Manners of contestation: “citizen science” and “indigenous knowledge” in West Africa and the Caribbean

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Introduction

In charting public engagements with science in the contemporary world, parallel discourses have emerged. While analysts and activists concerned with Africa, Asia, Latin America, and the Caribbean have been debating and promoting “indigenous knowledge” (IK) and “ethnoscience”, many focusing on the high-tech, late industrial contexts of Europe and North America have phrased their concerns as with “citizen science”. The distinction extends beyond vocabulary. As we explore in the first part of this paper, each discourse has its own theoretical and practical roots and preoccupations, which lead them to represent “lay” knowledges and their relationships with modern science in very different ways. At the extreme, IK debates have moved towards emphasising the conceptual and moral dissonance and autonomy between knowledge systems, while work on citizen science emphasises how it emerges in direct engagement and contest with the science produced by “expert” institutions.

Both discourses are undermined by arguments that all knowledge is socially produced, dissolving divides between indigenous/scientific and lay/expert knowledge into a plethora of partial perspectives and situated practices among diverse social actors. Nevertheless, this theoretical dissolution should not be allowed to mask very real differences in the manners of engagement – or contestation – between knowledge systems. Two cases from the Caribbean and Africa, where rural hunters are engaging with international and state-sponsored science and policy around national parks, illustrate such differences. In Trinidad, the style of hunters’ direct critiques appears to conform with emphases in “citizen science” debates, whereas in Guinea, there appears to be greater autonomy and dissonance between knowledge systems, in line with the emphases in IK literature. These differences, we suggest, reflect the social and institutional relations of science and the particular histories through which they have developed; social and historical relations which have also shaped strategic uses and representations of categories such as “indigenous” and “citizen”.

Contrasting discourses: “citizen science” and “indigenous knowledge”

That the roles of science in colonial, fascist, and democratic regimes have been very different raises sharp questions concerning how pub-
citizens relate with ‘scientific expertise’. Who has the capacity to establish certain questions and agendas as legitimate foci of study, and to carry these through? Is this confined to specialists in laboratories or development projects? Or is it open to public participation – and if so, by whom? What are the dynamics of ordinary people’s engagements (and confrontations) with experts?

These questions have become central to emergent debates on science and society in Europe and North America, and a resurgence of ‘grand theory’ about it. Central here is the work of Beck (1992, 1995, 1998) whose ‘Risk Society’ thesis suggests that the public are increasingly concerned with risks that are no longer “external”, but continually thrown up by systems of industrial technology and its governance themselves. This engenders a critically reflective attitude among a wider public to “expert” institutions and their knowledge, and a growing lack of trust. For Beck, science not only creates the problems, but also the analytics required to recognise and overcome them: reflection is enwrapped in the terms of modern, expert science. Yet as a number of critics have pointed out, this obscures attention to alternative knowledge systems, sciences and forms of social order which may exist in the public realm (Caplan 2000, Lash et al. 1996, Wynne 1996).

It is precisely these alternative knowledge systems that have been the focus of two very different research traditions, one concerning “citizen science” (conducted largely in Europe and North America) and the other concerning “ethnoscience” or IK (conducted largely in low income countries).

That the public now engage critically with the scientific perspectives of expert institutions, either through funding or orchestrating their own scientific investigations, or through lobbying to transform research questions, has been dubbed as “Citizen Science” (e.g., Fischer 2000, Irwin 1995, Irwin and Wynne 1996). Social science work in this vein took root largely in response to a perceived crisis of legitimacy in science among lay publics in northern industrialised contexts. In the early 1980s, many identified the reasons with a public misunderstanding of science: an intellectual deficit or gap in knowledge which public science education should be called upon to fill. A spate of social science work then ensued which showed that public understandings of science were more sophisticated and nuanced than they had been given credit for, focusing not just on the content and methods of science, but also on its institutional embedding, patronage, and control (Wynne 1992). It also explored cases where lay people had explicitly engaged with and contested science and its advice by conducting their own research and experiments (for instance in “popular epidemiology” around issues of toxic waste pollution). The emphasis has thus been on citizen science as alternative science, conforming with its broad categories, more than on the ways in which public knowledge develops in embedded relationship with local social processes and differences, concepts and moralities.

In contrast, such questions of social embeddedness have been central in the debates about IK which have developed around rural issues in Africa, Asia, and the Caribbean. This tradition is rooted in social anthropological work from early in the twentieth century, which detailed “knowledge systems” concerning issues such as health, agriculture, and ecology in the context of broader ethnographies of society and culture (e.g., Evans-Pritchard 1937, Richards 1939). It thus emphasised how knowledge and beliefs about “technical” issues were largely inseparable from cosmology and local religion on the one hand, and questions of social order and prevailing relations of authority on the other. Central to this work has been exploration of local concepts, metaphors, and idioms, examining how these make sense in relation to their particular social and cultural settings.

What came to be called IK from the early 1970s has been seen in ambiguous relationship with “western science” in its modernist guise. It has sometimes been depicted as a valuable and complementary resource to be repackaged in the terms of modernising, expert scientific institutions (Brokensha et al. 1980). At others, it has been portrayed as rooted in incommensurable concepts and framings, necessitating a more comparative framework of analysis (Fairhead 1992, Scoones and Thompson 1994). This work has been effective in showing how dispute and debate over technical issues in local settings are interlocked with social difference (e.g., around gender, age, ethnicity) and with struggles over control of resources, and over
socio-political authority. However, it has been largely silent on engagements of contestation with “expert” science – in stark contrast with the citizen science tradition. IK works frequently point out the lack of commensurability between rural people’s concepts, and those employed by modern science. At the same time, this more comparative work has been fuelled by the perspectives and claims voiced by indigenous people’s groups whose emphasis is frequently on the autonomy of local traditions of knowledge and ways of life from modernising states and development paths. While many works document public distrust in development expertise, this tends to be described as manifested in withdrawal from, and resistance to, its effects, rather than active engagement with “Science” (e.g., Crush 1995).

Thus while works on citizen science show how science has “come out of the laboratory” in the sense of being conducted within wider social relations, works in the IK tradition suggest that some forms of science have never been in it. Emerging in very different parts of the world, it might be argued that each of these analytical traditions relates to the particularity of its settings. Yet imaging a shift from modernity to more fragmented and critical public reflection in “late” or “reflexive” modernity may overemphasise past acceptance of scientific expertise (Lash et al. 1996, Latour 1993), and hide the experiences of certain social and cultural groups.

Moreover, recent work in both IK and citizen science traditions suggests greater theoretical convergence. A number of commentators have pointed to the problems in upholding a strict divide between IK and science. As Agrawal (1995) argues, this serves misleadingly to represent indigenous cultures as static and bounded, and opens them to exploitation as knowledge stocks within a globalised system. Fundamentally, both local knowledge and science should be seen as emerging and developing through historically located practices, in particular social and institutional con-
texts, subverting any fundamental theoretical divide between them (Agrawal 1995, Murdoch and Clark 1994).

Taking a perspective which is symmetrical in seeing IK, citizen science, and science as socially shaped and located, and seeing all of these as differentiated and fragmentary, points, theoretically, to a dissolution of all fundamental divides in favour of a set of plural, partial perspectives (see Haraway 1988). From this angle, it is important to unpack and investigate the scientific practices which emanate from so-called “expert” institutions, as they are locked into particular arenas and institutions of government, and the social constituencies of these institutions. Internal struggles between government agencies and other institutions to which they are linked may influence the ways science develops and the uses to which it is put. It also becomes important to investigate the socially located knowledges and practices of a large range of intermediary actors and institutions which embody attributes of both “citizen” and “expert”, from policy advisors and pressure groups to educationalists and the mass media.

Yet dismantling a theoretical divide between indigenous and scientific knowledge should not blind us to examination of the social and political relations of science, and important differences in the ways they operate in different settings. There may well be, we suggest, real, empirical validity to the type of distinction picked up in the IK and citizen science literatures: between relative autonomy of dissonant knowledges on the one hand, and their engagement within the terms of ‘Science’ on the other, and the cases we present below illustrate contrasting situations in this respect. However to contextualise these, one needs to displace the focus somewhat from the content and epistemology of knowledge, to the historical and institutional relations in which such knowledge develops and is represented.

The cases we summarise below (for further details see Fairhead and Leach forthcoming) both concern interactions between local hunters on the one hand, and state authorities, scientific researchers, and international organisations seeking to develop national parks on the other. The very different nature of knowledge-engagements in the two cases reflects broader institutional and social relations and agendas.

The cases also indicate the salience of terms such as “modern”, “traditional”, “citizen” and “indigenous” in these engagements, but as politicised constructs and representations which say more about social and institutional relations than they do about the content or epistemology of knowledge.

**Cases: Hunters and national parks**

**Trinidad**

The first case, from the Republic of Trinidad and Tobago in the Caribbean, illustrates an instance where a citizen’s organisation has explicitly contested the methods and findings of “expert” science by conducting its own investigations. The case concerns scientific scholarship on wildlife dynamics based at the Trinidad campus of the University of the West Indies (UWI), and how its findings are opposed by the South East Hunter’s Association.

In the early 1990s, a series of studies of changes in wildlife populations in forested areas of the country were carried out by a Trinidian biologist as part of an MPhil in Life Sciences at UWI (e.g., Nelson 1996). The particular configuration of institutions in which these studies were produced needs to be understood as culturally and historically located. The work was supervised by, and papers co-published with, a visiting senior professor from the Department of Conservation Biology at the University of Wisconsin. The work thus emanated from links between two well-established scientific institutions in the field of conservation biology. It also drew on links with the Wildlife Section of the government Forestry Division, and the World Bank-funded Environmental Management Authority (EMA). The university and EMA are emergent institutions in the field of conservation in Trinidad, and interlock supportively with the Wildlife Section of Forestry, whose senior employees themselves have university backgrounds. This configuration and its staff represent a modern generation of conservation concern, well linked into international scientific and policy circles. This contrasts with the rest of the Forestry Division, whose employees have roots largely in rural productive
activities and who have worked their way up through the ranks of a division which reflects a production-forestry focus. In as much as Division staff have acquired university education on the way, this has generally been in silviculturally focused forestry. Over the years, such foresters and forestry have acquired a backwater status and imagery in Trinidad. Only recently, on the wave of international environmentalism, have forest issues acquired a higher profile, attracting the interests of a different, more urban intellectual class who find the future of conservation and their own interests in it in different institutions – the Wildlife Section – EMA–UWI nexus. The studies were also produced in the context of tense debates about the establishment of national parks in Trinidad, and whether these should be managed by a new World Bank-funded National Parks Authority (which would be staffed largely by EMA–Wildlife–UWI personnel), or by the Forestry Division, which claims to have managed conservation issues in Trinidad since early in the twentieth century.

The wildlife population studies in question used the returns from the Mandatory Data Sheets which licensed hunters are required to return annually to the Wildlife Section to estimate mammal off-take. On this basis, overall declines in mammal numbers were found in major forest areas of the country over 3 years in the early 1990s. Hunting was identified as the primary cause.

The South East Hunters’ Association, a non-governmental organisation based in the highly forested south-east region of the country, has questioned analysis showing hunting as the main cause of wildlife depletion. Instead, the hunters point to other causes which they claim are more serious, such as the loss of wildlife habitats to other land uses, particularly the teak and pine monocultures established by the Forestry Division. They also question the methodology for wildlife population monitoring used by the UWI researchers and the Wildlife Section. Mandatory data forms, they argue, are no basis for analysis. Hunters fill them out not at the time of the hunt but rather at the end of the hunting season, when memory may be inaccurate. Moreover, they frequently fill them out “strategically” according to their interpretations of state wildlife management science and policy. If the reported number of kills is too high, they will be blamed for over-hunting, but if too low, the authorities will think animal numbers are in decline; both may presage restrictions on hunting, so the sheet is filled out at a “happy medium” level.

Furthermore, hunters in the Association argue on the basis of their own methodology that their activities have not generally reduced the populations of hunted species. This argument is based on tracking wildlife populations through a set of theories and methods that they have developed through experience, and which contrast with – indeed contradict – the findings of the conservation biologists. According to the Association’s president, the diameter of the circle in which an animal runs when fired at or chased by hunting dogs can be used as a gauge of its territory and hence population levels. A smaller circle suggests smaller territory and higher population; a larger circle, the opposite. The correlation between running area and population varies not only by species but also by terrain and other factors. Several hunters are assembling numerous observations in an attempt to build this up into a reliable methodology. Notably, it is a method which depends on the use of animals and their habitats for its application; it is thus a method developed through and with hunting. In using it, hunters estimate population increases of certain animals in areas where the Wildlife Section had considered them to be in decline.

This contestation is not just about the intellectual content and methods of science. Rather these different analyses of mammal populations, and the impact of hunting on them are linked to the production of different (competing) social categories, and through them, to social and institutional dimensions of conservation.

The first set of ideas, from conservation biology, sees the problem of mammal decline to lie with “Hunters” in general, imaging these as irresponsible in relation to their resource. The findings support anecdotal perceptions of hunters among wildlife administrators as little but dressed-up poachers who disobey state laws by hunting out of season and at night. They support moves in Trinidad both to tighten hunting regulations (e.g., in the draft wildlife bill prepared in 1998–9) and to protect wildlife populations in an expanded system of national
parks and reserves from which hunters will be excluded.

In contrast, the SE Hunters’ Association science is embedded in a discourse which images hunters as noble, knowledgeable, and law-abiding. The Association’s leaders take pains to distinguish their members from illegal poachers, farmers, and marijuana growers, whom proper hunters would be able to control should they be given access to wildlife sanctuaries and national parks. Indeed they argue that it is in precisely the areas from which these “real” hunters are excluded – Trinidad’s current wildlife sanctuaries – that poachers have free rein, and mammal populations have thus suffered most. Importantly, then, these arguments from the hunters’ citizen science give conceptual space for hunters to be conservation partners with the state, in helping to control the wayward.

What were the historical and social relations in which such engagement could and did occur? It is relevant to note that the Association’s president himself holds a science degree and a current job in the public sector. His own educational engagement with formal science and government institutions gives him a basis on which to deconstruct and directly critique the institutional orientation and content of the UWI/Wildlife Section studies. Furthermore, he is of a social standing in Trinidad which has enabled him to hold his own in presenting the Association’s ideas to university professors whom he has invited to the Association’s monthly meetings, and to engage with some confidence in discussions with government staff. Such discussions have taken place in the settings of various committees formed around policy developments, including the new wildlife bill, which in Trinidad’s avowed ‘participatory’ policy context now require representation from non-governmental organisations.

Membership of the SE Hunter’s Association is highly diverse. While its leaders are well-educated, and hunt for recreational purposes, its membership includes small-holder farmers who are required to attend hunting associations to hold legal permits for their firearms, and find there a platform expressing their interests. Their rural social backgrounds are notably similar to those of many production-focused Forestry staff, but very different from those taking a more internationally aligned perspective to wildlife and conservation. The Association is also very much a civil society organisation of people who consider themselves as enfranchised citizens of the Trinidadian state, while there are channels in Trinidad through which dissent towards government policy is frequently and popularly expressed, such as the daily newspapers. In particular the SE Hunters’ Association and its sister organisation, the National Hunter’s Association, were vocal opponents in the press of the 1996 National Parks bill which attempted to impose a very strict, exclusionary system of protected areas and in its provisions for random inspection of hunters’ homes, was claimed to infringe on civil liberties. Largely as a result of public protest orchestrated by the Hunter’s Associations through the media, this bill was withdrawn. These contexts contribute to hunters’ sense of agency to engage with and critique government policy and its science.

Nevertheless, the engagement also reflects concerns hunters have in the face of emergent ambiguities and threats to their status. The decline of oil revenues and ensuing unemployment have led many to re-turn to rural subsistence occupations, illegal or otherwise, and in this context the social identity of these “hunters” is fragile, keen as they are to distance themselves from “poachers”, “marijuana growers” and other “social deviants” who engage in illegal activities for subsistence. At the same time, Trinidadian citizens are well aware of the growing internationalism of the environmental movement and the way in which international scientific establishments and organisations exert leverage on research and policy development in the country, through influence and funding. The development of national parks is a case in point, with the support, loan conditionalities and the advice of a series of donors as well as foreign academics. Contesting the science of UWI and the Wildlife Section is in this context also a contestation of this internationalism, and the ambiguous control of agendas that it represents.

Guinea

In our second case, from the Republic of Guinea in West Africa, hunters’ knowledge appears as deeply embedded in its cultural and
historical milieu, and rather more autonomous from state- and internationally sponsored science. This is despite the drawing of so-called “traditional” hunters and their societies into new forms of partnership with government and foreign donor organisations in the management of national parks. While explicitly cast by donors as “working with indigenous knowledge”, this interaction has drawn only selectively on, and repackaged, hunters’ knowledge and practices within the terms of international conservation debate. Meanwhile, hunters themselves are taking up the opportunities afforded by these interactions to pursue a range of other socio-political agendas. As in Trinidad, broader social and institutional relations and histories are relevant to comprehending the nature of this (partial or dis-)engagement.

In Guinea’s forests and savannas successive state administrations, and more recently international agencies, have expressed extreme concerns about environmental degradation. Images of the region, backed by certain scientific accounts, as having lost once extensive tracts of forest and a rich wildlife through the effects of shifting cultivation, bush fire, hunting and “anarchic” resource use by local populations have fuelled attempts to create and police state forest reserves and national parks since early in the twentieth century (Fairhead and Leach 1996). In the 1990s environment and conservation have re-gained high prominence in Guinea, now strongly fuelled by international concerns with biodiversity. Government departments (the Forest and Wildlife Directorate and the National Environment Directorate) in this low-income country depend heavily on foreign donors to support their operational work. In particular, European investment through development assistance has been reinforcing state forest reserves and national parks, and creating new national parks, while explicitly cast by foreign donor organisations in the management of these reserves and creating new national parks, and shared ceremonies are frequently termed as a long-standing feature of rural society, especially in the Mande areas of Upper Guinea. Donor and state personnel cast this strategy in terms of the value of “traditional hunters’ knowledge” of animal species and behaviour for conservation. They also claim that as respected local institutions, hunters’ societies offer effective means to communicate environmental messages to, and regulate the practices of, other villagers. Such work through “indigenous knowledge” and “traditional organisations” also supports the self-representation of donor and government organisations as part of a new era of international conservation, in which “participation” and respect for “local cultures” and “indigenous peoples” carry high symbolic and financial weight.

PACIPE, a regional, European Union-funded information and communication programme to promote environmental messages through “a blending of the traditional and the modern” has worked with national park authorities in promoting hunters’ societies – or at least a particular image of them. As it argues:

Hunting is the activity of people gifted in sorcery, friendship with supernatural beings, and deep knowledge of plants and animals. In short, of people with superior powers. It is useful to recall the key role played by the hunter in traditional society. He is (PACIPE n.d.):

- the founder of three-quarters of all villages
- the selector of good farmland
- the prospector of watercourses and forests
- the finder of hideouts and sites rich in animals

His social role covers all aspects of existence and life:

- as protector of the community against all forces of evil
- as courageous defender/warrior
- as skilled healer
- as supplier of fish and animal protein
- as volunteer for sensitive missions in the interests of the community
- as organiser of cult ceremonies such as funerals.

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PACIPE draws on its interpretation of the laws of the Mande empire to suggest that there exists in Mande communities a coherent set of rules regulating natural resource use – a wa ton (“bush law”) – which has been undermined since colonial penetration and which could be recovered. Wa ton is associated with mythologies and “taboos” linking people with the bush (wa) and telling of dangers if these laws are transgressed. To harness these “traditional laws” for conservation ends, environmental programmes have been reinforcing (or perhaps transforming) hunters’ brotherhoods. PACIPE has been supporting the formation of District, Sub-prefecture, Prefecture and National hunting associations, in a federated structure which mirrors the present national administration. At a prefecture level, the new hunters’ societies have had to sign “nature charters” aligning them with national forestry and environment codes, giving hunters’ brotherhoods responsibility to respect the hunting calendar, protect endangered animal species, fight bush fire, and reinforce natural resource management programmes. While PACIPE suggest that charters are drawn up with the hunters concerned, it is notable that all prefectural charters to date are identical. Around the Parc National du Haut Niger the chief hunter of each village has been appointed head of a village wa ton committee, empowered to allocate a limited number of hunting and fishing permits, and to regulate who hunts, where, when and what, and who sets fire, when, where and how.

However, discussions with Mande hunters themselves (e.g., Fairhead and Leach 1996, Leach 1994), as well as the work of other social anthropologists, suggests that such “partnerships” incorporate only highly selective aspects of hunters’ knowledge, practice, and social positioning, repackaging these to fit contemporary conservation concerns.

First, representations of hunters’ knowledge in modern environmentalist contexts have largely overlooked the broader conceptual frameworks in which this – and the laws of wa ton – are embedded. Project representations of wa ton as purely ecological management, perhaps hedged around with a few “traditional taboos”, imposes a modern western vision of ecology which overlooks the consubstantiality between things ecological and things social in the fabric of the Mande world (cf. Croll and Parkin 1992). In this context, animal behaviour, movement, and reproduction, and hence hunting success, are influenced by social behaviour and events, whether concerning villagers’ domestic comportment, or their harmonious or quarrelsome personal relations. Breaking these rules of comportment, whether deliberately or by accident, can “tie” the bush. Re-establishing correct socio-ecological order requires the land to be “cleansed” by a specialist versed in the laws of an area’s land spirits. Specialist hunters are frequently medicine-owners who have not only the power to cleanse, but also the capacity deliberately to tie the land against others – and to intervene in local socio-political and gender relations in the process. Indeed the complex world of land and “bush” spirits, and belief in powerful fetish medicines, constitute further dimensions of the socio-cultural frameworks shaping hunters’ knowledge and practices.

Second, contemporary donor representations are highly partial in their view of hunters’ social position, as a central, authoritative figure in rural social life. Other ethnographic accounts (e.g., Jackson 1988, McNaughton 1988) suggest that villagers see hunters in some senses as operating on the fringes of “normal” social relations, in their fraternising with bush spirits, their long sojourns alone in the bush, and their reputation for possessing powerful and esoteric “fetish” medicines with the capacity to harm and disrupt the social fabric. Hunters may be less pillars of local socio-political life than actors on its margins, with more unpredictable and dangerous agency.

Third, the imaging of hunters’ knowledge in donor engagements also sidesteps the distinctions hunters themselves make between “real” hunters – those who “know the bush” in all its socio-ecological dimensions – and others; what some refer to as “small boys with guns who just go out and shoot”. The derogatory “small boy” in these constructions of masculinity connotes less age and more lack of experience, knowledge, and medicines, or – where practiced – formal initiation. Yet there are many hunting practices in which younger men, particularly, do engage, from trapping, to hunting cane rats with fire and dogs, to shooting monkeys for money.

There are, then, many dimensions of hunters’ knowledge which have remained relatively
autonomous from hunters’ engagements with national park authorities, continuing in vibrant forms but largely hidden from, or excluded by, project encounters and representations. At the same time, hunters and their societies are making use of their national park engagements to pursue a range of other socio-political agendas.

For instance, in the context of fragile relationships between senior hunters and rural youth, hunters’ brotherhoods have a strong desire to enforce their control over all gun hunters. They have been able to draw on the support of conservation organisations in this, since the latter consider “free” hunters as anarchic in their practices, and the major cause of environmental degradation through fire and over-exploitation of bushmeat. National Park authorities now stipulate that only card-carrying members of the hunters’ brotherhood may be armed, and that the brotherhood should police this and report infractions to government officials. However in this process, project staff are constructing distinctions based not along the lines that hunters draw, but around notions of indigeneity and global ecological alignment. A project director within the European Union programme spoke of “setting hunters against hunters”, distinguishing those “indigenous” to the park area and in tune with the project’s goals, from those who came from “outside” to hunt for commercial sale.

For the Guinean state, enforcing those with guns to join hunters’ brotherhoods is also part of a policy to control arms in the countryside, a real state security issue given current regional instability. Indeed the head of the national hunters’ association stated publicly in a rural radio interview that “our government has two armies of which we are the second”. The president has further drawn Mande hunters into the military side of the state and reinforced their links with national political interests by deploying them as fighters alongside the Guinean forces defending the borders from Sierra Leone’s rebel war. And linking these environment and security concerns, both hunters and the state are now using the discourse of environmental protection and of “indigeneity” to argue for the protection of “their lands and themselves” against “foreign infiltrators”, with hunters authorised to provide such surveillance. The hunter leadership is actively exploiting this new co-operation with the state to strengthen its hand in rural social and political relations.6

But while some spokespeople image hunters’ brotherhoods as close to the state through these associations, hunters have simultaneously used long-proven strategies to distance themselves from too close an alignment, maintaining their social and political – as well as knowledge – autonomy. For example, hunters have frequently placed powerless junior hunting apprentices at the helm of village, district, and prefectoral offices, confident that they can easily be called upon to administer policies acceptable to the elders, but that they can be just as easily stalled in enforcing unpopular measures.

The partial nature of these hunter–donor engagements also reflects the ambiguous historical relationship between hunters’ societies and the state and European powers. Early colonial conservation efforts followed closely on the heels of wars which had pitted the French colonisers against Mande armies and the hunter-warriors who led them. Hunters’ brotherhoods continued to act as a forum for mobilisation against the French throughout most of the colonial period. Administrators saw them as a dangerous threat to their precarious authority and made sustained efforts to suppress their activities. Hence it is not surprising that post-independence, hunters took the opportunity to reconstitute themselves as an organised administrative force. The first prefectural hunters’ associations date to this new climate of the early 1960s and were respected by the First Republic’s regime, although only in an overtly “demystified” form, in line with the cultural policy of Sekou Touré’s particular brand of technocentric African socialism (Rivière 1971). Far from being merely neutral, local organisations steeped in indigenous cultural tradition, then, hunters’ societies have long been constituted as an organised force in national and regional politics. Today, their simultaneous proximity and distance from the state is compounded by contemporary party politics: the party in power, Lansana Conte’s PUP, is highly unpopular in the Mande region, and it can be assumed that hunters’ integration with state services, state-supported projects and the state-sponsored national hunters’ association is in delicate balance with vehement political opposition.
Conclusion

These two cases highlight very different relationships between what might be termed lay knowledge, and scientific perspectives emanating from so-called expert institutions. In Trinidad, the hunters’ association and UWI were engaging in different methods, rooted in different practices, and with different social implications (e.g. local vs state monitoring of resource use). But they were addressing a common question (what is happening to wildlife populations) within a common policy field (what to do about it) and within a set of practices glossed by each as “scientific” (albeit with each critiquing the other as “unscientific”). This framing of the engagement has emerged, broadly, from the UWI/government line – so this is a case where citizenry are engaging critically with science/policy debates emanating from expert institutions. Nevertheless they are doing so from practices rooted in different experiential and institutional engagement with forest and animals; use rather than reverence, and a requirement for presence (to monitor illegal usages) not absence (a closure of reserve borders). And they are doing so in ways that also address hunters’ own social agendas – constructing themselves as distinct from “poachers” in Trinidad’s modernity.

In contrast, where hunters’ societies and state/donor organisations “engage” around national parks in Guinea, they seem to be pursuing more fundamentally different agendas: while the latter seek to arrest wildlife depletion and environmental degradation, the former are strengthening their authority in local, national, and even regional politics. The promotion of hunters’ brotherhoods and their “indigenous knowledge” in conservation projects has provided a set of practices within which both agendas can be met, but there is neither common framing, and nor, consequently, direct critique. At the same time, other dimensions of hunters’ knowledge and sociality are left right out of the picture, “uncaptured” by – and relatively autonomous from – these encounters. While these dimensions of knowledge provide a basis to contest government and donor perspectives on both environmental degradation and community organisation, these contestations take place more subtly, silently, and in other domains.

What these contrasting cases highlight, then, is that citizen science implies a certain engagement with, and dominant discursive role for, the science of expert institutions. They also highlight that there are circumstances where people (as in Guinea) maintain entirely different positionalities – “uncaptured” by these discursive formations – while nevertheless having to deal with their material effects, and sometimes able to manipulate these to their own advantage.

Such contrasts do not map easily onto geographical distinctions between the European and African/Asian/Latin America/Caribbean settings which have respectively spawned “citizen science” and IK discourses. Equally, they do not counteract the reality that in any setting, there exists a plurality of partial perspectives. Rather, which elements of this plurality come together at any place or time, and on what terms, depends on the particular histories, social and institutional relations which shape practices of knowledge production by different scientists and lay people, the ways they articulate, and the broader issues to which they speak.

The very different ways that the politics of knowledge have unfolded in Guinea and Trinidad reflect how their respective colonial and post-independence histories have played differently into contemporary social relations of science. In Guinea, until independence in 1958, there was little research in institutions of science outside the white-dominated colonial service, whether in the natural or social sciences. The Independent socialist regime embraced a modernising agenda founded on “Africanisation” on the one hand and “Science” on the other, building three major centres of tertiary education and in particular, in agriculture and environment, an agricultural training centre in each prefecture (Rivière 1971). Access to education and to science implied the embracing of a state socialist political identity, in strong distinction from existing (“indigenous”) forms of knowledge and institutions in rural areas. There was little incorporation of local perspectives and priorities in setting scientific agendas. This is not to say that indigenous practices were attenuated, but merely that they continued to operate in more independent realms.
(realms which were occasionally drawn on by the new political and scientific elite to enhance their power through “traditional means”, but in radical disjuncture with their engagement with science). In this respect, indigenous knowledge and practices gained in strength and autonomy vis-à-vis state-sponsored science. This situation has changed little since the East-European visions of the socialist era gave way after 1984 to western influence under Guinea’s liberalisation era. In short, these historically rooted relations have produced a high degree of disengagement between expert institutions and many villagers’ perspectives.

In Trinidad, mass education, dating from the 1830s, created opportunities that played into an emerging religious and education ethic among poorer migrant communities and laid the foundation for an emerging middle class. This was especially so in the urban centres that expanded rapidly during and after the oil boom. This enabled wider publics to engage actively in social, political, and scientific debate whether in the media, in local and national politics or now in the university, and to do so within the idioms and framings of these institutions.

To draw out the comparison, then, in Trinidad vibrant local and national NGOs, citizens’ organisations and national media are used as forums for public mobilisation, debate and for citizen science amongst a highly literate population, in engagement with strong national scientific institutions. In Guinea, by contrast, different educational, cultural, and political histories have shaped less overt forms of public engagement, and more sustained autonomy between knowledges. Yet the inter-country differences should not be allowed to obscure similarities in the experiences of certain people in each, as shaped by their positions in these social relations of science. Thus while the cases of hunters engaging with national park processes explored in this paper highlight contrasts between Trinidad and Guinea, others in Trinidad – certain marginalised “squatter” farmers, for instance – share a less contrasting experience, unable to articulate their knowledge and perspectives within science and policy institutions. As the hunters’ case illustrated, those engaging in citizen science to contest national policies are still largely drawn from a more educated elite. Inversely, more concerted “citizen scientific” knowledge engagements could be found in Guinea among certain urban citizens, for instance in student mobilisation around issues of waste and sanitation.

Arguments that all knowledge is socially produced theoretically dissolve divides between indigenous and scientific, lay and expert knowledge into a plethora of partial perspectives. Yet the cases we have presented indicate how there remain significant differences in the manners of contestation between knowledge systems, which reflect particular social and historical relations and practices. Categories such as “citizen” and “indigenous” are themselves produced through these same social and historical relations, and need to be seen within ongoing social and institutional histories and their linked politics of representation. Studies of local knowledge by social anthropologists were framed by their theoretical and colonial-administrative concerns to represent and document bounded cultures. Not dissimilarly, more recent representations of IK in development discourse have been shaped by contemporary institutional backgrounds and conservation and development strategies. Yet people may themselves represent their knowledge as “indigenous” or “traditional”, constructing and reinforcing divides with modern science and its institutions, as part of political struggles for independence, autonomy or – as our Guinea case showed – authority in local social affairs. And as “indigenous people” becomes an increasingly important category in international law and regulation (Kingsbury 1998), so constructed representations of certain types of knowledge as local and authentic, distinct from modern science, acquire greater salience in global, as well as national, arenas.
Notes

1. Interview, President of the South East Hunters’ Association, Rio Claro, 6 July 1999.
3. Interview, MPhil student working with north-eastern hunters, St. Augustine, 15 May 1999.

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