Practising "patrimony" and "biodiversity"

The articulation of diverse local, national and international perspectives in Guinea, West Africa

James Fairhead

Melissa Leach

Introduction

Within a cacophony of voices now speaking "environment" in the Republic of Guinea, biodiversity has become a key organizing concept. Guinea was the second country in Africa to ratify the 1992 Biodiversity Convention which was signed in Rio at the Earth Summit, and the concept of biodiversity is now central to the strategizing and daily work in the National Environment Directorate, the Forest and Wildlife Directorate, and the many donor funded programs which have now reoriented their work towards "biodiversity" conservation objectives.

Our main focus in this paper is on the ideas concerning "biodiversity" and its conservation which circulate in international organizations, and on how these relate to the national and local settings which may reproduce or rework them. These "external" ideas are in no way homogeneous, but comprise an array of diverse perspectives, associated with different institutions and scientific traditions, which treat biodiversity in very different ways. Each of these perspectives on biodiversity constructs patrimony rather differently. In particular, each (a) focuses on different spaces, species and products, (b) holds

different views of local knowledge and practice, and (c) offers different types of impetus to territorialisation.

While we build here on our longstanding work on local knowledge and practices in landscape management in Guinea (Fairhead and Leach, 1996), the paper comes out of a broader project to situate such understandings in a broader reflection on science-policy processes nationally and internationally [1]. In this, we are engaging with a set of literatures on the ethnography of science, policy and environmental decision-making which has emerged in large part from work on industrialised countries. This, we suggest, offers a range of useful insights for conceptualising issues around the construction of "natural patrimony" in Africa, complementing more established perspectives in African studies such as those emphasising indigenous knowledges, the diverse construction of tenure regimes, and so on.

Modern concern for biodiversity and for its conservation echoes older colonial environmental concerns, although these had focused more on deforestation and its supposed influence on climatic desiccation. As today, colonial administrations and their "street level bureaucrats" had to balance international scientific practice and policy (which they sometimes had a hand in) with the political, economic and ecological specificities of the territory they administered.

Yet there are differences, as we shall explore. The evolution of contemporary science and policy draws on the practices (science and policy traditions, if you will) sedimented in earlier colonial times. These are traditions of practice which have been shaped by the particular history of administrative succession: in Guinea, the colony (from the 1890s to 1958), the independent African socialist state (from 1958 to 1984), the one-party military dictatorship (1984-93), and now a contemporary liberal democracy. When the policy practices of one epoch are transformed, they are often shaped in a dialogical relation to their predecessors.

1. This project, "Forest Science and Forest Policy: knowledge, institutions and policy processes" was funded by the Economic and Social Committee on Research (ESCOR) of the UK Department for International Development (DFID). We are grateful for this funding support; however opinions here are the authors' own, and do not represent those of DFID.

Take, for example, the attempt after Independence of Guinea's radical pan-Africanist socialist leaders to promote African herbal medicine. This was in part a political act which gained its meaning in dialogical opposition to the alien colonial health regime which had earlier demeaned indigenous health practices. It also made sense in relation to economic realities then faced by Guineans in the isolated and bankrupt economy. Yet whilst the subject of the research was framed in opposition to colonial medical practice, the practice of research (what made it scientific) drew on colonially shaped scientific practice. Research sought to identify active plant chemicals, but not the social practices of medicine in which herbs were only a part. The policy thus trod a difficult line between Africanization on the one hand (defined in opposition to colonial practice), and "demystification" defined according to colonial traditions of "scientific" practice. In doing so, it helped shape new meanings (for those involved) about what it is to be African and Guinean; what is natural and what is supernatural, what is cultural and what is "mystification". Colonialism may be over, but its echoes still shape the present.

In this vein, we want to explore here the current practices of villagers, and of scientists and projects involved in mobilizing the biodiversity concept in national research and policy, examining where they build on earlier traditions of practice. After a brief *résumé* of a range of villager perspectives on "natural patrimony", exemplified through the case of forest islands in Kissidougou prefecture, we examine four rather diverse sets of practices which could be construed as "external", but which co-exist with (and articulate with) those of villagers in modern Guinean society. These include:

– *first* the production of lists of plant and animal species which university scientists and projects carry out with donor support. As we shall see, such research is intimately related to the creation, justification and funding of national parks and forest reserves;

– *second*, the exploration of ecosystem dynamics through "cutting edge" sampling and computer modelling techniques, which is equally linked to funding justification;

– *third*, the harnessing of traditional plant medicines by environmental NGOs and networks of healers to promote conservation; and issues also linked with discussion and action concerning biopiracy, multi-national corporations and "indigenous property rights", and

– *fourth*, promoting the use of "semi-wild"[2] plants such as oil palms, which link conservation with inhabitants' economic interests.

Biodiversity has acquired significance in Guinea through these fields of practice, involving as much low-level government and non-government employees as those in ministerial and donor offices. Each set of practices involves different social relations and funding of science; different international networks, and different political discourses. In this respect while each set of practices relates to biological conservation, each also carries wider importance in shaping national and local social and cultural identity, and it is this that we ultimately seek to explore.

Some theoretical clarifications

Our approach engages with a range of literatures concerning the ways science and policy mutually inform each other. As in many such studies, we take a methodological scepticism to the content of science, to enable an exploration of its social construction and meanings (Gordon *in* Foucault, 1981; Barnes and Bloor, 1992; Jasanoff, 1996; Wynne 1996). Rather than attempt to argue for any particular perspective (in this paper at least), what we are interested in is how social and historical context shapes scientific research and findings and its relationship with policy and wider society.

Work in the sociology of science has long problematized the ways that social and political values inform the setting of scientific agendas, they ways scientists work, and the ways they reach their conclusions. It emphasizes how "scientific knowledge embodies implicit models or assumptions about the social world" (Irwin and Wynne, 1996 : 3). Researchers examining policy processes and the contests

2. We use this phrase to refer to the fact that these plants sometimes grow wild, but are also actively distributed and cultivated by villagers. As will become apparent later in the paper, different policy-makers, scientists and villagers variously emphasise the 'wild'or cultivated'dimension in defining and interpreting such plants.

over knowledge which they imply have varied in the extent to which they take a more "structural" or more "agentive" approach. Among the more structural approaches, some see science and policy change as negotiated between structured political interests (e.g. policy communities or "advocacy coalitions"; Jordan, 1990; Sabatier, 1988), or as socially constructed through particular discursive regimes of power/knowledge (e.g. following Foucault, Shore and Wright, 1997; Drysek, 1990). Other approaches give more weight to the agency of particular actors, their strategies, and interactions, ranging from interface analysis (Long and Long, 1992) and the Paris School's actor-network theory (e.g. Callon, 1986; Latour, 1993), to work on the strategizing behaviour of what Grindle and Thomas (1991) characterize as policy entrepreneurs, or to knowledge elites, who share core beliefs, characterized as "epistemic communities" by Haas (1992).

Our methodological approach to science and policy takes the focus off agency and structure, and focuses instead on the constellation of particular practices and procedures which can be and are considered as science or policy, and on the field which they add mass to and from which they derive funding. Ideally, such a perspective allows each practice – each workshop, meeting, report, legislative decision, funding flow – to have its own biography, which at once contributes to "policy" without conforming to any particular totalizing narrative of its evolution, enactment, or meaning. Practices that are scientific can have their own specificity (reviewing species lists, characterizing ecological zones, listing the forces leading to degradation), and need not conform to any totalizing narrative of scientific method and scientific advance.

Included in the idea of practice, as we want to use it at least, are the ways in which ideas can become vested in (encoded in) landscape features (such as "watershed protection reserves" "fire curtain reserves" or "permanent sample plots"). Ideas become encoded in networks of collaboration (such as those linking national park management and university zoology departments) as well as in methodological practices. Particular ideas may endure through their practice, and because they are practised, while other ideas, not embodied in such practice, become rather different phenomena. Scientists may have disproved that the Sahara is advancing because of anthropogenic influence, for instance, but the idea that it does live on in the inter-

national Convention to Combat Desertification, and the myriad of programs extolling inhabitants to change their ways. If the idea of human induced desertification had never been practised, its refutation would be a very different phenomenon.

Practices of science and policy may to some extent be generated and proceed independently with particular "bits" of science taken up by particular bureaucrats at certain points in policy processes. Yet as Shackley and Wynne (1995) have argued, there are important ways in which science and policy may be co-produced by processes such as funding; the commissioning of studies and consultancies, and practices of "applied, policy relevant research". When citizens generate their own science to contest particular policy directives science is being produced within policy processes. More broadly, as Shackley and Wynne (1995) have illustrated in the context of climate change, scientists may contribute to the framing of policy issues by defining what evidence can be produced and its policy significance. Those working in policy also frame scientific enquiry by defining areas of relevance, and pertinent questions for investigation. Such co-production also occurs at a second level: participation in policy lends credence to calling practices (such as listing species) "scientific", and political action based on science gains credibility to be called policy – or at least to be considered a contender for it. Taking a practice-based approach encourages us to pay attention not only to co-production (of science and policy) but also to their co-endurance, through the repetition of certain practices and their embedding in bureaucratic cultures and traditions, and to their co-validation, as being "Scientific" lends credence to "Policy" practices and vice versa.

The social relations of science and policy are shaped through political history. In one-time colonies such as Guinea, this shaping has been such as to produce almost total disengagement of land users from the development of environmental science and policy to date. We are not going to explore how villagers in Guinea consider and debate "environmental issues". We have explored this at length elsewhere (Fairhead and Leach, 1996). But it has made remarkably little impact on the development of science and policy. In the instances where local resource users have been involved in research and policy processes, we explore how it has been on terms which do not permit the full engagement of their alternative perspectives, and which merely

repackage the elements of local knowledge meaningful to science/policy discourse. Alternative lines of scientific enquiry have therefore been excluded, shaping the silences and well as the concerns of science and policy.

Villagers' diverse perspectives on patrimony and resource rights

Notable elements of "natural patrimony" in Guinea, and the foci of much external attention regarding biodiversity, are the forest patches which surround the villages in Kissidougou prefecture. Foresters and botanists have tended to consider these as the last vestiges of the Upper Guinean forest block's northern extension. Supposing that the soils and climate of the region should support forest, they assume that it once did and that the forest patches present today are relics of this past forest cover: a heritage which has survived the savannisation wrought elsewhere by local inhabitants (Adam, 1948; Aubréville, 1949; république de Guinée, 1988; Schnell, 1952). As we explore later in this paper, such understandings are associated with very particular ideas about elements of the landscape as patrimony. In short, considering these forests as "natural relics" assists them to be constructed as international and national patrimony, and supports the curtailment or circumscription of local rights over them and their constituent trees.

For the region's Kissia and Kuranko[3] inhabitants, by contrast, these forest patches are encouraged to form through habitation and management: they are products of settlement history, and as such linked to very different ideas about patrimony and territorial control. Yet as landscape features with histories, forest patches do not have a single significance shared by those who live in and use them. People repre-

3. Kissia is the preferred and correct plural term for the people who speak Kissie, a language categorised within the Mel group of West Atlantic languages. Kuranko is a dialect of Mandinka, part of the Mande language group.

sent and value them and elements of their diversity in a range of ways, each implying slightly different notions of patrimony, and different possibilities for claiming control over places, trees, resources, and for legitimising sociopolitical status.

For both Kissia and Kuranko, forest islands around villages play important roles in protecting the settlement from dry season bush fires, high winds and excessive heat. They also provide convenient sources of forest products and shelter for tree crops and social activities. In past periods of warfare they were central to settlement fortification. Today, villagers encourage forest island development more or less deliberately in the course of everyday life, occasionally by tree planting, but principally by creating the fire and soil conditions which favour forest regeneration in savanna. Villagers create fire-breaks to prevent annual savanna fires destroying their thatched houses and garden fences, largely through everyday activities which reduce the quantity of inflammable grasses on the village margins. Men collect grass for roofing houses and fencing there, and families frequently tether their cattle there during the farming season where their grazing and trampling diminishes grass quantities. Early in the dry season, young men and elders alike set and monitor a controlled burn which eliminates the fuel for more threatening late season fires. Thus protected, village-edge areas develop dense semi-deciduous moist forest vegetation over the years and as the island of forest expands, grass collection and grazing are gradually moved further out. The fertilisation of village-edge soils by the deposition of human and animal faeces and ash and household waste further encourages forest development. Villagers sometimes garden for a limited period around an inhabited settlement specifically to encourage forest establishment by removing grasses and ripening the soils. But the link between gardening and forest patch formation is more commonly manifested when once-gardened village and farm hamlet sites are abandoned, or when a new settlement is established on an old garden site.

While forest-promoting activities can be deliberately targeted, the individual activities which contribute to forest establishment are frequently undertaken without this outcome in mind. Forest island development in this sense depends on the diverse activities of community members, and not on deliberate management by community institutions. For most village men and women, the origins of forest islands

are therefore the logical extension into the past of processes experienced in the present. It is unremarkable to them that the gradual, cumulative effect of diverse activities on savanna village margins should be the establishment and expansion of a belt of woodland. All residents do not necessarily know a forest island's particular history, especially if they have come from other localities as male immigrants or as wives moving to their husband's home at marriage. Many suppose that the forest around their village has "always" existed, while noting in other contexts that everyday activities cause the gradual extension of forest island area. Within this perspective, the rings of large silk-cotton trees (*Ceiba pentandra*) and *Bombax buonopozense* which are a distinctive feature of many forest islands tend to be interpreted as the overgrown relics of living fence poles of past garden sites. People point out how effectively fence poles "take" in fertile garden soils, and these tree species are among those used to make garden enclosures today.

In many villages, certain elderly men and women – usually of landholding lineages – represent forest patch formation in a more punctuated, intentional way. Leaders of descent groups which claim founder status in a territory, and the political authority associated with this, often emphasise how their ancestors arrived in empty, relatively inhospitable savanna and initiated the beginnings of a forest island and a settlement there by planting "starter" trees. As one Kissi elder said of his village, Yiffo: "The firstcomers planted cotton trees. There is still one which carries the name of the planter"[4]. Certain such trees are attributed origins emphasising the founder's extraordinary capabilities (e.g. at Fondambadou an initial *Erythrophleum guineensis* tree grew from the founder's powerful staff placed in the ground). But more normally, founding trees are remembered more prosaically as individuals of fast growing species which were transplanted from wildlings to suppress fire and accelerate rapid forest succession within their protection (using, for example *Triplochiton scleroxylon* and *Ceiba pentandra*).

Frequently, one of these founding trees becomes a marker of the establishment of the alliance or "contract" with the land spirits; the contract

4. Interview, Elder, Yiffo village, 18th January 1993.

which ensures a place for human settlement and reproduction and for productive farming, hunting and fishing to sustain it. In Kuranko, it is usually the founding family which manages this contract and makes the sacrifices necessary to maintain it, often with the assistance of trained chief hunters. In Kissi villages the land contract enshrined in foundational trees is usually managed by a family reputed to have been the first to bury a member in the new settlement; a role distinguished from political chieftaincy, assumed by other possible village founders. As an elder in Ningbeda succinctly put it: "You have founded a village, you go, you build, he whose child dies first, it is he who is the land chief; even if you are the first in the village, you are not the land chief"[5]. The representation of forest island origins in terms of the planting of initial trees is significant in upholding relations between lineages. For ruling families, the trees remain markers invoking historical planting events which legitimise their current social and political status.

"Punctuated" views of forest island origin also draw on the planting of trees and establishment of forest islands as fortresses. From this perspective, the rings of cotton trees are represented as having grown from the stakes of the stockades which were used in combination with ditches and closely-interplanted thorn bushes and lianas in pre-twentieth century fortification strategies. As the rings of closely staked cotton trees of grew, trees were often trained for particular purposes. Some would have their apical meristem cut to promote a dense spreading and interlocking crown for maximum concealment, grass suppression and fire control. A few would be fertilised and trimmed of their lateral branches to encourage rapid upward growth into lookout trees and gate posts. The training of trees to take on different forms – whether the spreading form known by Kuranko as *bolonani* (four arms/branches) or tall straight forms suitable for timber – is a common practice in the region. Foresters, by contrast, tend to attribute tree form only to natural conditions, assuming heavily branched individuals to have grown up in savanna or forest clearings, and tall straight ones – the "forest form" – in forest. They thus wrongly infer that all forest form trees on more open land are relics of deforestation.

5. Interview, Elder, Ningbeda village, 25th September 1992.

In addition to fortification, villagers have enriched and altered the species composition of forest islands for a wide range of purposes. As people of different gender, age and social position use and value island resources in different ways, the species composition in forest islands comes to reflect the patterning of socially varied priorities, albeit mediated by people's differential ability to realise them. Use priorities also change over time, so forest islands acquire a layering of changing enrichment legacies.

From the first, forest islands were enriched with kola trees (*Cola nitida*), earning the Kissidougou region its ascription as *Worodu* (Kola-land) within Mande-speaking West Africa. The nuts produced in this area carry high value not only in local health and cultural practice, but also as an important trading commodity in long established forest-savanna commerce. Women are culturally prohibited from planting and harvesting (though not trading) kola, but men frequently transplant wildlings and thus acquire individual control over the resulting tree wherever it may be in the forest island. Both Kissia and Kuranko also plant kola with the buried umbilical cord of a newborn baby, to "grow up with the child". From the 1930s, men planted coffee in forest islands, although labour and tenure arrangements have excluded almost all women from this. When necessary, forest islands were extended to house more coffee, and were adapted by removing undergrowth and selectively thinning the canopy, leaving some trees for shade and valued timber, fruit and oilseed resources (e.g. *Afzelia africana*, *Khaya grandifoliola*, *Parinari excelsa*, *Elaeis guineensis*). More recently, coffee profitability has declined and bananas have come to be favoured as forest island tree crops, along with fruit trees such as mango and citrus which are planted by women and children as well by men. All these tree crops are individually owned by their planters as heritable property. While some village forest islands are divided into individualised plots, complicated inheritance patterns and more spontaneous transplanting mean that people often have individual tenure over trees scattered throughout the island.

Valued gathering species also become concentrated in forest islands through their selective preservation. Medicinal and craft specialists often preserve supplies of their favoured species, and elderly women, especially, keep transplanted supplies of common herbal remedies

conveniently in the forest edge, near their houses. Oil palms self-seed from women's palm oil processing activities on the village edge, and are subsequently protected within the island. Women especially value the forest island as a convenient source of edible nuts and fruits used in sauce preparation and for cash sale. They also collect dead branches for fuelwood there during the dry season when obtaining preferred species from open land and farm-sites is less convenient. Cotton trees and thorny bushes from past fortification, together with ancient but no longer productive kola trees and oilseed species once protected by women but now no longer used (e.g. *Pentadesma butyracea*), remain in the forest island alongside currently useful species. Forest islands are thus not only represented differently according to people's interpretations of resource value, but they are also, in effect, a living archive – a repository of layered social memories – albeit one open to socially differentiated interpretations.

Social memories evoked by the forest island are made explicit in the shrines devoted to past inhabitants and cult figures. The silk-cotton and *Triplochiton scleroxyllon* trees planted by founders often become sites where present lineage members seek ancestral beneficience, often through sacrifices. In many forest islands, village hunters maintain an altar to the locality's most renowned hunters, who trace the ancestry of their skills and success ultimately to *Mandenbori*, the legendary father-figure of all hunters. In Kissi forest islands, a place is reserved for the burial of the first-dead children of each family, who unlike other people are buried "with the land" rather than among the living in the inhabited village, and whose death is neither recognised nor mourned. Those buried in this way are locally termed *cuei pieeo*, literally "child (buried in) the leaves" (Paulme, 1950: 514): the leaves of *Newbouldia laevis*, a pioneer forest species which reproduces vegetatively and comes to dominate the burial site. Within most Kissia forest islands, there is an additional shrine to the chief land spirit (*Luande*), managed by the land chief lineage and with access strictly limited to initiated members of the men's society.

Men's society (*tooma vanpiandua* in southern Kissi areas) is an institution or "secret society" which trains young men, during at least two initiation stages, in skills and knowledge central to male social roles, as well as in managing important aspects of community and inter-

village life and political relations. Schooling and society business take place in a delimited part of the forest island, which provides the necessary concealment of activities from women and non-initiates. The boundaries are made clear to potential trespassers by the planting of distinctive *Dracaena arborea*. The installation of this specialised arena for men's society business, and of the "medicines" (*koan*), special plants and expertise needed to run the institution, is an important sign of a well-established, politically-influential settlement, as distinct from a subordinate hamlet or farm camp. Women have a parallel initiation society (*tooma vanlandua*) which similarly educates young initiates, transacts women's business, and holds gender specific knowledge, especially concerning fertility and reproduction. Women's society affairs are conducted at streamside locations, where shrines to female ancestors are maintained. The place is usually concealed from men and non-initiates by a forest patch, often a part of the village forest island. Thus most forest islands contain male and female "sacred" places. Yet their quality derives from the installation of the institutions in them, rather than inhering in any sacredness of "forest" as a category in Kissi thought.

Thus forest islands thus acquire very different meanings depending on who one is, and whether the attention is on everyday provisioning and village protection, village origins and lineage political relationships, the power and military structures of men's societies, the control over fertility in women's societies, the economic value of tree crops and timber, or assertions of ethnic identity and relationships with the state. This is equally true for the significances of particular tree species and, indeed, of particular trees. Each of these perspectives carries different implications for who might control trees and their material resources, and for establishing and maintaining social and political positions.

The perspectives on biodiversity which have developed among national and international institutions are selective in which aspects of this local knowledge and practice they pick up on (or ignore), and how they contextualise these, and in doing so give them rather different meanings. This puts into question simplistic ideas concerning "participation" and "building on local tradition" in the management of biodiversity.

Biodiversity and administration

The Environment Directorate has been responsible for the negotiations and the subsequent implementation of the Biodiversity Convention, and the production of a national biodiversity strategy and action plan. Whereas the Environment Directorate cannot implement, the Forest Directorate can, with its large staff managing state forests and forest law throughout its Prefectoral and Sub-Prefectoral administrations. The Forest Directorate is, however, heavily dependent on supplementary funding and infrastructure from donor funded projects, and this – along with the green conditionalities imposed on Guinea by international financial institutions – means that large parts of its activity are now inflected by donors' concerns, where biodiversity looms large.

That those working in forestry, conservation, agricultural and environmental jobs have been turning their attention to biodiversity issues is certainly linked to funding. But it is also stimulated by a developing interest in the subject. Through the national and international networks a mutually interested community (epistemic community) has developed which gives new meaning and application to the skills of many involved. For national university academics, biodiversity provides an opportunity for "research", and for those in foreign universities, it provides funding and interest in "cutting edge" research.

That the major EU funded "Niger River Protection Program" which was initially conceived as a watershed protection program has recently employed as its key expatriate a specialist ecologist skilled in ecosystem research (not hydrology), and that the refinancing of the program that he is responsible for flags biodiversity as a major theme, clearly illustrates the shift (in donor interest) from concerns with watersheds to concerns with ecosystems and biodiversity.

National academics in universities and government research institutes have been incorporated into several of these developments. And many work simultaneously for non-governmental organizations which deal with environmental issues. International donors now often seek to work through NGOs rather than the state, and this enables talented government staff to work in the lucrative and better financed world in a freelance capacity. These rather entrepreneurial NGOs have been

quick in "mobilizing" biodiversity and the funds it attracts. One, to give an example, is developing a biodiversity project with university staff to re-invigorate a national game reserve, receiving financing from the German national fund dedicated to international biodiversity conservation, helping spend the money which Germany is obliged to spend following its ratification of the Biodiversity Convention. The same NGO is developing a medicinal plant initiative.

However briefly, let us look at the spectrum of practices these projects and ministries engage in.

Listing diversity

Focused attention on biodiversity has heralded a resurgence of interest in the identification and listing of plant and animal species. Long before colonization, European visitors to West Africa had begun collecting and naming local flora. Early in the colonial period, botanical gardens and research centres collected, identified and classified plants, and established and managed plant herbaria.

Certain Guineans became indispensable to this process through their knowledge of the flora and their capacity to identify and distinguish plants. The Guineans involved became renowned for their botanical knowledge, and informally this contributed to their reputations as herbalists. At Independence it was these few Guineans and their apprentices who took over the herbaria. Their skills were valued when the state became interested in medicinal plants, as mentioned, and several were sent for botanical training in East Germany.

State funding interest in indigenous medical plants eventually waned following the death of President Sekou Touré in 1984, so the botanists had to continue with minimal resources and lack of recognition. They were kept busy "tree spotting" (largely for forest inventories and forest exploitation), rather than for their herbaria and knowledge of diversity. In the last five years however, there has a rapid increase in the demands on these charismatic botanist-healers' time as more attention is paid to making species lists, and to identifying endemic species, those "in peril" and in totting up numbers of each. These lists are central to many university and ministry biodiversity studies.

Species lists appear in justifications to prioritize particular locations for conservation (e.g. Progerfor, 1995), yet their role in this is far from straightforward. First, species lists have generally been made in "protected areas" such as forest reserves. Forest reserves have a long history in Guinea, being proposed in the 1900s and established from the 1930s onwards largely for their supposed influence on regional climate. Species lists were drawn up in early ecological studies within three logics: (a) the "practices" of the taxonomist-collector (locating new plants, interacting with metropolitan plant collections to establish the classification, coupled to the cult of naming in recognition of the finder), (b) the practices then used to define ecosystems (via plant communities – phytosociology), and (c) the practices of inventory for determining the "economic value" of a forest. Significantly, there was little attention paid to diversity *per se*.

So reserves and parks which had their own logic of foundation proved to be the site of taxonomic practice – producing the lists for one set of reasons which are now important to supporting the continued existence of such reserves for another, in an era of biodiversity conservation. The practice of compiling lists from secondary sources only reinforces such focus on existing protected areas.

Virtually no comparable lists have been established for inhabited landscapes. The lists give the semblance of logical prioritization to the parks and reserves which are long established, and by deduction, to the idea of biodiversity wealth and conservation in reserves, and biodiversity destruction in inhabited areas. In short, the presence of these reserves established for different reasons, has facilitated the development of science/policy around biodiversity in protected areas; in the same way perhaps as the emptying leprosaria for Foucault, facilitated the development of the clinics which redefined the mad (Foucault, 1973).

This has very real effects on the way conservation management is evolving in the region. In the Ziama forest reserve, for example, this logical association of biodiversity conservation with reservation has been reproduced both in the structure of its refinancing, and in everyday management practices. The forest reserve received support from one funder, and the inhabited buffer zone outside from another. The reserve project is responsible for ensuring "biodiversity and habitat conservation", and the latter, for "local participation and livelihood

sustainability" (Schmidt Corsitto, 1998; Kientz, 1996). In this institutionally-divided setting, biodiversity and participation have come to be seen as trade-offs. As one expatriate project staff member put it: "In village forests, biodiversity has no role. It does not interest villagers. In the forest reserve, the biodiversity aim must necessarily reduce the extent of participation; the more one has a goal of biodiversity conservation, the less one has participation"[6].

The reserve boundary came to be seen within the project as a dividing line between zones where important plants and animals might thrive, and those where farmers might be encouraged to intensify their agriculture and so reduce pressure on the reserve. As a Guinean critic observed, this structure precludes attention to the ways farmers have long used products from the forest reserve and integrated a huge diversity of "wild" plants within their own landscapes[7]. Yet his critique is not practised.

A second weakness to the seeming scientific rationality of prioritization was made visible in the 1999 regional meeting held in Ghana by the Washington-based NGO Conservation International. More than 300 international and national scientists and policy makers focused on prioritizing biodiversity conservation in West Africa. Ideally, species numbers modified in relation to endemism and "endangerment" were to be the key criteria in priority-setting. Yet in discussion, participants were understandably keen to favour their particular projects and protected areas and indeed countries, and when national or local importance appeared to be reduced due to a relatively poor position in relation to list-based endangerment, assorted arguments showing the real weaknesses of listing were marshalled in defence. The correct research had not been done... A key report had not been consulted... Important subspecies issues were overlooked... A focus on butterflies, orchids, or birds, rather than trees would show a different set of priorities...

Despite the practices of list-making, those managing protected areas actually consider the lists to be of little use. This is exemplified in the

6. Interview, expatriate project staff member, Nzerekore, 15th February 1999.

7. Interview, Director, Institut de recherche agronomique, Seredou, 18th February 1999.

newly-established Parc national de Haut Niger (PNHN) in Upper Guinea, funded by the European Union. University researchers have been contracted to conduct a series of animal and plant species inventories. The researchers involved find this rather tedious and uninteresting from a scientific point of view. They would prefer to be researching ecosystem dynamics, which they see as more important for advancing scientific knowledge of the region; "there is not much treatment of systemic aspects of vegetation; this is a major lacuna"[8]. Yet given the social and funding relations of science in a Guinea where universities are chronically under-funded and foreign aid projects provide almost the sole context in which field research costs can be met, and reports published, researchers have little choice but to work on the project's terms.

Paradoxically, however, those managing the park also see these qualitative inventories as of virtually no use in day-to-day management. As the Park's director put it: "lists of species are fine for global biodiversity, but not for managers. We need to go deeper, to have quantitative information and information on ecosystem dynamics"[9]. From his perspective, data on species numbers and hunting kills is needed to assess how endangered species are relative to hunting[10].

Ecosystems and diversity

A second conception of "biodiversity" elaborated through contemporary scientific practices highlights how diversity is embedded in ecosystemic relationships. From the first years of the twentieth century,

8. Interview, Head of Département des Eaux etForêts, Institute of Faranah, 23rd February 1999.

9. Interview, Park Director, Sidakoro, 26th February 1999.

10. Interview, Park Director, Sidakoro, 26th February 1999. Although appealing at face value, it is unlikely that scientific practices which give this data could generate a precise estimate of the effects of hunting on particular species, given the more chaotic ecological dynamics affecting species numbers, and the difficulties of recording the outcomes of various, often secretive hunting practices. Yet aspiration to do this is used as a justification both for controlling hunting in a precautionary sense, and for creating the park as an arena for research to fill that data gap. In this case indeterminacy (unknowability) is constructed as uncertainty (knowable through further scientific research). Science and policy, framed within a similar set of assumptions and funding structures, are thus mutually constructed (Shackley and Wynne, 1995).

colonial botanists categorized particular plant communities in relation to broad climatic zones. Ecosystems were seen as stable formations, characterized by particular dominant trees – a "climax vegetation" in relation to prevailing climate and soil conditions, unless "disturbed" and "impoverished" by human impact. This analytical frame persists today in the national biodiversity assessments made by national university staff and commissioned by the Environment Directorate. Natural and social scientists have assembled data from secondary sources in such a way as to present general arguments about "loss of habitat integrity" under pressures from farming, burning, overfishing, overhunting, population increase and so on. The work supports the reserve strategy for biodiversity conservation[11].

Simultaneously, however, another research program is being conducted as part of the Niger River Protection program, by expatriate researchers. This is using a highly detailed quadrat survey method and computer modelling technique to generate patterns of species association in relation to soil, climate, land use, and the culture of it. Proclaiming that the modelling enables the research practice to be "without a-priori" the expatriate project leader, and force behind this research, sees the method as an ultimate tool in objective ecosystem analysis[12].

The fresh approach provides a radical departure from the listing and climax ecosystem classification. First, it examines species diversity in inhabited landscapes, treating these not just as "impoverished ecosystems which would be better represented in reserves". Second, it focuses on the forest-savanna transition zone as a species rich tension zone (a site of speciation), rather than a species-poor zone (a site of degradation).

11. The broad topics and orientation for these thematic papers derives in part from the requirements of the Biodiversity Convention, adapted to suit Guinean conditions by members of a cross-ministerial biodiversity co-ordinating committee, UNBIO (Interview, Head of Biodiversity Section, National Environment Directorate, Conakry, March 1999). Such adaptation nevertheless neatly slotted into a long analytical tradition of both botanical and social science work in Guinea framed by such assumptions from colonial times onwards (e.g. Adam, 1948; Paulme, 1954).

12. Interview, European consultant, EU Niger River Protection Programme, Conakry, 15th March 1999.

There are clear ways in which this research is shaped in its co-production with policy. Not only is it being conducted by an environmental program, but it is already project policy to work to promote biodiversity in lived-in landscapes. And for regional political reasons the project must now work in the forest-savanna transition zone. Both these dimensions are crucial to the refinancing of the program, which has been uncertain. The expatriate hired had the skills and impetus to conduct this research.

These scientific practices are perhaps more significant for the way they speak to an international scientific community, enrolling certain Guinean and expatriate researchers working in Guinea into a global actor-network developing high-tech ecosystemic research. To date, Guinean university biologists who conduct national biodiversity research have been "confined" to carrying out taxonomic studies for donor projects. Most do not even know of the existence of this research.

It is perhaps ironic that most Guinean natural and social scientists, academics and project staff remain locked into colonial scientific paradigms, the view of nature they embody, and the reservation policy it has endorsed. The new, expatriate driven, science presents a radical departure from this. Yet it does not just depart merely in "academic" ways. The new science is in dialogical relation to the old not just in method, but in its policy practice. It may counter deductive methods about climax vegetation with generative ones, but it simultaneously counters the social exclusionary biodiversity conservation of reserves with an apparently socially incorporative policy of "participation".

As in the case of the dialogical reversal in medical research and practice under Sekou Touré that we have described, this apparent reversal depends ever more on the "practice of science", and its capacity to differentiate the "good" aspects of African practice (in this case land management for biodiversity) from the problematic. Indigenous framing of biological issues, and the debates they have do not enter the picture. The adjudication of good and bad practices concerning African social life are again scientised, and in social relations of science as – or even more – alien than in colonial times.

Medicinal plants and diversity

A third set of practices considered within the rubric of biodiversity concerns medicinal plants. Numerous donor-funded projects now compile knowledge of plant medicines, encouraging environmental and health NGOs and "traditional healers" to pool information and discuss strategies for biodiversity conservation. This suits a generation of development donors concerned to link biodiversity conservation with participation and to carry out development by working through "traditional" forms of organization and authority. This dimension of "biodiversity" generates interest among many Guineans. The taxonomist-herbalists discussed earlier now find themselves in great demand as brokers between healers, professional botanists, donors and government staff. They are popular not least because they can speak – and help integrate – the various languages. Numerous younger university-educated people have aspirations to "join the circuit". One in Kissidougou spends his spare time collecting and collating village information about plant medicines, and plans to produce a book which he hopes will attract the attention of ministerial and donor personnel interested in this aspect of biodiversity [13]. Many Guineans who share this perspective are already in positions of authority in the national bureaucracy, and they have not found it hard to enrol others to their perspective.

Biodiversity interest has thus given renewed impetus to practices which promote "local" plant medicines. As mentioned earlier, during the First Republic under Sekou Touré scientific and policy practices around plant medicines were most strongly promoted. Between 1972 and 1978, all pharmacy students had to conduct a study of the medical uses of a particular plant, comprising a botanical examination, a determination of chemical constituents, and local knowledge of its pharmaceutical and therapeutic importance. East Germany provided funding and materials.

This was part of a broader set of practices associated with the political philosophy of this phase in the First Republic, heavily influenced by the writings of the then President Sekou Touré and his ideologues.

13. Interview, NGO leader, Kissidougou, 2nd February 1999.

The key motives, as clarified in the students' introductions to their dissertations include first, national self sufficiency, which is easily understood given Guinea's self imposed economic and political isolation during this period; second, a valuing of national patrimony, and third, a revaluation of elements of African popular culture – albeit in the terms of modern science. For example:

> "Our popular medicine is a rich mine and is marked with the impressive character of our historical legacy. The revalorization of this popular medicine through a painstaking exploration of our flora, and its restitution to all the people of Guinea remains a pressing and 'exultant' duty of every militant of our country" (Barry, 1974).

The pharmaceutical research practices of the era were thus shaped by, and contributed to, discourses which simultaneously promoted modernist science and 'authentic' African culture. The practice of cataloguing medicinal plant knowledge and repackaging it in the terms of (medical/pharmacological) science, and valorizing vegetation is very similar to international biodiversity concern today. In both cases, medicinal plant knowledge is extracted from the social relations of its day-to-day practice in village settings (cf. Agrawal 1995). But whereas under Sekou Touré this interest derived from a focus on human health, the interest of current biodiversity discourse focuses on vegetation health, and whereas it was earlier locked into a nationalist discourse, today's interest in biodiversity conservation is locked into an internationalist one.

Guinean historical experience continues to shape its engagement with international discourse. In particular, Guineans are particularly sensitive to biopiracy (the exploitation of local biodiversity resources by other nations or corporations). This has been important to most "southern" perspectives on international conservation discourse, but carries added weight in Guinea for at least three reasons. First, because there is a long history of the exploitation of local plant resources by foreign powers – colonial and soviet block. Second, the plundering of Guinea's other mineral and timber resources by foreign companies is today of great significance, and there have been numerous popular insurgencies against them. "David and Goliath" stories of these struggles are on the lips of rural and urban publics alike. Third, biopiracy presupposes "bio-wealth", affirming the idea that Guinea is tremendously

rich in biodiversity resources, giving weight to the economic importance of conservation (past and future). Thus the concern is less with "international wealth" and "plants for plants sake" than with national wealth, and the economic benefits of conservation.

When actively contributing to international debates concerning this issue, Guinean national spokespeople also bring a second distinctive perspective. Generally in international discourse, concern with biopiracy is juxtaposed with "indigenous intellectual property rights". But Guinean spokespeople reject the "indigenous" polarity of this debate, continuing to see the practice of valorization of biota as a "nationalist" enterprise, and understanding "indigenization" of rights as a threat to state authority and stability [14]. It promotes ethnogenesis; the antithesis of African nationalist discourse which those working in ministries had learnt at school. With Sierra Leone and Liberia on the border, this is also a very modern concern.

Once again, the particular way biodiversity is being mobilized in the country has been shaped by national history; by a sedimentation of practices from colonial times, transformed dialogically at independence, and transformed again in contemporary debate.

Economic plants and diversity

Extending out of interest in medicinal plants, the practice of biodiversity in Guinea also draws on a fourth set of existing practices which concern economically-useful wild plants. Projects are keen to "show villagers how valuable are products such as tree nut oils, palm oil, honey, dental sticks". In project rhetoric, such an approach is linked to "participation", especially among certain groups such as women's groups. It also conveniently links economic incentives with biodiversity protection.

Focusing on the latter, one project worker noted:

> "Biodiversity is one of our strategies for the protection of natural resources which enables us to fuse economy and protection.

14. Interview, Head of Biodiversity Section, National Environment Directorate, Conakry, March 1999.

> We were oriented only towards protection, and it didn't work very well. Now with an economic emphasis, peasants are more interested. For instance, honey is a product of biodiversity, so is palm oil and palm nut oil" [15].

Many projects have done surveys of potentially economic products. Yet all of those they identify are already widely used and frequently cultivated; they might be described as "semi-domesticated". Villagers actively preserve wildlings, and sometimes transplant them for accessibility and convenience. In this respect the plants could be considered more "agricultural" than truly "wild"; a point overlooked by those discussions which make a general equation between biodiversity and "wild plants" and associate the latter with undisturbed "nature".

Projects have long been teaching villagers the value of their own environment, especially in relation to timber. In doing so they simultaneously construct an "ignorant peasant" who does not know the value of the resources around them, and an "intelligent project" which does. When explicitly challenged with the idea that villagers might already use and value palm oil, honey and so on, personnel promoting this perspective tend to respond with the notion that this is specialized, not generalized knowledge, thereby allocating development projects a role in "diffusion of information". They also suggest that villagers may use these products, but are ignorant of their market value, thereby allocating projects a role in promoting commercialization.

It is not difficult to trace these practices back to the colonial botanical gardens and their role in the commodification of wild plants. Botanists in the first decades of the twentieth century also sought out useful "indigenous species" – of rubber, coffee, and so on – and sought to propagate and improve these products with a view to commercialization. This was with resources that were to be extracted from the local ecology and economy to serve the needs of a colonial administration, rather than developed locally in building synergies between local livelihoods and conservation as today's projects would emphasize.

But then, the plants concerned were generally recognized to be semi-domesticated by local populations, and indeed an aim of colonial

15. Interview, second NGO leader, Kissidougou, 1st February 1999.

policy was to domesticate and improve these plants further in order to enhance their economic value. Modern biodiversity concern, in contrast, seems to dictate a definition of these as "wild" plants, not least because this confirms the relevance of developing them in a "biodiversity" project. Other possible interpretations of biodiversity which would guide practices around these plants differently – for instance emphasizing agro-biodiversity and the ways local plant use practices conserve and enhance genetic diversity among domesticated species – are hardly evident in Guinea. The difference is telling. Those practising this aspect of biodiversity policy in Guinea consider biodiversity to be something of nature, something wild: the antithesis of farming and land use.

Some concluding remarks

"Biodiversity" as an explicit organizing concept for conservation is new to policy in Guinea. Here we have tried to explore how that Guineans and expatriates working in the country have interpreted and "operationalized" it. The different sets of biodiversity practices that we have explored in this paper are not associated exclusively with particular people. Rather, individuals and institutions are engaging simultaneously with practices that we have considered separately.

To understand fully the emergence of these practices in Guinea today, one would need to explore the genealogy of international scientific concern and funding for "biological diversity". What we have tried to explore here, though, are some of the particular forms that policy has taken in the country, showing the need to consider this both in relation to specific history of the country, and to contemporary social and political circumstances. We have taken a practice perspective (disembodied practices which have their own specific history and condition) to do this, which combines – we feel – a way to explore both the sedimentation of history into "structure", and the capacity for people to be the creative agents.

Those mobilizing the biodiversity concept are grappling with its relevance to their work and its applicability to policy, latching on to exist-

ing sets of practices. The impetus from biodiversity has not left scientific and policy practice unscathed, as enduring phenomena. Rather these have been subtly changed in form and in meaning for those conducting them. Yet this has occurred in a dialogical relationship with the practice-as-was.

Science-policy processes also "do other things", producing and reproducing certain images of wider society and economy – a point sometimes missed by the genre of close-focus, micro-historical analyses. To date, the new meanings that conservation bureaucrats now give to these practices have reproduced/reinforced ideas of nature as separate from people, whether in the form of commodities, of spaces (parks, reserves), or of desocialized medicinal plants. Where they have incorporated the perspectives of villagers, this has been only partially, with the good and bad practices in African social life being adjudicated by scientific enquiry into issues based on alien values.

Indeed for all their variation, the perspectives we have discussed here all in their different ways present biodiversity as a "nature" which people might act on or exploit, but from which their lives are ontologically distinct. In so doing, they exclude key alternative local framings, and what we would term a dynamic landscape perspective which would see biological patterns throughout the region as shaped through the interaction of social and ecological processes over time. Paradoxically, it seems that even foci with the potential for building a landscape perspective – such as oil palms, long managed, used and spread by people – become detached from the social processes of their establishment in their reconfiguration into the "wild plants" of international biodiversity debates. Despite avowed attempts to "include people" in biodiversity conservation – to move from colonial exclusionary approaches to modern "conservation with development" and "participation", the framing and institutional/funding imperatives linked to international biodiversity debates have pushed those working within their ambit further towards practices which reproduce western, colonial distinctions between nature and culture, and which are antithetical to understanding relationships between people and vegetation in the region.

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