

## The Sacred Uses of Nature

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### INTRODUCTION

Present-day India still abounds in many forms of nature worship. All forms of life from hedges to fig trees, and from crabs to peacocks and tigers continue to be considered sacred and inviolable in relation to a variety of primitive cults. Amongst these varied religious practices, the most significant from an economic viewpoint are those relating to the preservation of sizeable patches of forests, sometimes as much as twenty hectares in extent, as 'sacred groves'. All forms of vegetation in such a sacred grove, including shrubs and climbers are under the protection of the reigning deity of that grove, and the removal, even of dead wood, is taboo. This preservation of the entire vegetation in association with a deity is quite a distinct phenomenon from the preservation of isolated specimens of sacred tree species such as peepal (*Ficus religiosa*) or umber (*Ficus glomerata*) which are often preserved and worshipped even without any association with a deity. The sacred groves harbour vegetation in its climax formation and probably constitute the only representation of forest in near-virgin condition in many parts of present-day India. The borders of such sacred groves tend to be distinct, even when surrounded by forest on all sides. The surrounding forest, suffering some interference, is likely to be different in composition, and to lack the tree and liana specimens of truly magnificent proportions that are apt to characterize the grove.

Such sacred groves occur in many parts of India, and in some other parts of Asia and Africa as well. They exist in Ghana (J. R. Karr, pers. comm.) Nigeria, Syria and Turkey (C. C. Townsend,

pers. comm.). In India they have been reported to us from Khasi Hills in Assam (A. G. Raddi, pers. comm.) in the northeast, Arvalli ranges of Rajasthan (I. Prakash, pers. comm.) in the northwest, all along Western Ghats in the southern peninsula, and Madhya Pradesh in central India (G. .G. Takle, pers. comm.). The only published reference to the phenomenon known to us (Kosambi 1962) deals with the sacred groves of Maharashtra, a state on the west coast of India. The account given by Kosambi is very brief, being based on a single site and his approach is mainly anthropological, being largely concerned with religious beliefs. Our own studies have been confined to the state of Maharashtra where we have been supplied with a considerable amount of data by the officials of the state Forest Department whose co-operation is gratefully acknowledged. This has been supplemented with intensive field studies by us in the crest region of the Western Ghats in the districts of Poona, Kolaba and Satara.

### A CASE STUDY

Our field studies were conducted in the hilly regions of western Maharashtra. These areas still remain fairly inaccessible by road, and have retained forests and primitive religious practices to a much greater extent than other parts of the state. The altitude of this region ranges from 800 to 1500 m. and the entire region receives a rainfall of about 4000 to 6000 mm. during the southwest (summer) monsoon. The natural vegetation is a subtropical hill forest dominated by evergreen broad leaved species (Champion and Seth 1968). The whole of this area, locally known as *Ghatmatha* (the crest of the Western Ghats), is rich in sacred groves. We have chosen the catchment area of Panshet Dam which lies to the west of Poona at a distance of 40 km. as a representative area for a description of the phenomenon.

This area lies at the border of Velhe and Mulsi Taluks of the Poona district at a latitude of 18°25' N and a longitude of 73°25' E. A river, locally known as Mula originates at Dapsare and runs eastwards. It is dammed at Panshet. This has formed an extensive lake in the valley, flanked on either side by hills which rise 500 m. or so to an altitude of about 1300 m. The hill slopes are dotted by villages with populations ranging from 100 to 400. The villagers cultivate

paddy on the flat land in the valley, most of which is now submerged under the reservoir, and practice shifting cultivation on the hill slopes. Hill slopes fairly remote from the villages are still covered by some forest. Until about twenty years ago the whole region was much better forested, particularly because the peasants left valuable trees standing even when they cleared a plot for cultivation. Notable amongst these preserved trees was Hirada (*Terminalia chebula*) whose nut is in great demand in the tanning industry. However, all of these trees on the land owned by shifting cultivators, as well as some forest, were cut down during the decade 1950–60. In consequence, most of the land in this region is now entirely barren and heavily eroded. The trees left around settlements, and the sacred groves, are the only arboreal vegetation left standing except for the reserved forest in the more remote hill regions. Even the latter is suffering continuous encroachment by cultivators as the productivity of their eroded fields is declining.

Table 1\* provides a summary of the sacred groves of the entire region. An attempt has been made to include all of the sacred groves of this area. However some of the groves that were submerged when the reservoir was filled in 1961 and a few very small ones (i.e. less than 0.05 hectares in area) which are still standing may have been missed, since most of the groves were, in fact, not by the riverside, but a little distance further up the hill slope. Table 1 represents a fairly accurate account of the sacred groves of this region.

As may be seen from this table most of the cults around which the sacred groves exist are mother goddess cults. The images of the deities are generally unicomic, in the form of tandalas or stones of the shape of a rice grain, from 20 to 50 cm. along the long axis. They largely exist in the open, and many do not tolerate any shelter, punishing the misguided worshipper who tries to provide them with one. The cults are often associated with ancestor worship. Small round stones representing ancestors are generally set by the side of the deities. It is notable that apart from Kalkai and Wardani, the names given to the deities are all different from each other. Even two Kalkais of two villages are often considered as separate entities. The deities are very ferocious in nature, and mete out serious illness or death to any offender. They generally demand animal sacrifices to be placated, and stories of human sacrifices in the recent past are still current. The cult spots are rarely within a village, but lie at a distance

\* This table has been omitted here. Editor.

of at least 0.3 km. in all cases. As Kosambi (1962) discusses, these features of the cults mark them out as primitive cults, dating from the hunting-gathering stage of the society. The villages are inhabited by milder male gods like Maruti who live tamely in a temple and are happy with the offering of a coconut.

The area under a sacred grove can vary to a considerable extent. Sometimes it is nothing but a clump of 5 or 10 trees, all of them often large specimens of considerable age. There are however several which are larger than 0.5 hectare in extent. When a grove reaches this size, it serves quite well to preserve many features of the primaeva forest which must have covered the entire area in the past. As befits monsoon forests, these groves are rich in the number of tree species, in climbers and in epiphytes. Thus, one sacred grove of five hectares lying a little outside the area under consideration that we completely enumerated for trees and climbers included twenty-six species of the former, and six species of the latter (Vartak and Gadgil 1972). The groves lie at all locations, ranging from the floor of the river valley, slopes at various distances to the top, plateaus at intermediate levels and the crest of the hill. Thus they serve to represent all sorts of vegetation from the stunted forest on the exposed hill crests to the tall luxuriant growth in the ravines.

#### ORIGINS

As noted above, the nature of cults associated with the sacred groves indicated their origin in the hunting-gathering stage of the society. Since no specific sacred tree species such as peepal (*Ficus religiosa*) need be present in a sacred grove, the sacred grove does not appear to be totemic in its origin. Although this is pure speculation, we may suggest that the groves served to create the proper setting for the cult rites including human sacrifices. Kosambi (1962) mentions the occurrence of groves of mother goddesses of the Attonga tribe in West Africa, in which secret rites of the cult are performed by a sisterhood of priestesses. Any man entering the grove by accident is required to join the sisterhood and to dress and live like a woman for the rest of his life. There is a similar tale in Indian mythology of Manu's son, Ila who entered the grove of the mother goddess Parvati by mistake and was transformed into a woman.

Some of the sacred groves may also have had their origins in more

secular causes, in particular for the preservation of a valuable tree or climber which was relatively rare in the locality. We encountered a possible instance of this in a sacred grove of the water deity, Sati Asara, at Bombilgani (Srivardhan Taluka, Kolaba district). This grove harboured a solitary, but well grown specimen of the liana locally known as Gaydhari or succourer of the cattle (*Entada phaseoloides*, Family Mimosae). We were informed that the bark and leaves of this climber were used in the treatment of snakebite of cattle. Since no other specimen of this liana occurred at least within a radius of forty kilometers, people from a considerable area relied upon this one specimen in the sacred grove.

#### PRESENT-DAY FUNCTIONS

With deforestation proceeding at a rapid pace, the sacred groves are assuming a more and more important role in the daily life of the local population as the only remaining source of forest produce. Besides medicinal plants such as *Entada phaseoloides*, they supply deadwood for fuel and leaf litter for the initial burning of the plot in paddy culture. The sacred groves also occasionally supply timber in an emergency such as the destruction of an entire village settlement through fire. We came across many instances of such uses in our survey. In addition, one particular village, Gani in Kolaba district was dependent on the grove for its only perennial source of water for the cattle. Other formerly perennial springs in the vicinity had dried up with deforestation and soil erosion.

#### SANCTUARIES OF FOREST BIOTA

The sacred groves also have many potential economic uses as perhaps the last refuges of the forest vegetation and its associated fauna. We have come across many instances of the occurrence in such groves of plant species absent from the entire region. Thus, the grove known locally as Dhuprahat in Varandha pass in Bhor Taluka has preserved two magnificent specimens of the Dhup tree (*Canarium strictum*) otherwise present only in the Canara forests about 200 km. to the south of this region. The forest department officials have informed us of the occurrence of the valuable timber tree, teak (*Tectona grandis*)

in sacred groves of Poona and Yewatmal districts while it has become extinct from the rest of the area. The Botanical Survey of India has discovered some rare species of orchids in sacred groves in the Khasi Hills of Assam (A. G. Raddi, pers. comm.).

The preservation of this biological diversity is clearly of much potential economic significance. Many of the species so preserved serve as sources of drugs used locally. The traditional knowledge of the uses of these plants will vanish forever if these plants were to become extinct. Besides the traditional drugs, many of these could also have unforeseen uses, as, for example sources of chemicals mimicing juvenile hormones of insects. The sacred groves may also be harbouring genotypes of possible significance in future programmes of forest tree breeding or fruit tree breeding. In addition, the sacred groves serve as sanctuaries for forest birds and arboreal mammals, particularly monkeys.

#### PRESERVATION

If the sacred groves have originated at the hunting-gathering stage of the society, as we suspect from the associated cults, then they have indeed been preserved now for several centuries, perhaps from before 6th century A.D. when agriculture was probably first introduced into this region. As befits the cults of hunter-gatherers, the deities are fierce and when aroused are apt to punish the offender with death. We have heard innumerable stories of people's experiences in this regard. About thirty years ago, some worshippers of Moleshwar in Javali Taluk in Maharashtra decided to construct a temple for the god. Although this deity tolerates a shelter, he could not tolerate the wood for the temple being procured by felling of a tree within the sacred grove. The worshippers nevertheless decided to take a chance and started felling a Jambul (*Syzygium cumini*) tree for timber. The tree came down much before expected and instantaneously killed all the three wood cutters. In the grove at Dapsare in Velhe Taluk, while a man was trying to smoke out a *Varanus* lizard from a hole in a tree trunk the tree caught fire accidentally and [the lizard] was killed. The person fell violently ill, and escaped death himself only by placating the deity with the sacrifice of a goat.

The protection extended to the vegetation in the grove by the reigning deity is, or at least used to be, quite absolute. No vegetable

matter not even dead wood could be removed from the grove without incurring the wrath of the gods. The only possible exception was fallen fruit which may be gathered. This is the theory as related to us at almost every grove. How far these taboos were observed in the past is difficult to ascertain. There are however good reasons to believe that until recent times most of these taboos were complied with. The taboos may however have been violated under extreme duress, or by outsiders. Thus there are stories of the deity having permitted the felling of a tree for timber when the whole village of Manganv in Velhe Taluk was burnt down by fire some thirty years ago. Similarly, the grove at Ghol is reputed to have been felled a century ago by a timber merchant who propitiated the deity by the sacrifice of a number of animals.

The taboos have begun to weaken in recent times, especially since independence in 1947. Removal of dead wood and leaf litter is now a common practice everywhere, and in fact the villagers have often come to depend on the sacred grove as a source of fuel. Removal of live wood is still taboo in a number of groves. Even this taboo is becoming weak.

In fact, a look at Table 1 will reveal that a number of groves have already been completely destroyed. Some of these were so-called *inam* groves, i.e. groves in which no deity resided, but which were preserved for the use of the priests of the deity. The priests derived an income from the fruit and other produce collected from the grove, but did not disturb it otherwise. These *inam* groves seem to have been destroyed everywhere. What is far more alarming, however, is that not only *inam*, but even sacred groves are beginning to be cut down. Table 1 again shows that some of the largest groves in the region have been felled and converted into coal. The process seems to have been particularly intense around 1950s when all this region was being deforested to meet the demand for coal from the nearby urban centres. The demand now seems to have slackened temporarily. The realization of the economic value of the groves to the villagers as sources of fuel has also had a salutary effect and led to a resistance to the offers from the coal merchants. . . .

## REFERENCES

- Champion, H. G. and S. K. Seth,  
1968           *A Revised Survey of the Forest Types of India*, New Delhi.
- Kosambi, D. D.,  
1962           *Myth and Reality*, Bombay.
- Vartak, V. D. and M. Gadgil,  
1972           Dev-Rahati: An Ethno-botanical Study of Tracts of Forest Preserved on Grounds of Religious Belief, *Proc. Indian Science Congress*, Sixtieth session (abstract only).

## 'Jungle' in Nature and Culture

MICHAEL R. DOVE

The ability to project symbolic universes may well be located in the structure of the human brain, driven—according to Levi-Strauss—to resolve the irresolvable contradiction between Nature and Culture. Levi-Strauss notwithstanding, however, this contradiction is dealt with not in pure thought alone ('myth thinking man'), but in the active transformation of nature through the social labor of human beings. Contrary to those who believe that Mind follows an independent course of its own, I would argue that ideology-making does not arise in the confrontation of Naked Man thinking about Naked Nature; rather, it occurs within the determinate compass of a mode of production deployed to render nature amenable to human use. (Wolf 1982:388)

In CONTEMPORARY URDU (and in most local languages in Pakistan), *jangal* is defined as 'a wood; a forest; a jungle' (Urdu-English Dictionary 1977:265). In classical Sanskrit, the cognate term, *jangala*, is defined as 'arid, sparingly grown with trees and plants' (Monier-Williams 1899:417). There is a major difference in meaning between the two terms: the latter denotes an open, arid savanna stage of vegetation, while the former denotes a closed, tree-dominated cover (with unspecified aridity).<sup>1</sup> Given this difference in meaning, and since the common Sanskrit term for 'forest' is the completely unrelated *arana*, some contemporary speakers of Urdu (or Hindi) and students of Sanskrit deny that the term *jangal* has any Sanskrit antecedents at all.

From Michael R. Dove, 'The Dialectical History of "Jungle" in Pakistan: An Examination of the Relationship between Nature and Culture', *Journal of Anthropological Research*, Vol. 48, 1992.

<sup>1</sup> The Oxford English Dictionary (1989, vol. 8:313) notes this change of meaning in the word 'jungle' ('In India, originally, as a native word, Waste or uncultivated ground; then, such land overgrown with brushwood, long grass, etc.') and compares it to a similar change that has occurred in the meaning of the English term 'forest' ('from a waste or unenclosed tract to one covered with wild wood').

Francis Zimmermann acknowledges the Sanskrit antecedents to *jangal* but maintains that they are 'erroneous'. In the preface to his remarkable book, *The Jungle and the Aroma of Meats*, Zimmermann (1987:vii) writes

An extraordinary *misperception* [emphasis added] has overtaken the history of this word [jungle]. *Jangala* in Sanskrit meant 'dry lands', what geographers would call 'open' vegetation cover, but in the eighteenth century the Hindi *jangal* and Anglo-Indian *jungle* came to denote the exact opposite, 'tangled thickets', a luxuriant growth of grasses and lianas.

I suggest, on the contrary, that no *misperception* has occurred. I suggest that *jangal* is derived from *jangala* in a meaningful way, that to deny this derivation is to deny the human ecological history of a large part of the sub-continent, and that to fail to understand this derivation is to fail to understand where relations between nature and culture have come from on the subcontinent and, thus, where they are going.

Zimmermann (1987:ix) states that the purpose of his book is to peel away the modern misconceptions of jungle and to 'reveal the jungle in its ancient sense.' The method that he employs to attempt this is a thorough exegesis of the concept of *jangala* in the classical Sanskrit texts. His approach is explicitly interpretive in nature: 'The theme of this book, which concerns the fauna, geography, and physical realities of ancient India, is not those realities themselves but the system of formulas used to classify them' (Zimmermann 1987:134–5). At the end of his study, he states that 'I have endeavoured to show in this study that a reality—in itself physical and biogeographical—also has a social significance and ultimately becomes a theme for religious prescriptions' (Zimmermann 1987: 218).

My interests are different: whereas Zimmermann is interested in the social meaning of physical reality, I am interested in the reverse—in the physical reality behind the social meaning. My thesis is three-fold. First, I contend that the Ayurvedic formulas studied by Zimmermann are derived from the natural reality of the subcontinent: I suggest that the cultural classification of the natural world, as reflected in the Vedic texts, corresponds to meaningful divisions in this world. Second, I suggest that this linkage between cultural and natural systems is dialectical in nature: as changes take place in culture or nature, they provoke related changes in the other, and so on. Third, I suggest that this linkage—and the way that it is developed, in one direction as opposed to another—has implications

for the political relationship between local communities and central governments, and that the perception and representation of this relationship have, in consequence, an ideological component.

#### FIELD SITE AND DATA

This study is based on three-and-a-half years' research and residence in Pakistan between 1985 and 1989. Most of the data that will be presented were gathered during a household survey focussing on farm economy and ecology paying special attention to the farmers' perception and classification of the rural environment.<sup>2</sup> Data also were gathered regarding the perception and classification of the environment by government officials, by means of participant observation during over three-and-a-half years of meetings, workshops, and field trips with federal and provincial foresters, and by analysis of official documents prepared by the Forest Department. Comparative and historical data were drawn from the contemporary, historical, and classical Sanskrit literatures.

This research was concentrated in the *barani* 'rainfed' region of Pakistan, comprising the Salt Range, Pothwar Plateau, and plains of northern Punjab Province and southern Northwest Frontier Province. This region is quite arid, receiving . . . as little as 20 to no more than 100 centimeters of rain per year. The climatic climax vegetation of this part of Pakistan (as indeed of most of the country) is tropical thorn forest, 'an open low forest in which thorny usually hard-wooded species predominate', which merges into dry subtropical evergreen forests in the hilly regions in the north and western parts of the country (Champion, Seth, and Khattak 1965:111). The potential robustness of this vegetative cover is reflected in the varied animal life that it formerly sustained. As recently as the seventeenth century, Moghul court records and European travellers document the presence of Asian elephant, rhinoceros, and lion in the Punjab plains (Bernier 1891:374–82; Gupta 1968:85; Rao 1957: 268–70).

<sup>2</sup> The survey sample ranged from 1,132 households in 118 villages to 13 households in 13 villages. The study comprised five successive stages: (1) group interviews focusing on gross village characteristics in 118 villages, (2) individual interviews on basic household characteristics in 1,132 households in 63 villages, (3) in-depth interviews on farm ecology and economics in 589 households in 40 villages, (4) in-depth interviews on village ecology with 40 groups of key informants and village mullahs in 40 villages, and (5) monitoring of daily activities for 18 months in 13 households of key informants.

Today, these plains are nearly devoid of natural vegetation, and all three of the aforementioned animals have vanished from this part of the subcontinent. The contemporary, natural vegetation in most of Pakistan's arid lowlands ranges from a 'scrub preclimax' . . . (Champion, Seth, and Khattak 1965:40) to rocky wastes . . . The little true forest that remains occurs in oasis-like hazards [militate] against human cultivation or settlement; in government or tribal reserves, where the threat of sanction minimizes exploitation; and in holy shrines and cemeteries, where the same effect is achieved by the fear of supernatural sanction.

#### JANGALA

This picture of contemporary Pakistan is very different from the picture of ancient India drawn by Zimmermann in his elucidation of the *jangala* landscape.

#### *The Ancient Concept of Jangala*

One of the key citations in Zimmermann's analysis of the ancient concept of *jangala* is taken from a Vedic text, 'The Laws of Manu' and concerns the king's selection of a territory for himself. A part of the citation runs as follows: 'Let him [the king] take up residence in a *jangala* place, where cereals are abundant, where the Arya [Aryan colonists] predominate and which is free from disorders' (Zimmermann 1987:39). The gist of the verse is that the king should settle in the *jangala* 'dry lands' and avoid the *anupa* 'wet lands' (Zimmermann 1987:18, 39). Zimmermann (1987:4–7, 48) maintains that this distinction between *jangala* and *anupa* is one of the most fundamental polarities in early Brahminic beliefs and in the doctrines of the Indian medical science of Ayurveda.

Zimmermann assigns the following characteristics to *jangala*, based on his analysis of relevant Ayurvedic texts. First, it is located in the western part of the subcontinent, in the greater Indus River Valley, not in that of the Ganges to the east. (My study region—and, indeed, most of the rest of Pakistan—falls within the northwesternmost extent of the ancient zone of *jangala*).<sup>3</sup> Further, it is located

<sup>3</sup> This part of the subcontinent is today called (in both Pakistan and India) the *Punjab*, from the

in the central, flat part of this plain, not in the mountains on the periphery. It has an arid, not a moist climate, but with water (whether from well or rainfall) its soils are fertile and will support abundant crops. It is salubrious for humans (unlike the malaria and fever belts to the east) and encompasses their settlements in addition to their fields and fallow wastelands. The vegetative cover of the *jangala* is for the most part not closed forest, but rather open 'bush' or savanna. Of most importance, the *jangala* was 'pure' and the home of the Brahmin, whereas the non-*jangala* area was 'impure' and the refuge into which the Brahmin drove the barbarians.

Zimmermann suggests that the *jangala* was exploited primarily by pastoralists. . . . The suggestion that this environment is well suited to herding livestock is supported by the former isomorphism between the *jangala* and the subcontinent's then best-known ungulate and sacrificial animal, the Indian antelope (*Antilope cervicapra*). As reported by Zimmermann (1987:61), the ability of the antelope to live on the land was the ancient definition of the *jangala*, of the land appropriate for Aryan settlement and the propagation of Brahminic culture and religion.

#### *The Development of Jangala*

Zimmermann suggests that early Aryan society was not only adapted to, but in large measure was responsible for, the distinctive vegetative cover of the *jangala*. He states, 'Everywhere, the jungle is the product of the battle between the forest and the cultivated plain. It results from the degradation of the one and the abandonment of the other' (Zimmermann 1987: 44). He writes of a 'battle between man and forest. . . . encouraged by the overpasturing of livestock and the excessive exploitation of timber'. As to how specific practices affected specific types of forest in this battle he notes (Zimmermann 1987: 44) that slash-and-burn cultivation was responsible for the destruction of the wet *sal* (*Shorea robusta*) forest of the non-*jangala* zone; but regarding the original forest of the *jangala*, he says nothing. However, if Zimmermann is correct in arguing that human society created

Persian for 'five waters,' referring to the five rivers that here flow into the Indus: the Jhelum, Chenab, Ravi, Beas, and Sutlej. This land was the original *Arya-varla*, 'abode of the noble ones' (Moiner-Williams 1899:152), the heartland of the Aryan invaders. The Vedic texts discussed by Zimmermann and the author of the present study come from this people and this place.

the *jangala* and exploited it largely for animal husbandry, and I believe he is, then it follows that animal husbandry was responsible for the *jangala*.<sup>4</sup>

The thorn forests and dry deciduous forests of the *jangala* zone are especially vulnerable to livestock (Schaller 1967:7), so, significant degradation of the original forest cover through intensive use by early pastoralists is quite possible (cf. Allchin 1963:170–71). The natural forest would also have been felled (by axe) for its timber, and, of most importance, the forest was surely burned (cf. Zimmermann 1987:18). As Zimmermann (1987:44) writes, 'Brushfires and other phenomena, provoked essentially by the presence of man, bring about the degradation of the dry deciduous forest'. Data on the contemporary and historic use of fires suggest that early pastoralists would not merely have 'provoked' forest fires but would have purposefully set and used them to create grazing for domestic and feral animals, to prepare the land for periodic, low-intensity agriculture, and to drive game in the hunt.<sup>5</sup>

The initial opening of the thorn and dry deciduous forests would have been followed by the spontaneous growth of pioneering grasses and herbs, which are more palatable to herbivores than the mature vegetation of the forests. In the absence of further interference by people, this initial, herbaceous plant succession succeeds to bushy plants, which in turn succeed to young trees and eventually forest (the climatic climax vegetation).<sup>6</sup> (*Jangala* is not, therefore, the ultimate stage in vegetative succession on the Indian plains: it is an intermediate state [Champion, Seth, and Khattak 1965:27–8, 38–40; Spate and Learmonth 1967: 73–4; Whyte 1968: 167, 173, 174, 188].)<sup>7</sup>

<sup>4</sup> Agriculture also would have played a role, albeit a lesser one. Most contemporary pastoralists complement their animal husbandry with some agriculture, and there is every reason to believe that their forebears did likewise. A common pattern involves exploiting the alluvial *bar* lands along the rivers for cash crops, while exploiting the arid *bar* lands inland from the rivers for fodder (cf. Merrey 1983:83).

<sup>5</sup> Cf. Zimmermann's (1987:180) comment that there is 'no jungle without royal hunting'. Note that while the transformation of the ancient Indian landscape is being attributed primarily to pastoral Aryan society, some (lesser) role was played by the pre-Aryan, agricultural, urban-based civilization of the Indus Valley, which cut down forests for fuel for pottery making and copper smelting (Gupta 1968:79).

<sup>6</sup> For example, *Imperata cylindrica*, which Zimmermann (1987:44) cities as an important savanna component, is well known as a colonizing grass that is rapidly succeeded by shrubs and bushes in the absence of continued intervention by man and fire (Dove 1986a:122–5, 1986b:164–5).

<sup>7</sup> In contrast, savanna is the climatic climax vegetation in the Central Asian steppes from which the Aryans originally came. I am indebted to an anonymous reviewer for pointing out that the Aryans re-created (artificially) in ancient India the natural environment that they left behind in Central Asia.

The further this succession proceeds, the less palatable the vegetation becomes to livestock. It is in the best interests of pastoralists to check this succession and maintain the vegetation in its initial grassy phase. Grazing by animals helps to achieve this, and Misra (1980: 146–7) maintains that once people have opened the forest, grazing was accompanied by burning. Periodic burning, especially when carried out before the rains, retards the growth of unpalatable woody species and destroys older and less nutritious grass, in addition to stimulating the growth of new grass.<sup>8</sup> The value of such burning to the herder is demonstrated in the persistence of annual summer burning of pastures within the boundaries of the capital city of Pakistan, Islamabad (as elsewhere in the country, cf. Ashraf and Akbar 1989:85), notwithstanding stiff opposition by the government.<sup>9</sup>

#### *The Cultural-Historical Evidence*

This analysis of the ancient land cover as an unstable, artificially maintained savanna is supported by ancient principles of land tenure. The 'Laws of Manu', for example, stipulate that an agricultural field belongs to whoever first cleared the weeds from the land (Ghoshal 1973:108). It is significant that this tenure is based on the clearing of weeds and not trees. Cultivators who live in and from the forest (such as swidden agriculturalists) customarily assign tenure to whoever clears the trees from the land. If tenure in a forested environment is assigned on the basis of tree clearing, then the assignment of tenure on the basis of clearing weeds or grasses suggests a grassy or savanna environment.

The effect of a one-time clearing of the land in a savanna environment is finite in duration. A constant effort is required to keep the land clear. When this effort ceases, the savanna vegetation will

\* Cf. Champion, Seth, and Khattak (1965:38, 40) on the role of grazing and fire in creating contemporary 'preclimates'.

<sup>9</sup> The land being burned over lies mainly within the Margalla Hills federal park. The erection by the federal government of huge hurricane fences all around the perimeter of this park has greatly reduced (albeit not eliminated) the pressure of livestock on the local vegetation, and as a result, a robust natural vegetation—an incipient thorn forest—has sprung up. In just the two decades since Islamabad was founded and the park laid out, this vegetation has already surpassed in luxuriance almost anything else that can be seen on the plains of Pakistan. This example demonstrates that the barren vegetative cover over much of contemporary Pakistan is artificial, and it also demonstrates that the ancient vegetative cover was probably robust enough not only to support, but also to require, periodic burning in order to prevent the natural restoration of woody growth.

begin to reassert itself, and the recognition of tenure will lapse. As Zimmermann (1987:14) says, quoting from another transcription of ancient law ('The Code of Gentoo Laws'), 'Land waste [viz., unworked] for five years is called jungle.'<sup>10</sup> The implicit recognition in this tenet of the need for recurrent human activity to oppose the implicit tendencies of the land cover towards self-transformation is characteristic of savanna and, again, supports the identification of the ancient land cover as an anthropogenic savanna.

Finally, this identification is supported by evidence on the role of fire in Vedic religion. The Vedic literature is filled with impassioned paeans to Agni, described by some observers as the god of 'sacrificial fire' (Tyler 1986:47). In a pastoral society such as the one described here, however, the use of fire in sacrifice is a sideshow to the use of fire in creating and maintaining the basis of society's existence, the anthropogenic grasslands. In the *Rgveda*, the oldest of the classical Vedic texts (to which attention will be confined for reasons of space), Agni is mentioned not only in sacrificial contexts but also (and perhaps more commonly) in ecological ones: for example, 'He [Agni] eats the woods as a King eats the rich' (Griffith 1973:44). Agni's (implicit) impact in these contexts also is mentioned, including his impact on vegetation: thus, 'On thy [Agni's] way hitherward and hence let flowery Durva grass spring up' (Griffith 1973:639).

'Durva' is *Cynodon dactylon*, Bahama or Bermuda grass (Banerjee 1980:39; CSIR 1986:156), of which Burkhill (1986:739) writes: 'In some parts of the tropics it is the most important of all fodder grasses. Vast amounts of hay are made from it in Bengal.' The role of fire in managing this valuable fodder grass is attested in (otherwise enigmatic) verses in the *Rgveda* about the protective and reconstructive powers of fire. Thus, 'Cool, Agni, and again refresh the spot which thou hast scorched and burnt' (Griffith 1973:45) can be interpreted as referring to the growth of a 'fresh' (and thus more nutritious) grass cover on burnt-over land. Similarly, 'O Agni guard the spots that cattle love' (Griffith 1973:541) refers to the need for periodic burning to preserve the pastures favoured by cattle against the succession to nongrassy vegetation that otherwise inevitably

<sup>10</sup> Similar tenurial rules hold to this day among inhabitants of savanna environments, such as the Banjarese of southeastern Kalimantan, who farm fire-climax grassland by means of cattle-drawn ploughs. They say that when the grassy cover characteristic of cultivation begins to succeed to the more mixed cover characteristic of a fallow, as the result of noncultivation for too-long a period, all tenurial rights lapse (Dove 1986a:124).

would occur.<sup>11</sup> The targeting of nongrassy, ligneous vegetation is explicit in verses such as 'And thou, O Agni, thou of Godlike nature, sparest the stones [soil?], while eating up the brushwood' (Griffith 1973:639).

The linkage between burning and the growth of a new and more luxuriant grass cover throws light on the repeated use in the *Rgveda* of the metaphor of 'barbering' to describe Agni's impact: 'When through the forest, urged by wind, he spreads, verily Agni shears the hair of the earth [viz., grasses and shrubs]' (Griffith 1973:639). Throughout South and Southeast Asia, in both historic and contemporary times, it has been the custom to shave babies' heads to stimulate the growth of a more luxuriant crop of hair. The purpose of 'shaving' the earth's vegetation with Agni's fire is identical.<sup>12</sup>

A final piece of corroborating evidence of the use of fire to manage the ancient savanna involves an analogy between Agni and flooding. Two natural forces in either ancient or contemporary Pakistan can suppress mature vegetative successions and stimulate depauperate ones with higher nutritive value to livestock: one is fire, the other is water. Annual floodwaters in the alluvial plains (*bela*) suppress mature vegetation and, when they recede, permit the growth of immature vegetation in its place. The fact that this same end is attained on dryland through the use of fire surely explains the coupling of fire and flood in such suggestive verses in the *Rgveda* as: 'Kin as a brother [Agni] to his sister floods', and 'Thy birth who seekest food is in the falling flood, Agni....' (Griffith 1973:44, 639).

#### JANGAL

The contemporary concept of *jangal* is very different from that of *jangala*.

#### *Historical Changes in Land Use*

During the millennia that separate the Vedic period from contemporary times, the factors responsible for the development of the

<sup>11</sup> The conjecture by one commentator that this verse reflects concern to keep fire away from pasture (Griffith 1973:45n) shows how little comprehension there has been of the ecological underpinnings of Vedic beliefs.

<sup>12</sup> I am indebted to Carol Carpenter for this observation.

*jangala* have changed or disappeared, and new factors have come into play. One of the most important of these is population/land ratios,<sup>13</sup> which have increased as the result of not just demographic but also political-economic variables. Central governments prefer concentrated populations, which foster intensive and sedentary patterns of land use. These patterns, in turn, facilitate centralized political and economic control.<sup>14</sup> Successive central governments have directly supported the intensification of resource use through the development of irrigation and intensive agricultural technologies. In addition, by extending their control to include forests and so-called wastelands, they have curtailed exploitation of these lands under locally oriented and extensive systems of resource use, thereby favouring externally oriented and more intensive systems (cf. Buzdar 1992). The cumulative impact of these historical developments has been to shift the balance between animal husbandry and agriculture increasingly in favour of the latter and to replace the role of vegetative dynamics with human labour.

The labour saving practices of transhumance and pasture rotation—which use the natural dynamics of the vegetative cover to subsidize labour inputs into animal husbandry—have been replaced over time by labour-intensive practices of fodder crop cultivation and stall feeding. (A similar process has taken place in agriculture, with the function of the long fallow being replaced in most areas by soil tillage, fertilization, irrigation, weeding, and crop rotation.) One consequence of replacing vegetative dynamics with human labor is the disappearance of the vegetation itself. The intensity of land use has become so great, at least in the central plains of the subcontinent, that it does not provide sufficient time after each use of the land for secondary growth—viz., savanna—to establish itself.<sup>15</sup>

#### *The Contemporary Concept of Jangal*

The *jangala* has now disappeared, and its place has been taken by

<sup>13</sup> As Legris (cited in Spate and Learmonth 1967:74) correctly notes, 'Savannah results essentially from the regular passage of fire, but it presupposes a feeble density of human and cattle populations.'

<sup>14</sup> The tension between central government and rural farmer is reflected in the phenomenon of farmer flight into the forest, which is a recurrent feature of Indian agrarian history (Habib 1982a:64, cf. Dove 1985:15–8 on farmer flight in ancient Java).

<sup>15</sup> It is to this process that Gupta (1968:93) refers when he writes, 'It may therefore be safely said that Rajasthan desert, if not a "man-made desert" is surely a "man-maintained desert".'

the *jangal*. Contemporary Pakistani peasants use *jangal* (in Urdu and in most regional languages)<sup>16</sup> to refer to any distinct, contiguous block of trees—typically not the sparse scrub of *jangala*, but true forest, with taller, older, denser trees. The prevalence of this usage is reflected in the official name of the Pakistani Forest Service, *Mahkamah Junglot* (*junglot* being the plural form of *jangal*). The contemporary concept of *jangal* has lost the broad geographic referent that *jangala* had (viz., the connotation of the arid savanna lands of the west as opposed to the marshy lands of the east). *Jangal* does have a customary geographic association, but it is the reverse of ancient *jangala*'s. While *jangala* developed where the forest was cleared, *jangal* is found only where the forest has not been cleared (or where it has been cleared and then grown back). *Jangal* is typically found not in the central plains, therefore, but in peripheral areas whose remoteness or some other characteristic (such as the slope of the land or susceptibility to seasonal inundation) makes them relatively less suited to agriculture. In practice, this means that *jangal* is found either in hilly regions or in seasonal floodplains.

The most important difference between *jangala* and *jangal* involves their respective relationships to society. Contemporary Pakistani farmers conceive of the *jangal* as uncultivated, as 'wild'.<sup>17</sup> For example, *jungli* in common usage refers to feral varieties of plants and animals, as in *jungli kikar*, 'wild Acacia'.<sup>18</sup> This characteristic of wildness is partly shared with *jangala*, but an associated characteristic of 'uncivilized' is not shared with it. The contemporary expression *jungli log*, for example refers to people—living in rural areas but not necessarily in the *jangal*—who do not obey the norms and laws of the country. The most well-known example is the *dacoits*, who to this day ply their kidnapping and banditry from the shelter of the riverine forests of the lower Indus. According to popular thought, the *jangal*,

<sup>16</sup> Cf. *jangal* in Punjabi: 'A Forest, a wood, a jungle, a desert, a forest land, any uncultivated ground' (Singh 1983: 478).

<sup>17</sup> This transition from fallow land (within the agricultural system) to wild land (outside it) is noted in Hobson-Jobson's entry for 'jungle' (Yule and Burnell 1903: 470):

The native word means in strictness only waste, uncultivated ground; then such ground covered with shrubs, trees or long grass; and thence again the Anglo-Indian application is to forest, or other wild growth, rather than to the fact that it is not cultivated.

<sup>18</sup> A significant proportion of Pakistan's remaining forest cover is neither 'natural' nor 'wild', having been planted by the government Forest Service. According to both popular mythology and historical fact, even *jungli kikar* (which most often refers to *Prosopis juliflora*), while now growing wild throughout the arid plains of Pakistan, was initially introduced and sown from the air by the Forest Service. Thus, the meaning of *jangli* has more to do with the opposition of nature and culture than with the opposition of wildness and domesticity.

in addition to harbouring those who are not of society, harbours those who are not of this life: the *jangal* is thought to be the abode of *jin* 'spirits'. One farmer defined *jangal* as 'the place where one feels fear'. This feeling is enhanced by the fact that over much of Pakistan's desolate plains, the only remaining stands of trees are those protected by religious proscription within the walls of graveyards and shrines.<sup>19</sup>

Whereas *jangala* encompassed ancient civilization, contemporary civilization excludes *jangal*. To illustrate, the ancient barbarians were pushed out of the *jangala* (by the dominant Aryan society), but the contemporary equivalent (e.g., the *dacoits*) are pushed into the *jangal*. This disassociation of civilization and *jangal* has affected the broader relationship between civilization and nature. Whereas the 'wild' formerly encompassed the 'civilized' within the concept of *jangala*, the two (with all contemporary values of 'wildness' placed on *jangal*) are now distinct. Whereas civilized society was formerly seen as being part of nature, now it is seen as standing outside of nature. Further, while the 'wild' was once opposed to the barbaric or uncivilized (in the *jangala*/non-*jangala* polarity), the two are now collapsed together (in *jangala*). Thus, whereas nature once encompassed the values of civilized society, now it is seen as encompassing their antithesis.

#### THE RELATIONSHIP BETWEEN NATURE AND CULTURE

The contemporary *jangal* is, therefore, very different from the ancient *jangala*. The difference between the two is not the 'historical mistake' that Zimmermann believes. His errors stem from misunderstanding the dynamics of the *jangala* and the dialectical nature of the relationship between nature and culture.<sup>20</sup>

<sup>19</sup> This is so frequently the case that a subfield of silvicultural research has developed in Pakistan, which attempts to reconstruct an area's original vegetation based on the extant vegetation within cemeteries and shrines (e.g., Chaghtai, Shah, and Akhtar 1978; Chaghtai, Rana, and Khattak 1983; Chaghtai, Sadiq, and Shah 1984).

<sup>20</sup> Although today's barren landscapes do not suggest that man is engaged in a constant battle to suppress the natural vegetation, he still is. The balance between the regenerative abilities of the natural vegetation and man's agricultural management of it, what Mukerjee (in Lal 1985: 374–5) calls 'the balance between the progressive tendencies of vegetation and retrogressive influence of man', is responsible for maintaining what is left of India's savanna (cf. Misra 1980). However, with the immeasurably greater pressure of human population on natural resources today, the forces that would return the savanna to forest and the forces that would keep it under cultivation are far weaker and stronger, respectively, than they were in ancient times. The contemporary forces for cultivation are in some cases so great that they not only

### Zimmermann's View of Nature-Culture Relations

Zimmermann's concept of *jangala* is well illustrated in his use of Kipling's short story 'Letting in the Jungle', although not in the way that Zimmermann intends. Kipling's story details the way that the jungle boy Mowgli took revenge for the mistreatment of his foster mother by the villagers of the Waingunga Valley. With the assistance of the jungle's 'Eaters of Grass' (viz., elephant, deer, pig, and nilghai [*Boselphus tragocamelus*]), the offending village was levelled, the inhabitants driven off, and the jungle 'let in' (Kipling 1990:208).<sup>21</sup> As this last phrase suggests, the jungle had been previously '*not let in*', had in fact been '*kept out*' of the village and its surrounding agricultural lands by the unceasing efforts of the villagers. When the villagers were driven away—a more serious blow by far than the simple smashing of the village walls and houses—the heretofore checked natural succession of the tropical vegetation became unchecked. Kipling writes (1990:212), 'By the end of the rains there was the roaring jungle in full blast on the spot that had been under the plough not six months before'; or in Zimmermann's words (1987: 43), 'the abandoned land was literally transformed into savanna'.

However, if natural succession could produce 'roaring jungle' or 'savanna' in less than one year in this environment (in the dry deciduous forest zone of modern-day Madhya Pradesh), then—assuming that the villagers did not return—it would be likely to produce impenetrable bush forest on the site within a few years, young secondary forest in a decade or so, and mature secondary forest in several decades. True agricultural abandonment does not

check succession of the savanna to forest, but they also make it impossible to keep the savanna under cultivation: they (viz., overuse) turn the land into unproductive wasteland, which is so poor as to rule out (for the immediate future) either further cultivation or spontaneous reforestation.

This deflection of the normal processes of natural reforestation in the subcontinent has misled Zimmermann and others. In the face of this manifest challenge to keep savanna from degrading into wasteland, the suggestion that it requires an effort by society to keep savanna from progressing into forest may seem farfetched, but it is not. If the pressure from the rural population and their livestock is removed, then the tendency for savanna to degrade to wasteland will cease; and if the pressure from peoples and beasts is removed long enough, then the savanna will slowly begin its natural succession to forest. The contemporary evidence of the possibility of anthropogenic deflection of the savanna to wasteland does not, therefore, belie the necessity of human intervention to block the natural succession of the archaic savanna to forest.

<sup>21</sup> It is noteworthy that Kipling chooses the 'Eaters of Grass' to let the jungle in, since the natural habitat of this group of animals is the jungle, as opposed to the true forest, in which there is little or no grass to eat.

turn fields into savanna, it turns them—eventually—into forest (cf. Misra 1980:147). Only periodic human intervention can avert this process and keep the land under an intermediate, savanna cover. To use Zimmermann's own terminology: calamity produces forest wastelands, on-going exploitation produces productive *jangala*.

This understanding of the dynamics of vegetative succession yields a significantly different view of the relationship between ancient society and the savanna than Zimmermann's. Whereas Zimmermann regards the savanna as the product of the victory of the forces of nature over the forces of human society, I regard it as the product of a fine balance between the forces of society and the forces of nature. Whereas Zimmermann regards the savanna as the product of a *one-time* clearing of the forest for cultivation, followed by a subsequent 'abandonment' of the cultivated land due to some 'calamity' (Zimmermann 1987:41, 62), I regard it as the product of ongoing, periodic impacts by society. Zimmermann believes that the forest-savanna transformation is permanent, that cultivated fields can succeed to *jangala*, but *jangala* can never succeed to forest. He writes (1987:62), 'Who could forget in India the forests that have died out, and the dramatic expanse of wastelands, the lands once abandoned, the lands then desertified'. In fact, permanent abandonment of land has different biotic consequences than temporary fallowing in the course of a grazing or cultivating cycle: while fallowing for a fixed period results in a secondary vegetative cover, abandonment eventually results in a primary vegetative cover. In short, fallowing results in *jangala*, and abandonment results in forest.

This dynamic interpretation of the savanna actually supports Zimmermann's basic thesis—namely, that the early Aryan culture favoured the *jangala* environment—more than Zimmermann's interpretation of the Kipling passage does. According to Zimmermann, the *jangala* developed incidentally, as the result of the abandonment by the Aryans of their lands for unrelated reasons. According to my analysis, in contrast, the development of the *jangala* was purposeful, the result of society's conscious management of vegetative succession for its own ends. This conception of society's role in the creation of *jangala* also better explains the strong normative weighting placed on *jangala* in the classical texts, as elucidated by Zimmermann.

### *A Dialectical View of Nature-Culture Relations*

Two forces have been at work here: on the one hand, society's use of livestock, fire, and axe to transform the forest into *jangala*, pasture, and fields; and on the other hand, the natural processes of vegetative succession returning pasture and fields to *jangala* and—in the absence of further intervention by society—to forest. The *jangala* was thus a zone of tension; it was the product of a balance between society and nature—a balance that was intentional on society's part. Understanding this balance helps to explain some otherwise problematic aspects of nature-culture relations in both ancient and contemporary times.

There is, according to Zimmermann (1987:38–8), a dichotomy in Brahminic thought between village and forest: the former is sociologically 'full', while the latter is sociologically 'empty'. The socioreligious distinction between the two is, he says, bridged by the ecological concept of *jangala*. This claim is not self-evident, so long as the *jangala* is regarded as the product of a one-time abandonment of the land. If the *jangala* is regarded instead as the product of periodic and continuing use of the land, however, then Zimmermann's claim is more comprehensible. As the site of an extensive system of land use, the *jangala* is sometimes inhabited and used and sometimes not. As a stage of vegetative succession, it is poised half-way between nature and culture. As the product of progressive natural forces and retrogressive human forces, it is a product of both society and nature. By virtue of being an active zone of tension between society and nature, therefore, *jangala* is a mediator between the two, between village and forest. Over time, however, this role was transformed.

The position of the jungle in the human geography of the sub-continent has undergone a profound historical change. The ancient pastoralists (*cum* agriculturalists) literally lived and worked within the *jangala*, the 'wild'. The *jangala* contained their pastures, fields, and villages, just as it contained the fallowed lands that were recuperating from use. The *jangala* encompassed the entirety of the land-use cycle. But this changed with the intensification of land-use practices. Pastures and fields are now largely outside the *jangal*, removed from the wild, removed from nature. Whereas extensive, long-cycle uses of the land obliged society to view agriculture and civilization within the bounds of nature, intensive,

short-cycle uses do not. Whereas society once depended upon the natural dynamics of vegetative succession to restore the productivity of the land during fallow periods, society now views these dynamics as a threat. Whereas extensive practices caused society to honour nature and natural processes, intensive practices lead society to suspect and disparage natural processes—as implied in the contemporary use of the term *junglees* 'forest [people]' in derogatory fashion.

The changed relationship between cultural and natural dynamics, the changed dialectics between culture and nature, explains why society does not just disparage the *jangal* but—as mentioned earlier—fears it. The ancient *jangala* was not, in contrast, a place of fear.<sup>22</sup> It symbolized an achieved (and desired) balance between nature and culture, in contrast to which the *jangal* symbolizes either the lack or loss of balance. Whereas the *jangala* symbolized acculturation, the *jangal* symbolizes either nonacculturation or deculturation. The *jangal* is a reminder of how society's works are circumscribed or even undone. Therefore, the jungle became a place of fear when it came to represent not the 'working' of a natural landscape, but the nonworking or 'unworking' of a cultural one.

### POLITICAL-ECONOMIC DYNAMICS OF 'JUNGLE'

The dialectical relationship between culture and nature involves not just local communities and their immediate environment; it also involves broader political-economic structures, including the state. Ancient, colonial, and contemporary governments all have participated in and passed judgment on the dynamics of 'jungle'. While the judgments vary from one case to the next, they all have one thing in common: they are all 'deflected' by the self-interests of the state.

### *State Views of Nature-Culture Relations*

I began this study with Zimmermann's (1987:39) citation of an

<sup>22</sup> It was the other half of the Brahminic polarity, the wet forests of the Ganges (called *anupa* in Zimmermann [1987], that were feared. Shiva (1989:57) oversimplifies the complex relationship between society and environment and ignores both the ancient distinction between *jangala* and *anupa* and the contemporary distinction between *jangal* and non-*jangal*, when she writes, 'All religions and cultures of the South Asia region have been rooted in the forests, not through fear and ignorance but through ecological insight.'

ancient Vedic prescription for settlement in *jangala* 'savanna': 'Let him [the king] take up residence in a *jangala* place.' This prescription clearly implies that the *jangala* existed prior to human settlement and land use. There is no recognition in this or other relevant passages in the Vedic literature of the thesis that pastoralism was responsible for the transformation of the natural Indian forest to *jangala*. The Vedic literature presents the distinction between *jangala* and forest as one between the environment of civilization and the environment of barbarism, not between anthropogenic and natural environments (Zimmermann 1987).<sup>23</sup> This literature presents the *jangala* as land that is chosen because it is good, not land that has become (or been made) good because it was chosen. The state's conception of its environment as ritually pure militated against recognition of the *jangala*'s anthropogenic character.

The British colonial government perceived the *jangala*'s more recent manifestation in opposite, but similarly 'deflected', terms. Whereas the ancient Aryan state associated *jangala* with the presence of civilization, the British colonial government associated *jangali* landscapes with the absence of civilization; and whereas the early states conceived of *jangala* as natural, the British conceived of these landscapes as man-made. British interest in this matter was based on concern over afforestation of agricultural areas. Colonial observers claimed that whenever Moslem populations displaced Hindu ones, intensively cultivated 'good' landscapes were transformed into overgrown, sparsely cultivated, *jungli* 'bad' ones (cf. Heyne cited in Bartlett 1955:280-2). The British attributed this transformation to the Islamic system of agrarian taxation—dramatically referred to as the *damnosa hereditas*, 'legacy of loss'—which was said to penalize any long-term investment in the land because its limitations on the length of tenure discouraged long-term planning and the heaviness of its exactions encouraged periodic flight (Moreland 1988:205, 207). In fact, the *jungli* landscape was a product not of a flawed sociopolitical system, as the British supposed, but of a rational land-use system. This system was characteristic not just with a particular religion but also with a particular environment (viz., arid or semiarid) and population

<sup>23</sup> Indeed, Vedic society appears to have reversed the actual status of forest and *jangala*, viewing the latter as natural and the former as artificial (at least in some cases). This reversal is reflected in injunctions in the Vedic literature for the state (especially a new state) to plant forests. Thus 'And he [the King] should establish forests, one for each of the products indicated as forest produce. . .' (Kangle 1988:59).

density (viz., low), to which it was arguably well adapted.<sup>24</sup> The colonial government's view was self-interested, since extensive land-use systems, which produce *jungli* fallow covers, are inherently more difficult and less rewarding for governments to administer and exploit than intensive systems, which do not produce such covers.

The contemporary government of Pakistan adopts a similar, essentially cultural argument to explain not the rise but the demise of *jangal* 'forests'. The Forest Department attributes purported over-exploitation of tree products and deforestation of forested areas to the 'anti-tree' attitudes of the rural people (Dove 1992; cf. Agarwal 1986: 108). Up until recently, state foresters maintained that farmers were not merely the enemies of the forest (i.e., the state's forest), but that they were also opposed to trees per se (even on their own farms): the farmers were not 'tree-minded'. This belief was held in the face of the fact that virtually every farm in Pakistan contains naturally grown trees (whose existence attests to at least protection by the farmer), and 43 per cent (according to my studies) contain trees that actually were planted. The government's stance is (again) self-interested, because it construes conflict between forester and farmer as conflict between cultures, as opposed to competition between equally self-interested resource users. Such 'mystification' by the state of relations between society and the natural environment follows the same pattern as the colonial and precolonial states.

#### Reification of Nature and Culture

The error in these state interpretations of nature-culture relations can be illustrated with reference to the earlier-mentioned 'isomorphism' between the Aryan and the antelope. Vedic culture identified the proper range for Aryan settlement in the subcontinent as the range of the Indian antelope, whose preferred habitat was the *jangala* 'savanna'. However, if the *jangala* was, as argued here, anthropogenic in origin, the actual causal relationship must have been the reverse of that implied. The Aryans did not follow the antelope;

<sup>24</sup> The Islamic system of taxation may have encouraged more extensive land use, but this must be judged within the broader association of social system and land use. Through much of India's history, a basic dichotomy has existed between Hindu agriculturalists living in comparatively dense populations along rivers and in their floodplains and Moslem pastoralists and extensive agriculturalists living in the sparsely populated arid interior regions. Whenever a population pursuing one of these systems replaced a population pursuing the other, some

rather, the antelope followed the Aryans. This sequence is especially clear where the range of the antelope extended beyond the climatic dry zone, as Zimmermann (1987: 59) says occurred. The expansion of the antelope range followed the extension of the savanna into wetter parts of the subcontinent as the result of human land use. Here the savanna represented an even greater deviation from the natural vegetative cover. Failure to see this causal relation correctly can be attributed to an overly reified view of nature, as something completely distinct from human society.

The policies of the contemporary government of Pakistan reflect a view of culture-nature relations that similarly suffers from reification. The Forest Service's previously mentioned explanation of deforestation and of farmers' purported 'anti-tree attitudes' is based on a reification of culture, just as its approach to reforestation is based on a reification of nature. The Forest Service holds it as an article of faith that the only way to reforest most barren land is by planting trees. This faith is illustrated by an example from the Forest Department of the Northwest Frontier province. Several years ago, this department fenced off a barren hillside in one district and planted it with seedlings of *Acacia modesta*. The biggest problem faced by the seedlings was competition from naturally growing weeds, and the Forest Department had to devote considerable resources to weed suppression. Eventually, outside observers discovered that the weeds in question were in fact also *Acacia modesta*, which had grown up naturally as soon as the hillside was fenced and browsing by local goats had ceased. As this example demonstrates, trees (and eventually forest) naturally and spontaneously grow over the plains of Pakistan whenever their suppression by people and animals ceases. The degradation, maintenance, and restoration of barren lands is, therefore, a question of relations between society and the physical environment, not a question of the physical environment alone.<sup>25</sup>

<sup>25</sup> The Forest Service's failure to acknowledge this point benefits it in a variety of ways. The reality of the natural vegetation—that it is straining to return would the human population and their animals but let it—and its corollary—that the key to successful afforestation is protection—directly conflict with the Forest Service's self-interests. Such protection is socially and politically difficult, demands a long-term commitment, and emphasizes social rather than silvicultural expertise. In contrast, the Forest Service's purported key to afforestation—the planting of tree seedlings—is straightforward, involves a short-term effort only, and emphasizes the value of silvicultural training. In addition, the raising of seedlings in nurseries for the purpose of reforestation offers a variety of financial rewards for forestry officers. The difficulty but also potential rewards of dealing with the reality of community-forest relations is evident in a program of 'Joint Forest Management' recently inaugurated by the Forest Department of India, which aims at promoting (mostly) natural regeneration of state forests solely by means of restricting use by

## CONCLUSIONS

I conclude my study with a discussion of theoretical problems in the study of relations between nature and culture and of practical problems arising from obfuscation of these relations by the state.

### Nature-Culture Relations

Zimmermann interprets the jungle not in terms of the way society interacts with it, but in terms of society's needs in some other sphere altogether. Thus, he writes:

The jungle, like the human body, provides a favored context for a conceptualization of the relations between the outside and the inside, between wildness and culture, and, at an even deeper level, for a dialectic between the pure and the impure (Zimmermann 1987:218).

The implication is that the conceptualization of the jungle was not a response to the importance of the jungle to society in ecological terms, but a response to the metaphorical excellence of the jungle for articulating critical social dialectics.<sup>26</sup> In other words, Zimmermann treats nature as a 'given', something that is used by society as a ready-made symbol to think about culture.

This posture constitutes a reification of nature and a reductionist approach to the study of classificatory systems. Nature is *not* a given. It is, as the analysis here has shown, subject to modification by society, and this modification is central to the way that nature is conceptualized. The concept of the jungle has to do with neither nature nor culture, therefore, but with the relationship between them. The meaning of *jangala* is based not on one physical fact but on one physical fact and one social one: first, the vegetation on the subcontinent's arid plains grows back unless something is done to prevent it; and second, it was in the interest of early Aryan society to keep it from growing back. And a significant part of this society's pattern of land use was devoted to doing just that (viz., maintaining natural succession at the savanna stage), an effort which was acknowledged in the cultural value placed on the *jangala*.

Zimmermann does not appreciate the instrumental linkage

local communities, in exchange for a larger role in the management and exploitation of the forest by these communities.

<sup>26</sup> See Smith (1991) for an analogous interpretation of ancient Indian classification of fauna.

between land-use practices and cultural values. He writes:

Dryness, a flat terrain, sparse, scattered trees, mainly thorny ones: such are the physical features of the jungle given in the Sanskrit texts. They are not empirical observations, but norms (Zimmermann 1987: vii).

In fact, they are both: the physical features of the jungle given in the Sanskrit texts describe both the landscape that Aryan society desired and the landscape that it created. The normative values placed on these features refer less to a particular aspect of nature (viz., *jangala*) than to a particular type of relationship between culture and nature (that which creates and maintains *jangala*). In short, how society views nature is in part a function of how society has affected nature and how nature has affected society. Nature and the cultural conception of nature develop together; they co-evolve.<sup>27</sup>

As a result of his failure to fully perceive this co-evolution between nature and culture, Zimmermann falls short of one of his own major research goals, which was to explain the historical evolution of the concept of *jangala* to *jangal*. By the end of his analysis, he has proceeded no further than his initial statement that the change is an 'extraordinary misunderstanding' (Zimmermann 1987: vii). In contrast, by treating *jangal* and *jangala* as dialectical concepts that embrace both nature and culture, I have shown that the evolution of *jangala* to *jangal* represents not a misunderstanding, but, rather, an understanding of historical changes in the human ecology of the subcontinent. The former approach leaves us with a mistake, a historical accident; the latter leaves us with an explanation, a meaningful historical process.

#### *Obfuscation and Degradation*

A dialectical relationship between nature and culture may explain another aspect of Pakistan's ecological history, that pertaining to the role of the state. The relationship between nature and culture is so important that it draws the ideologically motivated attention of

<sup>27</sup> Cf. Norgaard (1984: 165, 1987: 118) and Thompson, Warburton, and Hatley (1986:132). Norgaard (1987: 118) says that knowledge of nature cannot be independent of relations with nature and suggests that only the tradition of objective knowledge makes us think it is. This distinction is well illustrated by Spooner's (1987) comparison of Native and Western ecological paradigms in Baluchistan: he concludes that Baluchi pastoralists focus on the *interaction* among the range, the livestock, and the people, whereas Western range scientists focus on the condition and welfare of the range alone.

the state. Each of the state systems discussed—ancient, colonial, and contemporary—customarily mystifies or obfuscates the character of this relationship. This obfuscation merits attention because the physical environment with which it is associated is one of the most degraded on the face of the earth today. Is this association coincidental, or is it, too, co-evolutionary? Is a history of self-interested misrepresentation of nature-culture relations by the state responsible (in whole or part) for the historical degradation of Pakistan's environment? If correct representation of environmental relations is a prerequisite for sound management of these relations, then this question bears raising. . . .

## References

## REFERENCES

- Agarwal, B.,  
1986 *Cold Hearths and Barren Slopes: The Woodfuel Crisis in the Third World*, Md.: Riverdale Co. for Institute of Economic Growth.
- Allchin, F. R.,  
1963 *Neolithic Cattle-Keepers of South India: A Study of the Deccan Ashmounds*, Cambridge University Press, London.
- Ashraf, M. M., and G. Akbar,  
1989 Status of Desertification in Pakistan—A Review, *The Pakistan Journal of Forestry* 39(2): 79–87.
- Banerjee, S. C.,  
1980 *Flora and Fauna in Sanskrit Literature*, Naya Prokash, Calcutta.
- Bartlett, H. H.,  
1955 *Fire in Relation to Primitive Agriculture and Grazing in the Tropics: Annotated Bibliography*, vol. 1. University of Michigan Botanical Gardens, Ann Arbor.
- Bernier, F.,  
1891 *Travels in the Mogul Empire: 1656–1668* (trans. by A. Constable), S. Chand, Delhi.
- Burkill, I. H.,  
1966 *A Dictionary of the Economic Products of the Malay Peninsula*. 2 vols. Kuala Lumpur: Ministry of Agriculture and Cooperatives, on Behalf of the Governments of Malaysia and Singapore. [Originally published 1935, London: Crown Agents for the Colonies, on Behalf of the Government of the Straits Settlements and Federated Malaya States.]
- Buzdar, N. M.,  
1992 The Role of Institutions in the Management of Commonly-Owned Rangelands in Baluchistan, in *The Sociology of Natural Resources in Pakistan and Adjoining Countries* (ed. by M. R. Dove and C. Carpenter), Vanguard Press for Mashal Foundation, Lahore.
- Chaghtai, S. M., H. Shah, and M. A. Akhtar,  
1978 Phytosociological Study of the Graveyards of Peshawar District, NWFP, Pakistan, *Pakistan Journal of Botany* 10: 17–30.
- Chaghtai, S. M., N. A. Rana and H. R. Khattak,  
1983 Phytosociology of the Muslim Graveyards of Kohat Division, NWFP, Pakistan, *Pakistan Journal of Botany* 15(2): 99–108.
- Chaghtai, S. M., A. Sadiq, and S. Z. Shah,  
1984 Vegetation around the Shrine of Ghali Gul Baba in Khwarra-Nilab Valley, NWFP, Pakistan, *The Pakistan Journal of Forestry* 34(5): 145–50.
- Champion, H. G., S. K. Seth, and G. M. Khattak,  
1965 *Forest Types of Pakistan*, Pakistan Forest Institute, Peshawar.
- CSIR (Council of Scientific and Industrial Research),  
1986 *The Useful Plants of India*, Publications and Information Directorate, CSIR, New Delhi.
- Dove, M. R.,  
1985 The Agroecological Mythology of the Javanese, and the Political Economy of Indonesia. *Indonesia* 39: 1–36.
- Dove, M. R.,  
1986a Peasant versus Government Perception and Use of the Environment: A Case-Study of Banjarese Ecology and River Basin Development in Kalimantan, *Journal of Southeast Asian Studies*, 17(1): 113–36.
- Dove, M. R.,  
1986b The Practical Reason of Weeds in Indonesia: Peasant vs State Views of *Imperata* and *Chromolaena*, *Human Ecology*, 14(2): 163–90.
- Dove, M. R.,  
1992 Foresters' Beliefs about Farmers: A Priority for Social Science Research in Social Forestry, *Agroforestry Systems*, 17: 13–41.
- Ghoshal, U. N.,  
1973 *The Agrarian System in Ancient India*, Calcutta: Saraswat Library. [First published in 1929 by Calcutta University.]
- Griffith, R. T. H., trans.,  
1973 *The Hymns of the Rigveda*, Motilal Banarsi Dass, Delhi.
- Gupta, R. K.,  
1968 Anthropogenic Influences on the Vegetation of Western Rajasthan, *Vegetatio*, 16: 79–94.
- Habib, I.,  
1982a Northern India under the Sultanate: Agrarian Economy, Pp. 48–76 in *The Cambridge Economic History of India*, vol. 1: c. 1200–1750 (ed. by T. Raychaudhuri and I. Habib), Cambridge University Press, Cambridge, Eng.
- Kangle, R. P.,  
1988 *The Kautilya Arthashastra*. 3 vol. 2nd ed. Delhi: Motilal Banarsi Dass. [First published, 1969, Bombay University Press.]

## References

- Kipling, R.,  
1990      *The Jungle Books*, New American Library, New York.
- Lal, M.,  
1985      The Settlement Pattern of the Painted Grey Ware Culture  
of the Ganga Valley, pp. 373–9, in *Recent Advances in Indo-  
pacific Prehistory* (ed. by V. N. Misra and P. Bellwood).  
Leiden: E. J. Brill.
- Merrey, D. J.,  
1983      Irrigation, Poverty and Social Change in a Village of Pakistani  
Punjab: An Historical and Cultural Ecological Analysis,  
Ph.D. diss., University of Pennsylvania, Philadelphia.
- Misra, R.,  
1980      Forest-Savanna Transition in India, pp. 141–54 in *Tropical  
Ecology and Development* (ed. by J. I. Furtado), The Interna-  
tional Society of Tropical Ecology, Kuala Lumpur.
- Monier-Williams, Sir M.,  
1899      *The Agrarian System of Moslem India: A Historical Essay with  
Appendices*, Kanti Publications [First published 1929], Delhi.
- Norgaard, R. B.,  
1984      Coevolutionary Development Potential, *Land Economics*  
60(2): 160–73.
- Norgaard, R. B.,  
1987      Economics as Mechanics and the Demise of Biological  
Diversity, *Ecological Modelling* 38: 107–21.  
*The Oxford English Dictionary*,  
1989      2nd ed, Clarendon Press, Oxford.
- Rao, S.,  
1957      History of Our Knowledge of the Indian Fauna through  
the Ages, *Journal of the Bombay Natural History Society*  
54(2): 251–80.
- Schaller, G. B.,  
1967      *The Deer and the Tiger: A Study of Wildlife in India*, University  
of Chicago Press, Chicago.
- Shiva, V.,  
1989      *Staying Alive: Women, Ecology and Development*, London:  
Zed Books.
- Singh, B. M.,  
1983      *The Punjabi Dictionary*, Vanguard Books, Lahore.
- Smith, B. K.,  
1991      Classifying Animals and Humans in Ancient India, *Man*  
26(3): 521–48.
- Spate, O. H. K., and A. T. A. Learmonth,  
1967      *India and Pakistan: A General and Regional Geography*, 3rd ed.,  
Methuen and Co., London

- Spooner, B.,  
1987      *Insiders and Outsiders in Baluchistan: Western and Indi-  
genous Perspectives on Ecology and Development*, pp.  
58–68, in *Lands at Risk in the Third World: Local-Level Percep-  
tions*, Westview Press for the Institute for Development  
Anthropology, Boulder.
- Thompson, M., M. Warburton, and T. Hatley,  
1986      *Uncertainty on a Himalayan Scale: An Institutional Theory of  
Environmental Perception and a Strategic Framework for the Sus-  
tainable Development of the Himalaya*, Ethnographica, Lon-  
don.
- Tyler, S. A.,  
1986      *India: An Anthropological Perspective* [First published 1973.],  
Waveland Press, Prospect Heights, Ill.
- Urdu-English Dictionary*,  
1977      Rev. ed., Ferozsons, Lahore.
- Whyte, R. O.,  
1968      *Grasslands of the Monsoon*, Faber and Faber, London.
- Wolf, E. R.,  
1982      *Europe and the People without History*, University of California  
Press, Berkeley.
- Yule, H., and Å. C. Burnell,  
1903      *Hobson-Jobson: A Glossary of Colloquial Anglo-Indian Words  
and Phrases, and of Kindred Terms, Etymological, Historical,  
Geographical and Discursive*. 2nd ed. [First edition 1886.],  
John Murray, London.
- Zimmermann, F.,  
1987      *The Jungle and the Aroma of Meats: An Ecological Theme in  
Hindu Medicine*, University of California Press, Berkeley.