The same characteristics that are present in Davis and Henley's description of resource management are also evident in the way

they describe Penan concepts of landscape. Again this is derived largely from material published by the present author. In my 1986 article, I described something of the depth of Penan knowledge of the landscape: the richness of vocabulary for talking about landforms and rivers, the way in which rivers form the skeleton around which environmental knowledge is organized, and how river names incorporate geographical, ecological, historical and genealogical information. My intent was to demonstrate how Penan encode ecological information in the naming of landscape features and to demonstrate the coherence existing between the physical landscape, history, genealogy and the identities of individuals and communities. I described Penan landscape knowledge as follows:

> A conspicuous feature of the Penan environment is rivers.... The importance of rivers to the Penan can scarcely be underestimated. In an environment where visibility seldom exceeds 200 ft., these rivers and streams form the skeleton around which environmental knowledge is organized.... When travelling in the forest, Penan are always cognizant of their precise location relative to various rivers. This keen sense of spatial relationships derives from an awareness of the relative size of rivers, the angle of flow of one river to another, the topography between particular rivers, the proximity of headwaters of different rivers, and other sorts of environmental cues.... To Penan, however, the landscape is more than simply a vast, complex network of rivers. Above all it is a reservoir of detailed ecological knowledge and a repository for the memory of past events. (1986:174–5)

I then proceeded to describe how rivers are named—whether for persons, for landscape features, for ecological features, or for particular events—and how, in turn, the deceased are spoken of with reference to rivers. I also described the significance of such naming practices in establishing the 'cultural density' of the landscape:

> the landscape itself serves as an idiom for the maintenance of historical and genealogical information. This idiom is more than a trivial mode of expressing nostalgia.... It is an important mnemonic device for the maintenance of social relationships.... At the same time it serves to establish the rights of Penan communities to exploit the resources of a given area. The rivers in which the ancestors are buried are the source of livelihood for their living descendants, (ibid.: 175)

This discussion of the nature of Penan knowledge of the landscape is altogether transformed by Davis and Henley. Davis states that,

'For the Penan this forest is alive, pulsing, responsive in a thousand ways to their physical needs and their spiritual readiness' (1990: 98). Trees are 'blessed with spirits, the animals imbued with magical powers' (ibid.: 99). Discussing the Penan's skill as 'naturalists', Davis suggests that this exists because they identify 'both psychologically and cosmologically with the rainforest' (ibid.). Further, 'For Penan, every forest sound is an element of a language of the spirit' (ibid.). Davis states that

> To walk in God's forest is to tread through an earthly paradise where there is no separation between the sacred and the profane, the material and the immaterial, the natural and the supernatural, (ibid.)

Davis and Henley maintain that, 'Fearful of the heat of the sun, ignorant of the seas, insulated from the heavens by the branches of the canopy, their entire cognitive and spiritual world became based on the forest' (1990a:106) Finally, in a more recent work, Davis asserts that

> The Penan view the forest as an intricate, living network. Imposed from their imagination and experience is a geography of the spirit that delineates time-honoured territories and ancient routes that resonate with the place names of rivers and mountains, caves, boulders and trees. (1993:25)

What we observe in the statements above is a strategy by which a pattern of cognizing landscape and encoding knowledge about that landscape is transformed into an obscurantist, essentializing discourse which in fact elides the substantive features of that knowledge. The implications of this will be considered in the discussion below.

The Rhetoric of Medicinal Plants

A central element of environmentalist rhetoric on rainforest preservation concerns the value of such forests for the potential medicines they might provide for western science and the importance of indigenous knowledge as a key to the discovery of those medicines. In the film *The Penan: A Disappearing Civilization in Borneo,* the narrator provides the following commentary:

> The greatest reason for protecting this rainforest is perhaps found in the Penans' knowledge of forest products with medicinal purposes. The stem of a certain leaf cures stomach pains, the inner bark of a tree reduces headache and fever within seconds of being applied to one's forehead. When asked

> if there are any plants nearby that are good for medicine, the Penan will reach for a dozen or more where they stand and explain their use.
>
> With more than 40,000 years of experimentation and observation, the Penan have enormous medical knowledge which Western scientists cannot duplicate. Today less than one percent of the world's tropical forest plants have been tested for pharmaceutical properties. Yet 25% of all our medicine comes from the rainforest. Three-quarters of all anti-cancer drugs are rainforest derivatives. As hundreds of thousands of acres of Sarawak's primary forests are succumbing to chainsaws, the world is coming to realize that this is the tragedy affecting us all.

Likewise, in a televised segment on the Penan from the programme *Primetime Live,* narrator John Quinones says that

> for the Penan all plants seem to serve a purpose. Often they are life-saving. The bark from this shrub…heals snake bites. The Penan have identified fifty medicinal plants here. Scientists say there are thousands more. Like an Old World pharmacist, Balandang had us tasting plants that he says will cure all kinds of ailments.

Although these cases refer to the Penan, such statements are common in contemporary rainforest conservation rhetoric more generally.

Given his background in ethnobotany and ethnopharmacology, Davis was particularly interested in documenting Penan knowledge of medicinal plants. On his first visit to Sarawak, he devoted considerable attention to collecting medicinal plants and to talking with Penan about their uses. According to Davis and Henley,

> Preliminary ethnobotanical surveys suggest that the Penan employ over fifty medicinal plants which they harvest from the primary forest…. The first challenge in assessing the potential of the Penan pharmacopoeia entails understanding the belief system that mediates their use of medicinal plants. (1990a:117)

The authors then proceed to expand on what they mean by 'belief system':

> In general indigenous medicine is based on a thoroughly non-western conception of the etiology of disease in which health is defined as a coherent state of equilibrium between the physical and spiritual components of the individual. Health is

> wholeness, which in turn is perceived as something holy…. (ibid.: 117)

They proceed to discuss a mélange of Penan and indigenous theories of disease, again making a plea for the preservation of Penan medicinal knowledge.

> With a spirit world that is alive, the Penan quest for healing and well being is rooted both in magico-religious belief and a perspicacious knowledge of pharmacologically active plants. Understanding their folk medicine and identifying those of their plants that may ultimately serve the needs of all human societies is a complex and time-consuming task. Unfortunately, as in the case of indigenous societies throughout the world, the traditional knowledge is being lost at a tremendous rate. Logging activities are destroying the source of the medicines even as the forces of acculturation disrupt the integrity of the belief system itself, (ibid.: 118)

Finally, referring to the complaints of one Penan featured in their 1990 book about the ineffectiveness of medicines provided by the government, Davis and Henley state that 'What Dawat is saying is that a synthetic drug cannot replace the spirit of the plants, imbued as they are with the power to heal' (ibid.: 118).

One of the more interesting consequences of the environmentalist rhetoric of medicinal plants, evident in the preceding quote, is that this rhetoric has itself suffused back to the Penan and been adopted by them as their own. When one visits Penan today in those areas where blockades have occurred, one of the consequences of forest destruction they most commonly decry is the loss of medicinal plants. As my data collection among Eastern Penan in blockaded areas proceeded, I was struck by the frequency with which I heard such statements. In three years with Western Penan in the 1980s—in a non-blockaded area, and in a mostly pre-blockade era—I rarely heard medicinal plants mentioned or discussed in any context. Certainly Western Penan knew of several, but these tended to be few and to be used for a very broad range of illnesses. I encountered none of the non-stop commentary on the value of traditional medicinal plants that is so evident today when one walks through the forest with Eastern Penan. When I first began working among Western Penan I fully expected that I would hear much more on this subject. In 1980 I conducted fieldwork among Pinatubo Ayta in the Philippines, who have an enormous knowledge of medicinal plants (Fox 1952) and who constantly pointed them out. What struck me about Western Penan in the 1980s is that they showed so little interest in medicinal plants. In the 1990s, Western Penan in the Belaga District still did not, yet Eastern Penan in the Baram District

—that is, in those areas visited by environmentalists—did so with remarkable consistency.[21]

Davis and Henley are not alone in stressing the richness of Penan knowledge of medicinal plants. Other environmentalists writing about the Penan also frequently mention this. Part of the reason for this is that they are told about such plants by Penan. I believe that what we are observing here is what might be termed the 'Plotkinization' of the discourse of indigenous knowledge of medicinal plants. Mark Plotkin, of course, has been a leading figure in developing an awareness of the depth of ethnobotanical knowledge of medicinal plants among indigenous peoples in Amazonia.[22] This awareness has diffused into the rhetoric of rainforest conservation in many ways. It has now become standard practice to describe the depth of knowledge of medicinal plants of particular rainforest societies. Such knowledge may exist in other indigenous societies, but it is much less significant among Penan than recent statements would lead one to expect. This is a kind of ethnographic hall of mirrors: drawing on rhetorics derived from an Amazonian context, environmentalists have brought assumptions derived from a familiarity with Plotkin's work to the Penan, who then repeat it back to other environmentalists, who take it as an exemplar of the depth of indigenous knowledge. Precisely how this has occurred is nearly impossible to reconstruct, but it would seem that it occurs in the myriad conversations that have occurred between Penan and the environmentalists who have visited them. Penan take note of the Euro-American gaze on medicinal plants and turn it back to them as commentary. One anecdote serves as an illustration of this process. I was walking along a ridge with a group of nomadic Penan when we passed through a small patch of *Belassan* trees *(Tristania sp.).* One of the Penan I was with stopped, pointed at these trees, and said that one environmentalist who had spent some time with them had said that there were medicines in trees like these and that this is one reason the forest should be saved—to search for such medicines. Although this anecdote does not refer directly to the question of Penan knowledge of medicinal plants, it does reflect something of the kinds of conversation that have fostered this element of Penan discourse.

DISCUSSION

Drawing mostly on the writings of Davis and Henley as an exemplar of a more general phenomenon, I have tried to show how indigenous 'knowledge 'is represented and transformed in one ethnographic context. It has not been my goal simply to provide a particularistic critique of how one group of people have been portrayed and to describe what Penan are 'really' like, nor is this discussion intended as a critique of western representations of the 'other': that would

hardly be very original. Rather, this case raises several fundamental questions about how objective conceptions of knowledge are appropriated and deployed in environmental campaigns and what the consequences of this might be.

There are, in fact, several ways in which the objectivist conception of knowledge has been transformed in the texts I have provided. I have focused on one in particular in the first two cases discussed above: how indigenous 'knowledge' is linked to the sacred or ineffable. As noted above, it is transformed into wisdom, spiritual insight or some other such quality. This transformation serves a certain purpose. In describing peoples such as the Penan, the problem for environmentalists and indigenous rights activists is twofold. First, how does one make a society narratable? That is, what must one do to be able to talk about it? However one defines indigenous knowledge, it is not easily accessible, not something that can be picked up in a few short weeks, particularly for individuals lacking linguistic competence. The problem for environmentalists is how to create texts about peoples such as the Penan nevertheless and how to talk about the knowledge which they hold to be so valuable without actually comprehending much about that knowledge. Secondly, how does one create value? Environmentalist and indigenous rights campaigns are generally concerned with peoples who are 'endangered' precisely because they, their institutions and their systems of land-tenure are devalued by national governments. The Malaysian government considers the Penan a national embarrassment, a people who represent precisely those things they are trying to overcome in their national development efforts. The goal of environmentalists, then, is axiological: to demonstrate both to the government and to western audiences what is at stake if the forest, and the Penan, are destroyed.

In reducing Penan knowledge to the sacred or ineffable, the Penan are made both narratable and valuable. In linking knowledge to the sacred, commentators are provided with a way of constructing meta-commentaries about the *meaning* of a body of knowledge rather than about that knowledge itself. The danger, of course, is that such meanings may only be interpolated and may, in fact, be Euro-American in origin.

In short, the discourse of the sacred serves to make Penan narratable, all the while serving to elide gaps in understanding. At the same time that it makes Penan narratable, it also imbues them with value—a value that authors themselves feel in a most profound way but cannot otherwise articulate. It makes land, resources and people inviolable, and it does this by appealing to pre-existing categories of value—the endangered, the last whisper of an ancient past. As Suzuki said of one Penan, 'Listen to Dawat. He is what we once were' (1990:8).

The metacommentary on the sacred or ineffable has a number of pernicious effects. The most obvious is that it imposes meanings on Penan 'knowledge' that may be quite imaginary. In imposing some meanings, it expunges others. Penan certainly have some sense of the ineffable, and this is expressed in a range of concepts relating to power, avoidance, respect, and so forth (see Brosius 1992, 1995a, 1995b, 1995–96). But it is nothing like the obscurantized sanctity Davis and Henley describe. Reducing the ineffable to 'sacred' transforms and distorts it.

Secondly, and paradoxically, it genericizes precisely the diversity that it is trying to advance. Whatever else sanctity is, it is not a universal category. In presenting Penan knowledge as wisdom or insight having a sacred quality, one is imposing a falsely universalized quality on a range of peoples, thus collapsing precisely the diversity that defines them. The Penan are transformed into a homogenous 'indigenous people' or 'forest people'. This is a very common—and often quite explicit—element in contemporary commentaries on indigenous rights. For instance, Durning states that, 'Amid the endless variety of indigenous belief, there is striking unity on the sacredness of ecological systems' (1992:28–9). According to Native American activist Winona LaDuke:

> Traditional ecological knowledge is the culturally and spiritually based way in which indigenous peoples relate to their ecosystems. This knowledge is founded on spiritual-cultural instructions from 'time immemorial' and on generations of careful observation within an ecosystem of continuous residence. (1994:127)

Suzuki describes 'this ancient, culturally diverse aboriginal consensus on the ecological order and the integrity of nature [which] might justifiably be described as a "sacred ecology"…' (Suzuki and Knudtson 1992:18). Barreiro asserts that

> Indigenous cultures are rich in ecological concept. 'Our Mother the Earth' is a reality in the cosmologies of virtually every native people in the world…It is one of the currents of thought that make up Pan-Indigenous philosophy and a basic message of the Indian peoples. (1991:200)

And Davis describes the Penan as 'related in spirit to the Mbuti pygmies of Zaire and the wandering Maku of the Amazon' (1993:24).

The discourse on medicinal plants is something else again. I do not mean to suggest that Eastern Penan lack knowledge of medicinal plants. Rather, what is significant is the way in which Penan presently emphasise and elaborate on this domain of knowledge as a central element in their objections to logging, a

product of environmentalist involvement with Penan. Indigenous knowledge of medicinal plants forms a highly narratable domain and invests environmentalist statements about the Penan with an aura of authority. As such, it becomes a locus around which environmentalists and Penan can converse. One might argue that those domains of indigenous knowledge that are most accessible, and thus most narratable, are elevated to a particularly important status in the discourse of endangered knowledge.

In the preceding discussion, I have attempted to show how, in an effort to make a people narratable and to create value (all the while essentializing them as 'forest people'), environmentalist discourse about indigenous knowledge has the potential to transform that knowledge into something it is not. To save something, or to mobilize an audience to want to save something, requires that it be made beautiful or profound or that it has some transcendental value. In creating that value, however, the thing itself is transformed. In transforming the rich if generally mundane Penan knowledge of the forest landscape into something that is sacred, it is genericized. The thing to be valued, and thus to be saved, is constructed in terms of categories that are Euro-American in origin. We see here a hall of mirrors of representation—similacra—as Penan knowledge is transformed into something that it is not, and western discourses are transported to Penan who convey them back to western interlocutors. The essential and diverse qualities of indigenous knowledge are lost along the way. As the future of the forests, other biomes and indigenous peoples are negotiated in the years ahead in a plethora of post-Rio international fora, the issue of who talks for whom and who constructs representations of whom is critical.

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NOTES

1. I translated this interview in 1989 for the Davis and Henley volume for which Dawat Lupung, the individual interviewed, was awarded the Reebok Human Rights Award.
2. In the United States, for example, the issue of logging in Sarawak has been covered in *Newsweek, Time,* the *New Yorker,* the *Wall Street Journal* and *Rolling Stone,* on National Public Radio, NBC Evening News and CNN, and on the programmes *National Geographic Explorer* and *Primetime Live*. Figures as diverse as Al Gore, Jerry Garcia and Prince Charles have spoken out on behalf of the Penan.
3. In this sense, referring to it as a 'campaign' is inaccurate, since this would seem to imply centralized coordination. Certain organizations acted as clearing houses for information or promoted particular strategies, but no single organization choreographed all the events that have transpired over logging in Sarawak since the mid-1980s. I refer to it as a campaign only as a matter of convenience. I must also stress that although most environmental organizations have focused their attention on the Penan, many environmentalists have insisted that this not be seen as a Penan issue exclusively. They argue that the concern should be for indigenous rights in Sarawak in general.
4. In the following discussion, reference to *environmentalists* should be understood to refer both to representatives of environmental organizations such as the World Wide Fund for Nature and Greenpeace, and to representatives of indigenous rights organizations such as Survival International and Cultural Survival. Though these two types of organization have at times been at odds, there has been some movement in recent years toward a convergence of interests.
5. Davis received his PhD. in Ethnobotany from Harvard University under the supervision of the prominent ethnobotanist Richard Schultes, and is most well-known as the author of *The Serpent and the Rainbow* (Davis 1985). In the late 1980s a controversy developed around Davis' work on Haitian voodoo (See Booth 1988; Yasumoto and Kao 1986). Before he became involved in the Sarawak issue, Henley was instrumental in organizing the campaign to protect the Queen Charlotte Islands, one of Canada's most historically significant environmental campaigns. Within the context of the Sarawak campaign, Henley's most active role was in organizing the 1990 Voices for the Borneo Rainforest World Tour, a series of events that brought two Penan and one Kelabit activist to Australia, Japan, North America and Europe—some eighteen countries in all. Henley and Davis, along with several other individuals, co-founded the Endangered Peoples Project, a foundation 'dedicated to the promotion of biological and cultural diversity' (Henley 1990:93).

6. In discussing how western environmentalists have represented the Penan, it is not my intention to question the validity of the concerns that motivate those within the environmental movement: I share their concern with ecological degradation and its effects on indigenous peoples. My comments are directed at particular rhetorical strategies, not at the broader concerns that underlie them. Moreover, whatever my misgivings about the forms of rhetoric examined here, I feel it is important to acknowledge the positive contribution that individuals such as Davis and Henley have made in bringing the situation of the Penan to the attention of the Euroamerican public.
7. Eastern and Western Penan in Sarawak together number some 7000 individuals. The Eastern Penan total some 4500 in approximately 50 communities, while Western Penan total some 2500 in 18 communities. These figures are updated from figures I have provided in previous publications and reflect estimations of population growth since 1987, when I carried out a census of Western Penan. In addition to Eastern and Western Penan, there are also several small groups of Penan who have been settled for a century or more and who have little interaction with either Eastern or Western Penan. These include the Penan Nyivung, Penan Bok, Penan Suai and Penan Jelalong. For more information on Penan in Sarawak, see: Arnold 1958; Brosius 1986, 1988, 1990, 1991a, 1991b, 1992,1993a, 1993b, 1995a, 1995b, 1995–6, 1997, forthcoming-a, forth-coming-b, forthcoming-c; Harrisson 1949; Huehne 1959; Kedit 1978, 1982; Langub 1972a, 1972b, 1974, 1975, 1984, 1988, 1989, 1990; Needham 1954a, 1954b, 1954c, 1954d, 1965, 1972; Nicolaisen 1976a 1976b, 1978; Urquhart 1951, 1957, 1959.
8. See Brosius 1990, 1991a, 1992, 1993a; Needham 1972.
9. These figures refer to band size prior to settlement. Both Eastern and Western Penan communities tend to experience growth once settlement occurs. See Arnold 1958; Needham 1972; Urquhart 1951.
10. Among both Eastern and Western Penan, the trend toward sedentarism has accelerated greatly since about 1960. I estimate that in 1960 70–80% of all Eastern and Western Penan were still nomadic. Of 7000 Eastern and Western Penan today, fewer than 400 Eastern Penan in the vicinity of the Magoh, Tutoh and upper Limbang River areas remain fully nomadic, approximately 5% of the total. The last nomadic Western Penan settled about1970.
11. In addition to SAM another local NGO, the *Sarawak Indigenous Peoples Alliance* (SIPA), also played a key role in the campaign for a short time. SIPA was forced to disband by the Sarawak government in 1992 after its founder Anderson Mutang Urud was arrested.
12. Among the environmentalist and indigenous rights organizations who have involved themselves in the Sarawak campaign are *Rainforest Action Network* (US), *Friends of the Earth, Greenpeace, Western Canada Wilderness Committee, Japan Tropical Forest Action*

Network, Rettet den Regenwald (Germany), *Robin Wood* (Germany), *Society for Threatened Peoples* (Austria, Germany, Switzerland), *ProRegenwald* (Germany), *Nepenthes* (Denmark), *Global 2000* (Austria), the *Bruno Manser Fonds* (Switzerland) and the *Rainforest Information Center* (Australia). Their activities have ranged from letter-writing campaigns to attempts at tropical timber boycotts, protests at Malaysian embassies, ship blockades in Europe and Australia, and direct actions in Sarawak itself.

13. There is a considerable degree of textual overlap in these accounts. As this article was under review, I received from Davis a copy of his most recent book on the Penan, co-authored with lan Mackenzie and Shane Kennedy (Davis, Mackenzie and Kennedy 1995). Though it retains some of the romanticized language that appears in previous works by Davis and Henley, an effort is made to provide a more realistic portrait of the Penan through a more balanced use of ethnographic material and the inclusion of numerous Penan commentaries in translation.
14. See Brush and Stabinsky 1996 for a comprehensive overview of issues involved in establishing a legal basis for the recognition of indigenous intellectual property rights.
15. Bruno Manser is a conspicuous exception here: having lived with Penan for over six years, he became a fluent speaker of the Eastern Penan language.
16. The process by which campaigns develop is extremely complex, particularly with respect to the relationship between the initial analysis of a particular context, decisions about how to proceed in a campaign, and the representations that are ultimately produced and deployed. Most environmental and indigenous rights organizations are self-consciously aware of the contrast between the images they purvey and the realities of a given situation, but they must also necessarily provide persuasive images. In any event, it is a mistake to equate the often bold simplicity of campaign images with the processes of analysis and debate that both precede and follow their deployment.
17. See also Barriero 1991; Brush 1996; Burger 1990; Gray 1991a, 1991b; IWGIA 1993–94; Kemf 1993; Suzuki 1990; Suzuki and Knudtson 1992, Taylor 1990.
18. In a recent conference paper, Anna Tsing examines the emergence of this paradigm, in which the concept of the tribe has reappeared 'with a newly powerful international political valence' (1995:2) and in which 'tribal wisdom' is accorded privileged status.
19. Since providing this initial definition 'to preserve', I have further clarified the semantic content of the term *molong* (Brosius 1991a, 1992, 1993a) as conveying a sense of fosterage as well as merely preservation. The *molong* concept does not constitute ownership of resources: rather, it encompasses a somewhat individuated proprietary concept of stewardship. Other members of the community may exploit resources which are individually claimed,

but they must inform the individual who has claimed that resource. The *molong* system does two things: 1) it serves as a way of monitoring information on the availability of resources over vast tracts of land, and 2) it prevents the indiscriminate cutting of fruit trees and sago, resources which might otherwise be seriously depleted. In one sense, the entire Western Penan settlement system may be seen as a temporalized manifestation of the *molong* concept.

20. It should be noted that Eastern Penan do not *molong* resources to the same degree as Western Penan. Eastern Penan do employ the word *molong* (and the synonym *mulah*), but the concept plays a relatively minor role in Eastern Penan notions of resource management, particularly in its individual aspects. This is not to say that Eastern Penan lack any sense of stewardship over the resources in their foraging areas: it is simply that Eastern Penan concepts of resource management are less formalized and individuated than those of Western Penan.
21. I do not mean to imply that the Penan are lacking in ethnobotanical knowledge. Indeed, their knowledge of forest plants is considerable. However, this knowledge tends to focus on plants whose utility is rather mundane: fruit trees, trees that are suitable for firewood, varieties of rattan useful for making particular types of items, and the like. It is for this reason that the contemporary Eastern Penan emphasis on the threat to medicinal plants is so remarkable.
22. Like Davis, Plotkin was also trained by Richard Schultes. Long before the theme of indigenous knowledge of medicinal plants became an element of rainforest conservation rhetoric, Schultes impressed upon his students the potential importance of studies focusing on this topic among native Amazonians.

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Chapter 11
INDIGENOUS KNOWLEDGE: PROSPECTS AND LIMITATIONS

Arne Kalland

In recent years there has been a growing interest in 'indigenous knowledge' and its relevance to the formulation of resource management regimes, or the conservation of fauna and flora.[1] Agrawal (1995) attributes this interest to the failure of grand theories to account for the lack of state-sponsored development in third-world countries. However, this is too narrow a perspective of indigenous knowledge if we are to understand the rhetorical power this concept has attained today. The interest is part of an intellectual reaction against what Friedman (1992) calls the anti-culture and anti-nature of modernism. It reflects the increasing skepticism many people in the industrialized world have of the heuristic power of the western, scientific paradigm—and of economic development as such—which so far has been the fundament of most management regimes designed and imposed by national and international bodies (Bruun and Kalland 1995). Moreover, it reflects the growing ability of some indigenous peoples and their organizations to make their voices heard both in national and international fora.

These two factors are interconnected. In their search for alternatives to the crumbling scientific paradigm, people in the industrialized world are increasingly looking elsewhere for explanations for and solutions to environmental problems. People active in the environmental movement have turned to indigenous peoples, who are pictured as savage ecologists living in harmony with nature. Some scholars have also contributed to this discourse. This interest has not only given international legitimacy to indigenous perceptions of nature but has also given them the aura of great ecological wisdom, which has presented indigenous peoples with the opportunity to acquire cultural significance and become full members of the 'global' village, with important consequences for their self-confidence and identity as peoples (Pedersen 1995).

This interest in indigenous knowledge should be welcomed for several reasons. First, indigenous people possess extensive empirical knowledge about their environment. Secondly, they offer interpretations of empirical knowledge radically different from the conventional scientific paradigm. Finally, there are important lessons to be learnt by studying the workings of indigenous resource management regimes.

However, there are serious limitations to the value of indigenous knowledge, as there is to all types of knowledge. One limitation is imposed by the concept itself. Indigenous knowledge might be different from scientific knowledge—despite Agrawal's argumentation to the contrary—but how different is it from other types of 'local', 'traditional' or 'practical' knowledge? By focusing on indigenous knowledge, we may make the mistake of ignoring equally revealing knowledge held by non-indigenous people (cf. Conklin and Graham 1995).

Another limitation is the interrelationship between ideology and practice. Can we, *a priori,* assume that people's perceptions and norms are mirrored in their actual behaviour? And if such a connection is present, is this a result of *ecological* understanding and conscious conservation or a mere coincidental side-effect of something else?

One purpose of this paper is to discuss the above limitations. It will be argued that the distinction between indigenous and non-indigenous environmental knowledge has little heuristic value and that the important dividing line is one between scientific and what I shall call 'local' or 'practical' knowledge, with indigenous knowledge seen as the politization of local/practical knowledge. Furthermore, it will be argued that the connection between people's perception of nature and their behaviour in nature must be subjected to rigorous analysis. The second purpose is, within the limitations indicated, to discuss the merits of local knowledge, both as empirical observations of natural phenomena and as paradigmatic knowledge through which observations are interpreted and placed within a wider context, or cosmology. However, since it is also argued that knowledge at these two levels is not necessarily sufficient to bring about conservation, it is also necessary to consider a third level of knowledge, which I shall call institutional knowledge, i.e. how people organize themselves in relation to an ecosystem. It will be argued that local management regimes must rest on all three levels of knowledge.

INDIGENOUS VERSUS LOCAL KNOWLEDGE

One of the roots for the present deep concern for nature in the western world is apparently the growing awareness of the inadequacies of the Cartesian worldview, in which an intensified

dichotomy of reality separated subject from object, mind from body, culture from nature and cultural sciences from natural sciences. With the challenged, some would say crumbling, western paradigms, an entirely new ecological paradigm is frequently called for (e.g. Dunlap and Catton 1980), a paradigm where 'man' and 'environment' are no longer seen as separate and opposite entities but where 'organisms and environment form part of one another' (Dickens 1992:15).

As pointed out elsewhere (Bruun and Kalland 1995:2), scientists and laymen alike have searched for new inspiration from outside western traditions to correct these ills. A large body of literature offers alternative world views to the prevailing western ones, usually depicting man as an integral part of nature instead of being separated from it and trying to dominate it. Asian societies figure prominently in this literature. Man and environment are portrayed as a harmonious unity of mutual respect, complementary and in symbiosis; their views are seen as holistic-organic rather than atomistic-mechanistic, as in the industrial west (Callicott and Ames 1989:5). In formulating alternatives one has commonly looked to religion, tradition, and old values. Hence, Poul Pedersen (1995) has termed this kind of paradigm 'the religious environmentalist paradigm'.

Indigenous knowledge of nature has undoubtedly provided us with rich notions of alternatives to the scientific paradigm. However, the concept is fraught with ambiguities, and uncontested definitions are difficult to find, not least in Asia (Barnes 1995; Gray 1995; Kings bury 1995). In the broadest sense, 'indigenous'—often used interchangeably with 'native' and 'aboriginal'—pertains to the first known inhabitants, or beliefs and practices, of an area, as when world religions are considered to be indigenous to Asia. More narrowly, the term has come to denote peoples—usually small tribal peoples of non-European descent and without elaborate political structures—who for decades, even centuries, have been oppressed by invaders (cf. Gray 1995; Kingsbury 1995).

In this latter sense, concepts like 'indigenous', 'native' and 'aboriginal' are structural definitions through which people are defined in relation to a state (Sejersen 1994). At present these concepts are used rhetorically by indigenous peoples themselves in order to gather support for their struggle to gain recognition as distinct peoples with their own cultures and with just rights to self-determination. However, 'indigenous environmental knowledge' does not denote a specific type of knowledge about the environment which sets it off from similar knowledge held by non-indigenous people. The concept glosses over many similarities between knowledge held by indigenous and non-indigenous peoples, with the result that the former is often contrasted with western knowledge. Such a dichotomy is untenable (Agrawal 1995).

Limiting our analysis to knowledge held by indigenous peoples—as this term commonly is understood—causes another problem as well: it easily becomes linked to, and even synonymous with, 'traditional' knowledge. Hence it gives an impression of knowledge being static and rigid rather than dynamic and evolving, further strengthening the outsider's image of aboriginals as people with simple technologies, with little economic sophistication and existing largely outside the world market.

What makes knowledge valuable to conservation of fauna and flora is not that it is held by a certain category of people but what it has to say about an ecosystem and people's place within it.[2] Rather than contrasting indigenous and non-indigenous knowledge, we should focus on the differences, if any, between scientific and other forms of knowledge, whether held by indigenous peoples or not. Only then will we be able to appreciate the Multiple domains and types of knowledges, with differing logics and epistemologies' (Agrawal 1995:433).

PERCEPTION AND BEHAVIOUR

It has commonly been assumed that there exists a close relationship between a society's management of natural resources and its perception of nature. White (1967), for example, gives the Judaeo-Christian cosmology of 'man's mastery over Nature' the blame for environmental problems in the industrial west. Others, like Callicott (1982), have put more of the blame on the Greek philosophers. In contrast, it is widely believed that people living 'in nature'—particularly Native Americans and Oriental ascetics—have developed a profound understanding of nature, which allows them to live in harmony with their environment. The fact that this understanding is usually phrased in religious rather than ecological terms means that accidents and poor harvests can be interpreted as divine punishment for behaviour which is believed to go against nature's orders. Many observers are of the opinion that this puts strong pressure on people to handle their environment with care.

We need to tread cautiously when inducing ecological practices from philosophical traditions. In Southeast Asia the land is being stripped of its rainforests at an alarming rate, despite widespread belief that spirits and ancestors reside in the trees. Infusing nature with spirits is apparently no guarantee for the well-being of the environment, at least not as long as spirits can be removed by ritual means before trees are cut or localities developed. Nor has the Japanese sensitivity towards nature, expressed in poetry, gardens and miniature trees, prevented environmental disasters occurring. The extensive use of natural metaphors in Japanese culture has been taken at face value and interpreted as 'love', but metaphorical use of nature depends more on the quality than the quantity of

nature. A Japanese poet needs a small garden or a *bonsai* pot, not a national park, in order to observe seasonal changes (Kalland 1995).

Theory and practice may be far apart not only in Asia but elsewhere as well. The G/wi bushmen in the Kalahari poison waterholes and kill a number of animals they do not use, despite the belief that all life forms belong to the God Nlodima and nothing should be hunted without reason (Broch 1977). The Mbuti pygmies in Zaire regard the forest as their parent but nevertheless burn it down in order to drive out game (Turnbull 1961). Despite a widely held belief that animals give themselves up to humans and that this places the latter in a position of indebtedness which has to be repaid by showing respect and preventing waste, the Northwest Coast Indians staged potlatches in which huge quantities of food were destroyed in order to compete for social prestige. Berkes holds that Cree environmental values are based on humanistic notions and morality towards nature where animals have intrinsic value (Berkes 1988:19) and that killing for fun is regarded as a transgression (ibid.: 15). Nevertheless, Cree and other native peoples in North America have been reported to kill indiscriminately (Brightman 1987). There are even reports that some Native Americans torture and kill small animals for fun (Broch 1977), and the Nuaulu in Indonesia and the Kwaio in the Solomon Islands deliberately cut all kinds of vegetation as they pass through the forest for the same reason (Ellen 1986:11; Keesing 1976:116).

Although it is far too simplistic to explain such behaviour in terms of cultural misfits, as Callicott does (1982:311), this discrepancy between theory and practice should not surprise us. First, knowledge is unevenly distributed through the population (Keesing 1987). Young hunters, fishermen and farmers may have other views and possess knowledge different from the religious experts or local philosophers. Secondly, in any cosmology there exist conflicting values. Among Native Americans, the values of showing respect to the animal and avoiding waste co-exist with a belief in incarnation where killed animals are reborn. Brightman argues (1987:132) that 'rather than inhibiting overkill, religious definition of the human-animal relationship encouraged it in so far as they premised an environment of primordial abundance in which game could not be destroyed but only temporarily displaced.' Similarly in Japan, whalers used to stage elaborate funeral rites for whale foetuses so that they could be reborn and subsequently be caught as mature animals. Thirdly, religion which is believed to encourage people to conserve natural resources by giving moral support to certain norms also provides people with the means to circumvent the same norms. Spirits protecting trees and locations can be pacified or removed through ritual. In Buddhist societies evil deeds can be compensated for by merit-making; in Christian societies confessions or prayers serve the same purpose. Its is tempting to suggest that any religion is likely to support values that

inhibit over-exploitation of natural resources as well as values that facilitate or legitimate such behaviour.[3] Explaining behaviour from ideologies tends therefore to rest on selective readings of the evidence. Rather than norms determining behaviour, we find that goal-oriented behaviour is legitimized by appealing to certain norms.

Postulating a close fit between perceptions and behaviour has led to a tendency to romanticism and idealization when it comes to indigenous peoples—and local peoples in general—and their relations with nature. The very fact that both indigenous peoples and wildlife have survived is taken as a proof that the former are conservationists (e.g. Feit 1988:76; Freeman 1994:156). It is common both in the environmentalist and anthropological discourses to read conservational motives into the practices of indigenous peoples. When, for example, people go to distant hunting or fishing grounds, leaving areas closer to home resting, this is taken as a proof of their conservational ethics. That hunters are reported to respect their prey and to frown upon waste—a common theme among Native Americans as well as among Japanese whalers—is also taken as proofs of their conservationist behaviour (e.g. Berkes 1988; Riewe and Gamble 1988). But what might work in the interest of conservation is not necessarily motivated by such considerations at all. Hames (1987) argues that the rotation of hunting and fishing grounds should not be understood as a strategy of conservation but as a strategy of optimal efficiency. In other words, people might maximize catch per unit of effort in the same way as shifting cultivators in Southeast Asia do when they choose to rotate their fields rather than use them until they are completely exhausted. The larger harvests and reduced labour input in weeding may more than compensate for time spent on transportation.[4]

THE RELEVANCE OF INDIGENOUS KNOWLEDGE

These critical remarks should not be taken as a rejection of indigenous or local knowledge. On the contrary, such knowledge is too important to be turned into myths for environmentalist consumption. And I think that local knowledge is particularly relevant at three levels. First there is the empirical knowledge—what Ingold (1993) calls 'perceptions'—about the environment. To this level belongs knowledge pertaining to the behaviour of plants and animals, how these can be collected and captures, and for what purposes they can be utilized. The second level I will call paradigmatic knowledge—'understanding', in Ingold's vocabulary. At this level empirical observations are interpreted and placed in a larger context. As paradigmatic knowledge influences peoples' acquisition of empirical knowledge, there exists a dialectic

relationship between the two. Finally, the third level can be termed institutional knowledge, which refers to knowledge embedded in their social institutions. Each of these levels poses challenges and opportunities.

Empirical Knowledge

Although both science and local environmental knowledge are based on detailed empirical observations, their selection and use of observations might be different. Whereas the scientist's selection of data is based on her or his desire to test the validity of theoretical models, the local man of woman often selects data according to a survival strategy. There is no model to falsify; knowledge is not true or false, only more or less effective. Accumulation of information is therefore not directed by pre-conceived theoretical models as in science, but by a desire to have a pool of information which is essential for the flexibility that real life situations require. In other words, local knowledge at this level is practical. Rather than studying how plants and animals are constructed and how they evolved, local knowledge explores how they can be found, harvested and used. This encourages the development of an intimate knowledge about the environment: about climatical conditions, the vegetation, how animals interact with each other and with plants and climate, how they can be caught and how the meat can be processed and stored. The knowledge which has been accumulated over the centuries on the nutritional and medical values of herbs is particularly impressive. Today this great reservoir of knowledge is being not only recognized but used by the pharmaceutical industry. The majority of medical components based on plants are gained from information provided by indigenous peoples (Rural Advancement Fund International 1989, cited in Gray 1991:45). Posey (1990:4) estimates that 'the annual world market value for medicines derived from medical plants discovered from indigenous peoples is $43 billion.' Indigenous peoples' intellectual property rights to such knowledge has therefore become an issue of concern.

With the difference in focus between the empirical observations guided by science and local knowledge, there ought to be fertile ground for collaboration. As Freeman (1985) has pointed out, scientific models require information and knowledge which is commonly not available to them. Usually they have only fragmentary knowledge about the plants and animals they are set to manage, and their time reference is short. Local peoples may possess much of the knowledge needed. The pharmaceutical industry's use of their knowledge is a case in point. Yet, it is not always easy to get acceptance for local knowledge, for, as Freeman argues (ibid.: 266), there is still a strong conviction among many scientists that quantitative data is essential. As local people are

more concerned with qualitative data, it follows that it is difficult to incorporate their knowledge into the scientists' models. What are needed are new models incorporating both quantitative and qualitative data.

Paradigmatic Knowledge

Whereas the relevance of local peoples' empirical or practical knowledge to management is generally accepted—although there remains the need to improve the dialogue and exchange of information between the scientists and local people—the relevance of local people's paradigmatic knowledge, the ways they interpret practical knowledge and construct more or less coherent cosmologies, is more difficult to apprehend.

We are facing two different paradigms or ways of understanding and interpreting the environment. Both are rooted in empirical observations, but whereas the scientific based understanding is heavily oriented towards quantification and one-dimensional causations divided into disciplines, each with their own bodies of theoretics and methodologies, local knowledge is behaviour-based (Freeman 1985: 265) and contextual, or holistic (Dei 1993:105), a feature it shares with many Oriental cosmologies (Bruun and Kalland 1995). One cosmology is not easily translated into another, and to many this task looks unsurmountable. Although I concur with Booth and Jacobs (1990:42) that—given the tremendous differences in technologies and population densities—Native American relationship with nature does not provide a solution to western problems, I disagree with their claim that 'attempts to borrow culture, whether it be wholesale or piece-meal, are doomed to failure'. There are many examples to prove the contrary; Japan's selective import of elements from Chinese culture in the seventh and eighth century and from western cultures in the nineteenth and twentieth centuries shows beyond doubt that successful borrowing is possible.

Alternative paradigms are therefore more than 'a reminder that positive relationships can and do exist' (ibid.); they can provide us with important new insights which can stimulate us not only to reflect on our own relationship with nature, but actively to construct new understandings through a process of syncretism. Cultures have always evolved in response to both internal and external factors, but the important point to make is that borrowing must be made on the borrower's premises and not be imposed from outside.

A word of warning is nevertheless in order here. Incorporating elements from one culture into another locates these elements in a totally new context. This might give very different and unexpected outcomes. One particularly relevant example is how ideas from

Native Indian and Oriental philosophies have been appropriated and merged with a western tradition of absolutism. This has produced environmentalist and animal rights discourses which are quite alien to the donor cosmologies. Not only has the animal rights discourse—and to a lesser extent the environmentalist discourse—turned respect for game animals into 'intrinsic value', but also their missionary zeal stands in sharp contrast to the contextual approaches of many local peoples. Ironically, then, the environmentalist and animal rights discourses at times pose a threat to the life-styles of local people who depends on the utilization of animal resources.

Both scientific and local paradigmatic knowledge will benefit from a dialogue. Science is facing a problem with its narrow focus on one-dimensional causations and often does not have the empirical data it needs. Local paradigms face problems with their holistic approaches: that everything hangs together with everything else makes it difficult to predict changes and to locate the sources for such changes. Both paradigms imply only partial knowledge and both are prone to making wrong diagnoses.

Institutional Knowledge

Although alternative paradigms are important sources of inspiration and make it possible to reflect on one's own understanding of the world, experience has told us that empirical and paradigmatic knowledge, whether scientific or local, is insufficient to secure a sustainable use of natural resources. Knowledge is unevenly distributed throughout the population, and people value various alternatives differently for many reasons. It is naïve to assume that everybody within a culture acts according to a fixed set of norms and values. Moreover, such a conception ignores the contradictions that exist in any culture. Local empirical and paradigmatic knowledge might nonetheless give an aura of legitimacy to a management regime which, rephrasing McGoodwin (1990:108), can be taken to mean 'any people's practice, whether conscious or unconscious, intentional or inadvertent, active or passive, recognized as resource regulation or not, that has the effect of limiting the mortality of natural resources resulting from harvesting efforts'. Too often management regimes are imposed by national, and increasingly international authorities and have no basis in local environmental knowledge. Moreover, they are narrowly defined in biological and economic terms. We should not forget that management of natural resources is foremost a question about *social* relations, a means of regulating *people's* access to these resources. We must therefore take a much broader approach and consider the socio-cultural dimensions. Unless we do, management

regimes will most likely be regarded as an irrelevant, even illegal imposition on local peoples' rights to self-determination.

Fortunately, there is today a growing awareness that natural resources are not only best regulated if local communities which depend on these resources for their nutritional, economic, social and cultural needs are brought in active participation, but that local participation is essential to sustainable management. This principle has been incorporated into the report *Caring for the earth: a strategy for sustainable living* (IUCN *et al.* 1991), and 'people's participation' has been turned into one of the major issues of Agenda 21.

In order to achieve this objective, we must formulate management regimes based on the premises and priorities of the local people. They should be built on local environmental knowledge on all levels, using their language and idioms. Moreover, keeping in mind that ecosystems are complex and might change in a chaotic fashion, we need management regimes that are flexible and can be adjusted to environmental changes. Monitoring is essential to any sustainable management regime, and local, people are in an excellent position to monitor the state of the environment, both because of their proximity and because they are most directly involved and dependent on its resources. And last but not least, we have to take full account of the local social structure.

Local peoples have, in many cases, developed regulations which have had a conservational impact on natural resources, although these originally might have been motivated by other considerations.[5] However, in our quest for integrating local knowledge and participation in management, we should not forget the values of science, unless we repeat the mistake so often made in resource management by ignoring alternative paradigms. A key concept is co-management in which management is shared between local communities and governmental bodies (Pinkerton 1989:4) and which actively seeks to integrate local knowledge with that of scientific studies.

CONCLUSION

There is a widely held notion, particularly among western environmentalists, that civilization has alienated man from nature. In its most radical form civilization becomes evil, and it follows that primitive man, engaged in subsistence harvesting of 'nature's abundance', becomes an ideal. Many inhabitants of the industrialized west subscribe to the idealization of indigenous people as innocent, noble savages, who ought to be kept that way.[6]

Although there are undoubtedly many cases where local peoples are known to have practised conservation consciously, their perceptions of nature have in general not operated to prevent

pollution, the destruction of natural resources or environmental disasters. It is too simplistic to assume that values and norms work directly on individuals (Holy and Stuchlik 1983), nor should we take environmental behaviour as evidence of specific values. We should be careful not to fall into the trap of cultural determinism. When people have not destroyed nature, this might have been the result of low population density compared to the resources and technologies available, rather than to conscious resource conservation.

Moreover, we should not be deceived by people's alleged sensibility and love of nature but rather see this as a commonplace use of natural metaphors, metonyms, analogies and euphemisms, serving the needs of the social order rather than addressing the physical environment. It might be argued that 'nature' in this sense is an aesthetic abstraction with little relationship to the nature of a real ecosystem (Bruun and Kalland 1995). Scholars have far too often compared western realities with non-western ideals.[7] It is time to look at non-western realities as well, although it might eventually lead to the dethronement of both the ecologically 'noble savage' and the ecologically Oriental ecologist (cf. Broch 1977; Bruun and Kalland 1995; Conklin and Graham 1995; Edgerton 1992; Ellen 1986; Headland 1997; Lohmann 1993; Redford 1990; Redford and Stearman 1993).

Keeping these limitations in mind, there is much to learn from local environmental knowledge. Environmental awareness, deep concern for depletion of the resource pool and knowledge about nutrients are among the elements in a people's outlook that may be valuable in the search for sustainable development strategies. They are not enough to secure a sustainable utilization of natural resources, however. It is necessary to formulate management regimes which are based on local knowledge at the empirical, paradigmatic and institutional levels, while at the same time not ignoring the possible input from science.

NOTES

1. I will follow the IUCN/UNEP/WWF definition of conservation as 'the management of human use of organisms or ecosystems to ensure such use is sustainable' (IUCN *et al.* 1991:210).
2. Although indigenous and other non-scientific bodies of knowledge might be equally relevant to conservation, one's place in the political hierarchy is important when it comes to the question of disseminating such knowledge. It can be argued that indigenous peoples long had a disadvantage *vis-à-vis* their non-indigenous neighbours and that for this reason—and because indigenous knowledge is embedded in what to the decision-makers is an alien culture—they deserve special appreciation and interpretation in

order to be understood. Things are changing, however, and today some indigenous peoples have better access to decision-makers than their non-indigenous neighbours who have not achieved full recognition of their life-styles, as it is commonly assumed that non-indigenous local people share the culture, and perceptions of nature, of the decision-makers. The many conflicts over resource management between the authorities and local communities in the west too show that this assumption is false.

3. A case in point is how Confucianism has been used over the years. It was long fashionable to blame this creed for the lack of development on the East Asian continent, forcing scholars to explain the Japanese success in terms of Japanese Pure Land Buddhism or *samurai* ethics in which Confucianism only played a part. However, with the rapid development of South Korea, Taiwan, Hong Kong and Singapore (and more recently China), all that changed. The creed which was said to inhibit development suddenly became the very reason for development.
4. There are two main modes of shifting cultivation on the Southeast Asian mainland. In one system the field is left fallow for about ten years after being used for one or two years. In the other system the field is used for several years until exhaustion, whereupon it may take fifty years or more before it has recovered its fertility. It was long taken for granted that the former was more ecologically sound than the latter, but Geddes (1976) argues that the latter system must also been seen in term of field-rotation, albeit with a longer time reference.
5. When, for example, the feudal authorities in Japan divided the coastal waters into small, exclusive village territories, the objective was not conservation but to secure taxes and corvée labour for the authorities, cheap food for the masses, tranquillity on the fishing grounds and a minimum income for the fishermen. Only later was the conservational value of the system acknowledged (Kalland 1990). See Polunin (1984) for a discussion on the situation in Indonesia and Papua New Guinea.
6. This discourse denies local people the right to develop on their own terms. The 1931 Whaling Convention, for example, endorsed aboriginal whaling only as long as whalers used traditional boats without engines and did not use firearms (Freeman 1993:244). Even today, at the annual meetings of the International Whaling Commission (IWC), Inuit whalers must document that they have not brought too much of the meat to market (Kalland 1993:5). In Sweden, the Saami reindeer herders are under similar constraints, and the protests are many and vigorous whenever they make use of modern technologies (Beach 1993).
7. One rather extreme example is Sponsel and Natadecha-Sponsel (1993), who in their advocacy of 'Buddhist environmental ethics' juxtapose 'Buddhist' and 'western' world views as follows:

Buddhist world view	western world view
non-violence	violence
mental control	technological control
need and being	greed and possessing (consumerism)
spiritual development	economic development ('growth mania')
ego extinction	species extinction
promote biodiversity	promote biopoverty

One does not have to be a fervent Christian to object to this scheme!

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