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'They scorn us because we are uneducated'

Knowledge and power in a Tanzanian marine park

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A B S T R A C T ■ This article addresses the relationship between science and popular knowledge within Tanzania's Mafia Island Marine Park. It examines the ways in which various forms of knowledge circulate within the park, as well as how knowledge is evaluated and used by representatives of international organizations, national government officials, and Mafia residents. Despite the ostensibly 'participatory' goals of the marine park, island residents continue to be excluded because they fail to speak the language of the 'educated'. At the same time, forms of knowledge within the park serve as potent cultural markers of class status, ethnicity and 'modernity' in ways that buttress the social position of national and international elites and undermine that of island residents.

K E Y W O R D S ■ indigenous knowledge, science, participation, environment, development, ecotourism, Tanzania

I first heard the sound of an underwater dynamite explosion in 1994 while conducting an English class on Chole, the smallest island in the Mafia archipelago off the coast of Tanzania in East Africa. At the time, Chole and nine other villages in the southern end of the archipelago were slated to become part of Tanzania's first national marine park, a project jointly sponsored by

international organizations and national government officials. Having agreed to teach English in conjunction with anthropological fieldwork in the area, I continued with my class on that particular day, unsure what to make of that far-off blast.[1] However, my lack of concern contrasted sharply with that of the dozen or so men present, all of whom were fishermen or former fishermen. Seated upon the wooden poles, cement blocks, and other building paraphernalia of Chole's budding 'ecotourism' camp – one of the handful of tourism establishments being built in response to the incipient marine park – the men listened anxiously, shaking their heads in disapproval. They described how dynamiters from Dar es Salaam were destroying the fishing around Mafia. Dynamiters, they explained, threw lit sticks of explosives into the water and then scooped the dead or stunned fish into their boats as the fish floated to the surface. Although a lucrative (if dangerous) way to fish, dynamiting also destroyed the coral reefs which residents described as the 'home of the fish' (*nyumba ya samaki*), turning the reefs 'white' (*mweupe*) or into a 'desert' (*jangwa*). These men, I quickly discovered, were not alone in their opinions: nearly all the men and women I met on Chole blamed this practice for declining fish populations in the region and perceived it as a major threat to their livelihoods and well-being. Indeed, their opposition to dynamiting and their desire to see the practice stopped underlay residents' strong support for the newly formed Mafia Island Marine Park.

Given the anger that Chole residents expressed towards dynamiting as well as their detailed descriptions of the underwater destruction it caused, I was surprised by the very different perspective on dynamiting offered by the marine park's top-ranking government official in 1995. The Acting Warden, who like most other district officials was a mainlander temporarily posted in the region, assured me that the widespread view that Mafia residents did not engage in dynamiting was a 'myth'.[2] On the contrary, he asserted, residents participated in such destructive activities because they failed to understand the impact that dynamiting had on coral reefs. In his view, the solution to the problem depended upon raising 'awareness' about dynamiting. Undeterred by the virtual non-existence of TVs and even electricity on Mafia, he suggested that this could best be achieved by educational programs on television and radio, as well as by increased international funding for conferences and informational meetings. Before I left, he clasped my hand and asked whether I knew any international donors who might be willing to help support this cause.

Such dramatically different conceptions of Mafia residents' knowledge of the marine environment formed one important strand in what I refer to elsewhere as the 'social drama' of the Mafia Island Marine Park (Walley, 1999). Conceived in the early 1990s, the marine park was designed to be an innovative example of a national park that would integrate conservation and development while also serving as a model for similar projects worldwide.

Yet during its implementation between 1994 and 1997, the marine park generated marked tensions on Mafia as international organizations, national government officials and island residents struggled to shape its goals and policies. These actors possessed widely differing stakes in the park. For government officials, the park represented an influx of foreign resources under national control which could serve as a potential source of 'development'. By contrast, for representatives of international organizations, the park promised the environmental protection of a 'pristine' area as well as the creation of a cutting-edge project that could be promoted in international fund-raising efforts. Mafia residents, who depended heavily upon the area's marine environment, hoped that the park could help them control practices such as dynamite fishing which posed threats to their livelihoods. However, they also feared the park's power to exclude them from marine resources in a way that could imperil their survival. Tensions were further heightened by the fact that many residents believed government officials to be complicit in the dynamiting, while these officials were often in turn skeptical of the ability of residents to 'participate' in ways they deemed appropriate.

Rather than focusing on such overt struggles here, I am concerned with a less dramatic but equally influential aspect of such tensions: the circulation and evaluation of knowledge within the Mafia Island Marine Park. How, for example, could one explain the remarkable ease with which the Acting Warden and numerous other 'experts' assumed that Mafia residents lacked environmental knowledge – despite the fact that the marine park was widely promoted as encouraging the 'participation' of those who lived on the islands? In general, how did evaluations of knowledge shape day-to-day interactions within the marine park, and what can such interactions tell us about the nature of social relationships in what is increasingly described as a 'global' era?

In exploring such questions, this article challenges commonplace assumptions which contrast a monolithic 'science' with an equally essentialized depiction of 'indigenous knowledge' – a dualistic framework in which one of these poles tends to be valorized while the other is denigrated. I argue that Mafia residents themselves fail to make such strict distinctions and are, in fact, eclectic in the kinds of knowledge they draw upon (see also Gupta, 1998). My own goal is to address the relationship *between* scientific and popular knowledge and to consider how knowledge practices are embedded within, as well as constitutive of, broader social dynamics and power relationships.[3] Towards these ends, I track the evaluation and circulation of knowledge as it occurred among island residents, national government officials and Euro-Americans associated with international organizations who were involved in the Mafia Island Marine Park during the mid-1990s. I argue that in a contemporary world in which international organizations and projects play an increasingly central role, such knowledge interactions

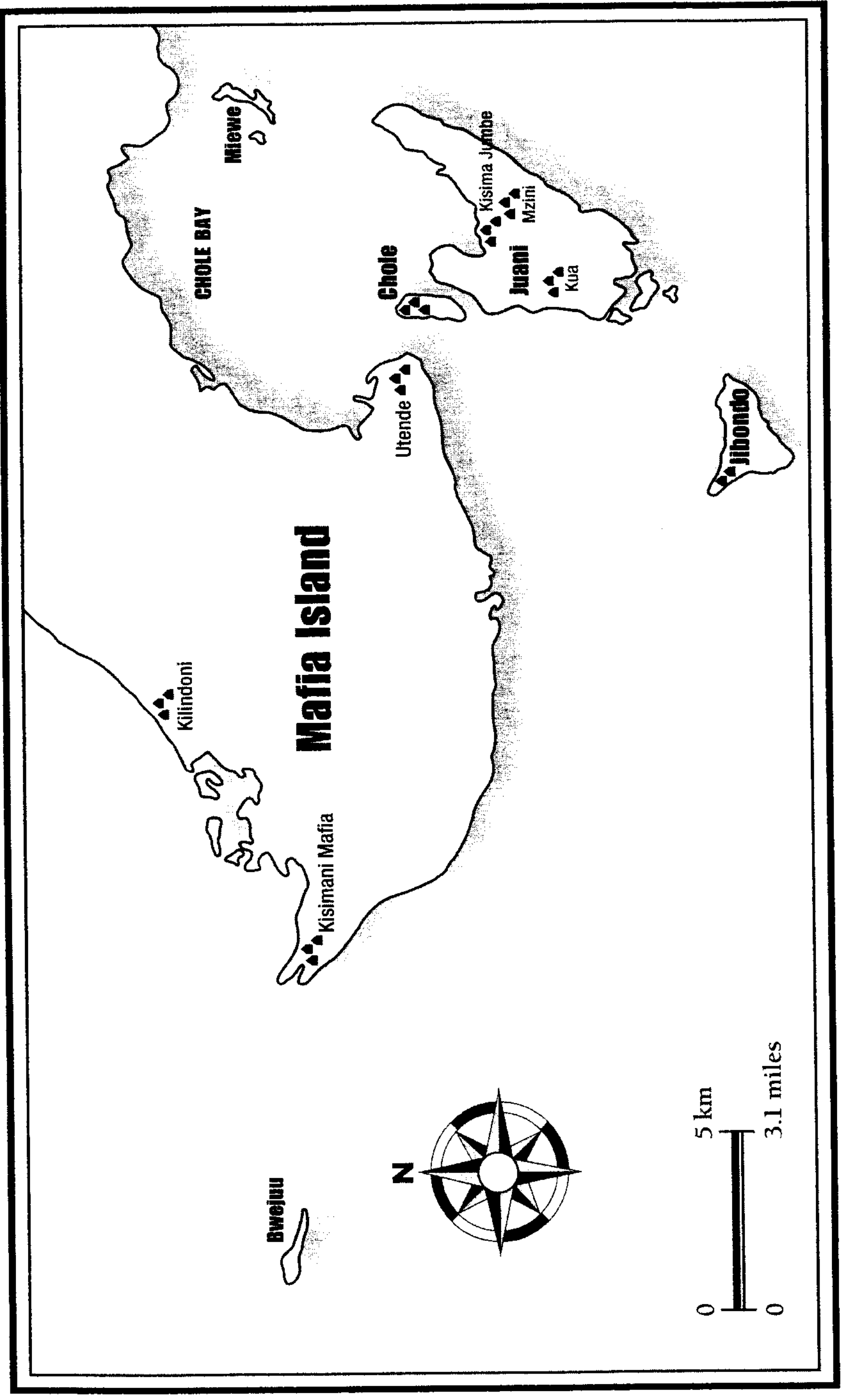

Figure 1 Southern Mafia.

form a central terrain for the production and contestation of social status, serving to mark and help produce class distinctions both within countries and between them.

Tracking popular knowledge in the Mafia Island Marine Park

Inspired by studies from the 1980s identifying the Mafia district as an important source of marine biodiversity, Tanzanian and expatriate scientists at the University of Dar es Salaam's Institute of Marine Sciences had begun lobbying for a national park on Mafia in the early 1990s and eventually gained the support of a range of international organizations, including the World Wide Fund for Nature (WWF), as well as national government officials. From the perspective of national and international planners, the Mafia Island Marine Park represented a 'new' kind of national park. East Africa has historically been the site of numerous terrestrial wildlife parks that are the heirs of colonial game reserves established by the British and the Germans in the 19th and 20th centuries. These parks and reserves have been based upon European-inspired ideas of 'preservation', mandating the strict segregation of nature from human beings. The result has been too often the forcible exclusion of rural Africans from residence, and often natural resource use, within protected areas – a legacy which has continued into the post-independence era (Adams and McShane, 1992; Anderson and Grove, 1987; MacKenzie, 1988; Neumann, 1998, 2000). The Mafia Island Marine Park differs in two fundamental ways from this historical legacy. First, it focuses on the marine environment, an area of increasing international concern as fish populations decline world-wide (Carr, 1998; McEvoy, 1986; McGoodwin, 1991; Safina, 1999). Second, it is the first national park in Tanzania to incorporate those residents living within park boundaries as 'stakeholders' and ostensible 'participants' within park governing structures.[4] In contrast to preservationist ideals, the goal of Mafia's marine park has been to integrate conservation with development. Planners have sought to accomplish this through the encouragement of environmentally friendly tourism or 'ecotourism', conceptualized as a source of wage labor that could provide an alternative income source for Mafia residents and relieve pressure on fish populations.[5]

The emphasis on 'participation' within Mafia's marine park reflects the growing prominence of this concept within development and conservation institutions throughout the 1990s, a response in part to increased international attention to 'democracy' in the post-Cold War era. Interest in 'participation' has spanned the political spectrum and included proponents on the right, who seek to unleash the entrepreneurial energies of the rural poor, as well as those on the left, who are critical of the power dynamics of

state-centered and top-down planning and desire the 'empowerment' of marginalized groups (Craig and Mayo, 1995). In recent years, scholars have begun exploring the dynamics of 'participatory' projects in greater detail, examining the degree to which such efforts have – or have not – had a democratizing effect (Cooke and Kothari, 2001; Green, 1997; Ribot, 1996, 1999, 2000; Walley, 1999). In this article, I am concerned with still another effect that 'participation' has had upon conservation and development paradigms: the expansion of interest in the knowledge possessed by poorer, rural residents of the so-called Third World (Peters, 2000).

Alternately known as 'local knowledge', 'indigenous knowledge' or 'traditional ecological knowledge', such knowledge has become a subject of widespread interest among academics and international organizations as well as a central topic for myriad conferences, books, and international projects (for example, Brokensha et al., 1980; Brush and Stabinsky, 1996; Johannes, 1981; Ruddle and Johannes, 1985; Shiva, 1988). As found within contemporary conservation and development frameworks, 'indigenous knowledge' is generally depicted as important because of its utilitarian value or because it offers a unique example of cultural diversity found among isolated social groups. Anthropology has had an ambivalent relationship to such trends. Anthropologists have a long history of exploring 'primitive' knowledge systems in relation to science/literacy and as emblematic of particular modes of thought.[6] However, contemporary anthropologists routinely criticize assumptions associated with ideas of the 'traditional' and the 'primitive' which are embedded in such historical accounts, and many express discomfort at the ways such seemingly outmoded ideas have resurfaced within contemporary discourses of the 'indigenous' and 'indigenous knowledge' (Agrawal, 1995; Brosius, 1997, 1999; Ellen, 1986; Gupta, 1998).[7] Recent ethnographies of science, however, which include analyses of the daily practices of scientists in their laboratories, suggest an alternate way of thinking about knowledge (for example, Gusterson, 1996; Helmreich, 2000; Latour, 1987; Martin, 1987, 1994; Rabinow, 1999; Traweek, 1992). Such studies focus on knowledge as a form of daily social practice which both reflects and helps generate broader sociocultural processes, including power relationships. In this article, I attempt a similar analysis, shifting the lens to focus on the power-laden interactions between science and popular knowledge in non-western contexts (see also Gupta, 1998).

By focusing on daily life, social dynamics readily emerge which are rarely acknowledged in more abstracted discussions of 'indigenous knowledge'. For example, it becomes clear that the popular knowledge of residents within the marine park has not been marginalized *solely* because of derogatory attitudes towards such knowledge (although such attitudes have been commonplace). Indeed, even in those instances in which park personnel were receptive to popular knowledge, the bureaucratic structures of the park

proved incapable of recognizing or assimilating such knowledge. While such institutional dynamics are crucial, the most pronounced knowledge dynamics on Mafia centered upon the role that science and popular knowledge played as politically loaded markers of class status, ethnicity and the perceived level of 'modernity' of park actors. In making this argument, I offer a somewhat different angle on power and knowledge than has been found in some of the critical literature on development.[8] Much of this literature, inspired by the ideas of Michel Foucault (1970, 1977, 1981), has emphasized the role that modern institutions and academic disciplines play in generating highly unequal international power relationships (for example, Escobar, 1995; Ferguson, 1994; Mitchell, 1998). Among other insights, such accounts have provided a powerful understanding of how development interventions are depicted as politically neutral, based on a universalized form of rationality drawn from economics, and presented as utilitarian tools designed to achieve a greater good – despite the profoundly political role that development institutions and discourses play in channeling financial resources, structuring social and economic policy, and encouraging modes of self-understanding which benefit some to the detriment of others.

By ethnographically exploring the role that knowledge plays as a marker of development, modernity and social class, however, we are more easily able to see how knowledge (as well as ideas of development with which it is intertwined in places like Tanzania) is used, negotiated, appropriated and struggled over in the context of daily life.[9] The work of Stacy Pigg suggests that the perceived level of 'development' of particular individuals in Nepal – as indexed by professed belief in 'traditional' shamans versus biomedical knowledge – is a crucial aspect of social status and upward social mobility (Pigg, 1996). In exploring such dynamics, I build upon the ideas of Pierre Bourdieu, who has thus far been neglected in the emerging anthropology of development. Although the particular work referenced here focused on taste distinctions in France (Bourdieu, 1984), Bourdieu's emphasis on the role that knowledge plays as cultural markers of social class are useful in this context. Extrapolating from his argument, I suggest that knowledge distinctions, as interpreted through the lens of development and being 'modern', are regularly used as markers of class in international as well as national contexts. By using the term 'class', I also reference contemporary theorists who are seeking to reformulate this concept, for example, by incorporating post-structuralist ideas and further emphasizing the foundational roles of sociocultural dynamics and identity formation (for example, Gibson-Graham et al., 2000, 2001; Joyce, 1995). Such a reworked conception of class can allow us to see how knowledge on Mafia serves as a cultural status marker used to socially position others, as a source of self-identity (for example, through Chole residents' self-identification as the 'uneducated'), and as a means to access – and deny – jobs and financial resources,

thereby creating the conditions for reproducing (or contesting) one's social position. Such a concept can help us untangle the relationship between power and knowledge both within and between countries, allowing a more thorough understanding of 'global' dynamics in a world rife with both international social inequality and environmental conflict.

Challenging 'local knowledge': coastal diversity and the transformation of fishing on Mafia

Assumptions about 'local', 'traditional', or 'indigenous' knowledge build upon long-standing Euro-American conceptualizations of Africans and other non-western populations. Historically, such viewpoints have presumed that 'tribal' or 'traditional' societies consist of discrete groups cut off from broader social interactions, possess a homogeneous body of practices and beliefs, and exist in timeless fashion outside of larger historical processes (Fabian, 1983). Yet, the assumption that the popular knowledge of 'traditional' areas can be rigidly opposed to scientific knowledge fails on a number of counts. It neglects the complex ways in which knowledge is produced, gathered, and circulated, not only on Mafia Island, but more generally. It ignores the hybrid nature of how people in all societies 'know', including the role that popular knowledge plays in countries like the US (Lave, 1996; Nader, 1996) as well as the potentially diverse origins of various bodies of knowledge both historically and geographically. It also disregards the complex and uneven ways knowledge is transmitted in the contemporary world, regularly crossing boundaries of oral transmission, practical experience, and written accounts. Finally, dualistic conceptions of knowledge fail to consider the slippage between categories. For example, the modernist assumption that the written word is inherently more trustworthy and of higher status than oral pronouncements, fails to account for the reality that the oral gossip of park officials and representatives of international organizations may carry far more weight in decision-making within Mafia's marine park than the written petitions of island residents (or, indeed, the official written documents of the park itself).[10]

In this section, I examine the complexity of knowledge practices found among Mafia residents and argue that such practices defy this kind of dualistic thinking. Historically, Mafia Island was neither isolated nor 'traditional' but rather formed part of an interconnected and cosmopolitan Swahili coastal world which extended from what is now Somalia in the north to Mozambique in the south. For more than a millennium, coastal traders participated in the broader Indian Ocean mercantile world, following the seasonal monsoon winds between the East African coast, the Arabian peninsula, South Asia, and beyond.[11] Ironically, it is much easier to think of

Mafia in the present as timelessly 'traditional' (or 'pristine' as park planning documents describe Mafia's environment) than it would have been in the past. In recounting the region's history, elderly men and women on Chole tell of successive waves of foreign elites and colonial powers who came to Mafia. Such accounts begin with Shirazi Persians in the medieval era and then shift to the Portuguese in the 16th century, MaShatiri and Omani Arabs in the 18th and 19th centuries, and finally German and British colonizers in the late 19th century and post-First World War periods respectively (Walley, 1999). Over the course of the 20th century, however, Mafia has become increasingly 'remote' and cut off from the cosmopolitan yet hierarchical world of the past and became increasingly 'remote'. Contemporary residents complain bitterly of their current isolation and the difficulties they experience traveling both within the archipelago and beyond. Dependent upon the few leaking, wooden sailboats that form the vestiges of a once prodigious maritime traffic, they lament their isolation and proudly recall the time when tiny Chole Island – less than a third of a square mile in size and home to approximately 700 residents – once served as the urban center for the entire Mafia archipelago with widespread ties throughout the Swahili coast as well as to regions far beyond.

Just as Mafia's history fails to accord with stereotypical conceptions of the 'local' or the 'traditional', residents' fishing practices and marine knowledge are equally inexplicable in such terms. On Chole, the role of fishing has been intrinsically linked to extra-regional dynamics and has changed dramatically over time. In the 19th and early 20th century, when Mafia's economy was centered around a slave-based coconut plantation system that fed international markets, fishing was a marginalized occupation. One elderly woman commented that in the past fish were largely uncommodified (literally, they 'had no price' [*haina bei*]), while another man explained that although men had fished to help feed their families, perhaps selling a few dried fish for additional income, that fishing was a 'game' (*mcheso*) rather than the serious undertaking it is today. However, the collapse in international agricultural prices in recent decades, including Mafia's copra market, has helped precipitate the economic tailspin being experienced in much of sub-Saharan Africa. Combined with the impact of structural adjustment policies, such dynamics have led the contemporary period to be characterized as *maisha magumu* or 'the tough life'. Increasingly, economic hardship combined with the new found ability to sell fresh fish to 'ice boats' from Dar es Salaam has meant that fishing has taken on an increasingly important economic role on Mafia.

Marine knowledge on Chole generally derives from a mixture of practical experience and socially transmitted knowledge. Women on Chole hunt for octopus and shell fish at low tide (in addition to doing much of the subsistence farming), while fishing from boats or with the use of hand lines or traps is considered to be men's work. Among men knowledge of the marine

environment is thought to vary widely, depending upon the particular gears they use as well as individual aptitude and experience. While most men learn about the marine environment while helping older male relatives to fish (although boys often begin teaching each other to use handlines from shore), the sociocultural framework for making sense of such practical experience comes in large part from coastal maritime culture as developed over centuries and passed on generationally or through experience and contacts with other parts of the Swahili coast (Glaesel, 1997; Prins, 1965). Such knowledge is not simply 'local' or even regional in origin but also reflects the widespread geographic contacts of the region's past. For example, the wooden sailboats common along the Swahili coast (and presumably much of the knowledge associated with making and using such boats) are strongly influenced by designs originating in the Middle East, while out-rigger canoes (*matumbawe*) are based on Malaysian models which reached East Africa via Madagascar. Other kinds of knowledge also came from experiences not easily explained by concepts like the 'indigenous', 'local' or 'traditional'. For example, elderly fishers informed me that after the abolition of slavery and the demise of Chole as an urban center, the island experienced a period of extreme depopulation during which the remaining residents did not fish. In the 1950s and 1960s, however, young men on Chole began to deliberately seek out knowledge about fishing techniques, gathering such information, not from other Swahili coastal fishers, but from Makonde Christians from the south who had recently migrated to Mafia. In more recent years, knowledge from scientific paradigms has also been incorporated into the popular knowledge of the region through contacts between Mafia fishers and government fisheries officers as well as Euro-American divers and marine biologists.

Just as it is important to recognize the ways in which popular knowledge on Mafia fails to conform to the concept of the 'indigenous', it is equally important to consider the social parallels between popular knowledge and its presumed opposite, science. While it is true that Mafia fishermen in the past preceded their trips to sea with religious offerings (*sadaka*), not by mapping transects as marine biologists might, and that contemporary residents often debate declines in fish populations in religious terms rather than through statistical studies of species extinctions, the social circumstances of producing knowledge are in some ways more similar than is generally assumed. While it is easy to presume that fishermen on Mafia are driven simply by instrumental desires for food or money while scientists are inspired by the desire for knowledge, many Mafia residents are also fundamentally curious about the physical world, and the desire for academic distinction or career advancement may motivate scientists as much as knowledge in the abstract. Both empirically observe fish in Mafia's waters (indeed the fisherman customarily spends far more time at sea than the scientist); each may individually be a more or less perceptive observer with the ability (or not) to draw astute generalizations from their observations; and each makes their observations in the context of a historically generated body of knowledge in which each may (or may not) have been an adept pupil paying attention to teachers or elders. Although science may have more elaborate methodologies and verification procedures, making it a powerful tool that can expand knowledge far beyond the realm of commonsense observation, this does not invalidate the observations or knowledge of fishermen. As Bruno Latour argues in the context of science studies, the reality of a common physical world across cultural divides must be acknowledged – a perspective as relevant in this case to fishermen as scientists (Latour, 1993). In short, the eclectic historical influences at work along the East African coast, as well as the intermingling of various types of knowledge among residents, suggest in perhaps heightened form what has been shown to be true elsewhere – that bodies of knowledge draw upon a diverse range of sources and are themselves in a constant state of flux (see also Gupta, 1998).

Power and knowledge within the Mafia Island Marine Park

The social status of science

Within the Mafia Island Marine Park, there has not been one viewpoint associated with scientific knowledge, but several. I will first deal with Euro-American representatives of international organizations and visiting scholars within the park who generally possessed advanced educational training in scientific and technical fields. Even among this group, differences were readily apparent: while some individuals implied that science was the only worthwhile form of knowledge, a smaller number were intrigued by and open to 'local knowledge'. Still others, primarily tourists whose viewpoints are discussed elsewhere (Walley, 1999, 2002), took an anti-modernist position that lamented the presumed ability of 'modern' scientific knowledge to displace a romanticized 'traditional' culture.

During my stays on Mafia in the mid-1990s, it quickly became clear that despite the 'participatory' language of the marine park, scientific and popular knowledge generally circulated along two distinct and non-overlapping tracks. An event that occurred in 1994 illustrates such dynamics. One evening, I visited a group of British divers staying on Chole who were gathering baseline scientific information to aid in the implementation of the marine park plans. At the divers' camp, I found myself sitting between an older Austrian scientist, Karl, who was assisting in the work, and Rajabu Issa, a young man from Chole.[12] A large book of colored photographs of

fish found in the Indian Ocean lay on a nearby table. As I curiously fingered the volume, the Austrian scientist eagerly pulled me aside to explain the photographs. Rajabu, however, was also interested in talking about the pictures and two conversations simultaneously ensued, one in English, the other in KiSwahili, each oblivious to the other. Karl would point to a particular fish, informing me of its scientific name, its range, and the beauty of its colors as observed underwater with diving equipment. Rajabu, who like many men on Chole fished for a livelihood, would point to the same fish explaining whether they were found around Mafia and describing idiosyncracies in the fishes' behavior, as well as how they tasted. Rajabu pointed out one fish in particular as having unusually large and sharp teeth, showing me the white scars on his hand where he had once been bitten. Discomforted by the lack of communication between the two men, I translated to Karl that these fish had big teeth, hoping this might lead to a more inclusive conversation. The Austrian scientist, however, frowned skeptically and, pointedly ignoring Rajabu, peered at the photo's caption to validate or invalidate this particular piece of information. Not finding the answer, he went on to the next page and continued his scientific monologue.

While this incident suggests the awkwardness with which some trained in the sciences perceive popular knowledge, other encounters suggested a more thorough suspicion of the knowledge of Mafia residents. In 1997, for example, a Swedish marine scientist, Johan, arrived for a five-week research project on corals within the marine park. My first conversation with him took place one afternoon when Johan was heading to Chole to check on repairs to a wooden sailboat he had rented there. As we boarded the decrepit sailboat that served as a ferry to Chole, Johan politely asked me about my research and we began conversing in English from opposite ends of the boat (while curious Chole residents, heads turning back and forth, watched this exchange in a language they did not know). As I began talking about the marine park and residents' concerns about dynamiting, his manner took on what had by this time become a familiar skepticism. He asserted in definitive tones that he did not believe dynamiting to be a real problem on Mafia. In light of his work on corals in the area near Jibondo Island, he saw no evidence that dynamiting was having a significant impact on corals or fish populations in the region. Unable to counter his arguments in a scientific manner, I relied upon Chole residents' accounts of dynamiting, their observations of the ways it affected corals and marine life, and their assessments of how it had impacted on fishing over the last decade or more. His look of skepticism now turned to one of open derision. 'But', he protested, 'people here don't even know the coral is alive. How could they possibly know the impact of dynamiting on marine life!?'

After reaching Chole's tourism camp, I related the incident to Idi Ibrahim, Mzee Salim, and Juma Hassani, all fishermen working in the camp. While

Juma responded with an uncustomary flash of anger that Mafia's *wenyeji* (inhabitants) knew far more than *wageni* (visitors), Idi carefully drew a picture on a scrap piece of paper torn from my notebook. Drawing a picture of the Mafia region, he marked with x's the places that had been bombed by dynamiters and circled a part of Tutia reef referred to as 'Ufungo'. Although this scientist, like many expatriates, knew little about residents, Mafia's residents had, through observation and gossip, gleaned considerable information about the scientist. Idi knew whose boat this man had rented as well as the exact location of his research. He does not see damage from dynamiting, Idi tolerantly explained, because 'Ufungo' has not yet been dynamited and he has not examined other reefs. Juma added angrily that he would be glad to take Johan out in a boat himself to show him the dynamite craters.

The assumptions of those like Johan must be understood, not as reflective of 'science', but as part of a broader historical framework in which knowledge, labeled as either 'modern' or 'traditional', has been mapped onto particular ethnic and racial groups, with science deemed to be characteristic of western thought, while 'tradition' or 'superstition' has been assumed to epitomize the mindsets of formerly colonized peoples. Such ideas have a long history in Tanzania. While the ideas of preservationism embodied in Tanzania's colonial game reserves formed one distinct strand of European thought, another strand which would later become associated with 'modernization' theories also had a widespread impact. Such ideas assumed that 'modern' and particularly scientific forms of knowledge were the key to development in places like sub-Saharan Africa where it was taken for granted that people either lacked knowledge or possessed a faulty kind of knowledge based on 'traditional' conservatism or superstition and which hindered them from improving their lives. Such ideas were widely evident in colonial era conservation policies, centering most prominently upon soil erosion as well as cattle dipping and destocking measures. Since it was widely held by European colonists that Africans lacked or possessed faulty knowledge, resistance to such policies (which was widespread) was taken to represent not disagreements over the effectiveness of such measures or the impact such measures had upon social dynamics, but conservatism, laziness or ignorance.[13]

Although such perspectives grew out of a modernist discourse generated in a colonial era, assumptions that rural Africans lack knowledge have remained widely salient internationally, as this incident with Johan suggests. Such dynamics, however, were not limited to encounters between Euro-Americans and rural Africans within the marine park. During the course of my fieldwork, the most vociferous proponents of the authority of science and the lack of knowledge of rural residents were, in fact, Tanzanian national government officials and scientific/technical experts, a group whose position has been largely ignored in international debates over 'indigenous knowledge' and science. In contrast to more distant social interactions with

Euro-American 'experts' (a partial product of language barriers as well as the mediating role played by national elites), Mafia residents possessed a more familiar and contentious relationship with government officials, drawing upon a common language and national political culture.

The fraught nature of knowledge dynamics among Tanzanians was readily apparent on Chole. For example, during the first official meeting I attended between appointed government officials and Chole residents, officials lectured Chole residents in a manner appropriate for errant schoolchildren, while residents sat silent, noticeably hesitant to state their views – a striking contrast to the outspoken village meetings to which I had by then grown accustomed. When I commented upon such striking dynamics to friends from Chole, they merely shrugged their shoulders and told me that government officials 'scorned' them (*wanatudharau*). When I pressed them to explain why, one man, Hassani Mbaraka, explained with a tone of weary obviousness that 'they scorn us because we are uneducated' (*wanatudharau kwa sababu sisi hatujasoma*). Indeed, throughout my stay, Chole residents would repeatedly emphasize the profound social barriers between the 'educated' and the 'uneducated' within Tanzania. Such viewpoints were graphically illustrated by a conversation I had in 1995 with Mzee Maarufu, a well-respected village representative. Mzee Maarufu related that although the Acting Warden of the marine park treated him in a friendly manner in public, he knew 'in his heart' that the Acting Warden thought of him as being as lowly as 'little bugs in the bush' (*vijidudu maporini*). He noted that Mafia residents wished to ally themselves with international organizations, as opposed to government officials, in order to stop the dynamiting because, although educated Tanzanians placed their trust in each other, 'the uneducated' were more trusting of *wazungu* (Euro-Americans). In response to my surprised reaction, he suggested that this was because the 'uneducated' believed that 'our fellow Africans can be even more contemptuous of us than Europeans . . .'. Although I would hear similar remarks from other Chole residents, such comments were not intended to downplay the profound injustices of European colonialism; indeed, Mafia residents were quite eloquent on the inequities of that period. Rather, Mzee Maarufu's critique rhetorically expressed the profound disillusionment many had experienced as a result of the ongoing injustices of the post-independence era.

The patronizing tone that government officials regularly adopted with Mafia residents (a didacticism fostered by the post-independence socialist government which encouraged cadres to 'teach' the people what development required of them) can only be understood within the broader social divisions of the Tanzanian nation-state. Such divisions are heavily based on access to particular kinds of knowledge, as is often the case in other parts of the world as well. On Mafia, such divisions were widely apparent. Government officials stationed in the capital of Kilindoni were overwhelmingly mainland Christians drawn from relatively affluent regions of Tanzania such as Kilimanjaro, which possess more highly developed school systems. Sent to the poor and remote district of Mafia, these officials tended to view the islands and its Muslim residents with disdain and one mainlander described Mafia to me as a 'punishment post' for officials. The fact that Mafia residents were almost never appointed government officials themselves stems from the peculiar patterns of educational access set into motion during the colonial era. Under the British, schooling was largely ignored and left to Christian missionaries, a situation which was to have a profound impact on contemporary Tanzania.[14] While some areas such as Kilimanjaro were early sites of Christian missionary activity and produced a high number of students with access to secondary and tertiary education (including most of the government officials involved in the marine park), other regions, particularly Muslim ones resistant to proselytization, were largely excluded from 'modern' education (Illife, 1979). Indeed, Mafia is widely rumored to be the last district in all of Tanzania to have a secondary school built, the first one opening in the mid-1990s during the course of my fieldwork. Mafia residents have been thus almost entirely excluded from Tanzania's ruling class of government civil servants, those whom Shivji has acerbically termed the 'bureaucratic bourgeoisie' (1976).

In short, access to formal education has performed a double duty: it structures attitudes towards popular knowledge while also providing the credentials necessary to gain jobs, resources and, ultimately, political power within the nation-state. Just as the high pay scales of Euro-American development workers cause resentment among Tanzanian government officials who are often paid below-subsistence wages in a climate of austerity measures and devalued currencies, profound tensions also exist between government elites and rural residents. Indeed, Mafia residents claimed that the 'educated' used their positions for personal advancement and argued that 'greed' lay at the heart of struggles over dynamiting within the Mafia Island Marine Park. Although both government officials and international organizations argued that the inability to stop dynamiting was due to a lack of resources or 'capacity' (*uwezo*) on the part of government institutions, residents argued that the problem lay elsewhere, claiming that government officials were in fact 'cooperating' with the dynamiters. One resident, for example, bitterly contended that those who were supposed to be 'protecting the fish' on Mafia would instead:

> . . . stay inside their nice houses, taking naps after they have received their salaries, while those who come to dynamite come and steal the fish and then go on their way. The news is brought to them [Maritime government division] that the fish are being stolen, but by that time the dynamiters have already left. . . . What we say among ourselves is that maybe this kind of thing is a

> result of the 'big people' themselves, if you understand what I mean. Those boats that are coming to do the dynamiting, maybe they are operating in conjunction with the 'big people' themselves, in other words those who are getting the money and profiting, such as those at 'Mali Asili', although by secret means [Mali Asili is the Natural Resources Department of which Maritime is a subdivision]. Indeed those who are coming to do such things [as dynamiting] are 'feeding' them [i.e. bribing the 'big people'].

This focus on the 'big people' or the educated bureaucrats who are thought to be enjoying the good life at the expense of the impoverished majority offers a portrait of class dynamics within Tanzania from the point of view of the rural poor. A context of massive national debt to international bodies, of devalued agricultural prices on a world market, and of internationally mandated government cut-backs on hiring and social services, suggest how local dynamics are nested within international relations and hierarchies. Given this context, virtually all Tanzanians are dependent upon the 'informal' economy to survive, with the select few who possess jobs in the formal or state sector regularly using such positions to 'get by' in both legal and non-legal ways (for example, Tripp, 1997). For educated government officials through whom the resources of international organizations are channeled, such access serves not only as a means of survival, but as an opportunity to prosper and attain power.[15] In general, such dynamics appear to be contributing to an explosion of class differentiation within Tanzania, which parallels similar developments in other post-socialist locations such as Eastern Europe and Russia (Verdery, 1996).

In sum, the valorization of scientific knowledge and formal education both internationally and within Tanzania serves both as a marker of class status and as a means of upward social mobility, dynamics which ironically run counter to the growing interest in 'indigenous knowledge' and 'participation' expressed by international organizations (Pigg, 1997). Euro-American backgrounds were not only symbolically coded as being more 'modern' or of higher status internationally, but they are often explicitly associated with 'science' (as I discovered as a high school teacher in neighboring Kenya when I was told that I was qualified to teach chemistry because I was white). Such tendencies, and the fact that international organizations assume, in their procedures and workings, the kinds of knowledge readily possessed by middle-class Euro-Americans, suggest one of the means by which hierarchical status comes to be reproduced internationally. Tanzanian elites, who were not afforded such *a priori* status, relied heavily upon scientific knowledge and other elite cultural markers to buttress their social position in relation to rural villagers and to gain respect internationally. Thus, for both Euro-American and Tanzanian experts, disdain for popular knowledge offered possibilities for reproducing existing class positions.

Science, bureaucracy and popular knowledge

Although scornful attitudes toward popular knowledge were widespread within the park, a minority of Euro-Americans and Tanzanian elites expressed interest in 'local knowledge' and reformist efforts gaining ground within international organizations. However, even in such instances, institutional dynamics continued to exclude the popular knowledge of Mafia residents. For example, two marine scientists, one Tanzanian and one British, both of whom held positions of authority within Tanzania's Institute of Marine Sciences, were crucial figures in the establishment of the marine park and were advocates of 'community participation' as well as attention to 'local knowledge'. In addition, the Australian WWF Technical Adviser for the park, who served as the counterpart to the Acting Warden between 1994 and 1997, fought endless political battles to actively include island residents in decision-making processes and to make 'participation' more than mere rhetoric. Trained in the marine sciences, these men, in interviews as well as casual conversation, at times expressed the wistful desire to be out in boats with Mafia's fishers rather than be bound to offices, and they appeared motivated by a pragmatic respect for the experience of those who had spent a considerable part of their lives in boats and on the water. Their interest was neither a romanticized fascination with the 'indigenous' expressed by some tourists and environmentalists, nor was it, in most cases, the desire to have residents define the parameters of the park from the ground up. Rather, such individuals were largely interested in the pragmatic goal of using such knowledge to further the internationally defined goals of conservationists and to rationally manage marine resources.

In the end, however, the interest these men expressed towards the popular knowledge of Mafia residents would remain largely undeveloped and unexplored as would their wistful desire to spend more time in boats. Ironically for a park conceptualized in terms of 'participation', the bureaucratic organization of the marine park left almost no room for such endeavors. Indeed, the knowledge that Mafia residents possessed about the marine environment was largely deemed extraneous to the bureaucratic organization of the park as conceived by international organizations. Although in the park's planning stages, the British and Tanzanian marine biologists *did* go out in boats with Mafia residents to help determine the boundaries of the proposed marine park, such efforts were brief (too brief, as residents complained) and were often part of formal excursions with government officials, a situation which made it difficult for Mafia residents openly to express their views.

When attempts *were* made to incorporate popular knowledge, such knowledge was reduced to information to be slotted into pre-existing bureaucratic frameworks. For example, in the years following the

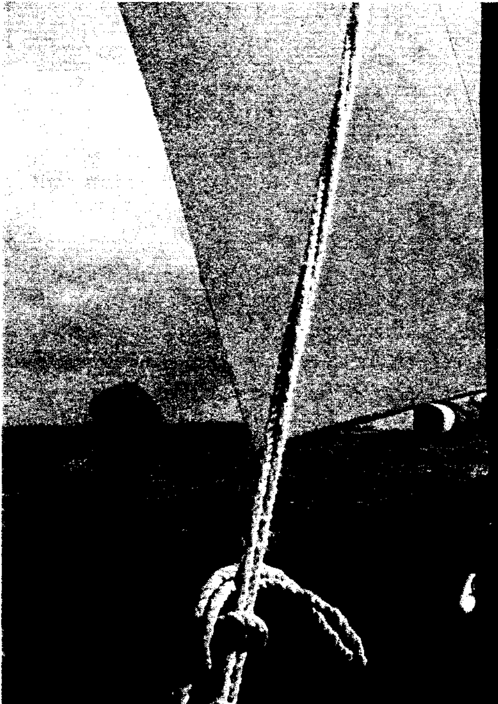

Figure 2 Sailing in Chole Bay.

establishment of the park, efforts were made to solicit 'local knowledge' through Participatory Rural Appraisal (or PRAs), a survey technique commonly used by international organizations engaged in 'participatory' work with rural people in the so-called 'Third World'. Indeed, WWF had allotted funding for its community development staff (a Tanzanian mainlander and a Mafia resident) to gather baseline information about the 10 villages within the park. However, the 'Village Holistic Study' was intended only to gather information that could be fitted within a pre-determined park structure; it was not designed to aid in the formation of the marine park itself. Indeed, this study was only completed several years *after* the official gazetting of the marine park and only a small portion of it would ever be translated into English (making it unlikely that its findings would circulate off the island). Instead, the organization of Mafia's marine park had emerged fully formed from the national and international institutions which had conceived the park, drawing upon generic management models offered in the IUCN guidelines and based on the Great Barrier Reef marine park in Australia (Andrews, 1999).

Figure 3 A mashua, or wooden sailboat, commonly used by Mafia residents.

In the end, whether or not the popular knowledge of residents would be incorporated within the Mafia Island Marine Park was determined not by the individual proclivities of NGO representatives, the stated policies of organizations like WWF, or even the accuracy or usefulness of particular information. Instead, the key factor proved to be whether information was accessible in a format easily recognizable and digestible by scientifically and managerially oriented bureaucracies. Such formats required not only advanced educational requirements for legitimate expression, but the use of English, the international lingua franca, to allow circulation in the international development and conservation world. As one of the community development officers complained to me, even after the painstaking compilation of the knowledge of hundreds of Mafia's fishers, it was difficult to get anyone at national and international levels to acknowledge such information since it was 'not based on citations' (see also Latour, 1987).

It comes as no surprise, then, to find that not all of the information compiled for the park could be deemed 'good'. Scientists and academics recognize as a matter of course that some scholarship is better than others, just as Chole residents make distinctions about who possesses more reliable knowledge about fishing and the history of the region. Many of the reports which I read that had been written about Mafia were undertaken by

educationally credentialed researchers and consultants who had visited Mafia only briefly (in some cases only weeks) and were frequently riddled with inaccuracies, as the leading WWF representative for the marine park himself complained. Despite potential problems, however, reports and articles generated by credentialed professionals had the power to circulate in WWF and government offices as well as in other national and international venues in ways in which the knowledge possessed by Mafia's fishers, even those who have fished for most of their adult lives and have formidable practical experience of Mafia's waters, did not (see also Latour, 1987).

The ability of such institutionalized knowledge to circulate also meant that it had the capacity to take on a life of its own (see also Weber, 1958). To offer one example, a British battleship mapped the coastal waters around Mafia in the early 1800s (Baumann, 1957[1895]), marking an uninhabited island near the mouth of Chole Bay as 'Jina Island'. This island, however, is popularly known on Mafia as 'Miewe'. However, subsequent maps of the region, from the colonial to the post-colonial era, as well as some reports on the marine environment written by Europeans (again inaccessible to residents) continue to refer to the island as Jina. As I sat reading one such report in Chole's camp, I puzzled over this tendency to refer to Miewe as 'Jina'. Juma Hassani, who had worked in the past for British divers doing research on the marine environment, gave a laugh of recognition. He revealed that the divers had often asked him about an island called 'Jina' of which he had never heard. He smiled, noting that they must have thought him a fool for denying any knowledge of an island that was only a short distance from Chole and well-known to all fishers on Mafia.

In short, knowledge about Mafia generally circulated along distinct tracks. Knowledge documented on paper and written in English or which was produced and recorded by those with official positions or proper educational credentials readily circulated in the national and international offices of conservation and development organizations. This track is based upon literacy and follows the conventions of international bureaucracies or of scientific scholarship (regardless of its potentially paltry or even inaccurate nature). It is this track which has almost exclusively been drawn upon in the creation and implementation of the Mafia Island Marine Park. In contrast, the popular knowledge of those living on Mafia circulates along another track. Expressed in KiSwahili, often built upon long experience in the region and linking coastal residents largely (but not exclusively) by word of mouth, this knowledge circulates in ways that are excluded from, and unrecognizable by, 'modern' institutions and is easily marginalized as 'local' or 'traditional' by national and international elites. In the end, it was more than the disdainful attitudes that some experts like Johan held towards popular knowledge which excluded such knowledge from the workings of the Mafia Island Marine Park. There was also the unspoken reality of a

bureaucratic structure premised on advanced education which allowed the formally trained to both 'participate' and reproduce their status, while simultaneously excluding the marginalized people it claimed to incorporate.

'Sisi tusiosoma': 'we the uneducated'

How did Mafia residents themselves evaluate the kinds of knowledge they possessed in relation to national government officials and representatives of international organizations? In this final section, I argue that the Chole residents with whom I spoke displayed considerable ambivalence towards their own knowledge. While residents at times expressed the denigrating viewpoints espoused by national and international elites, at others times they explicitly countered such accounts in ways that supported the validity of their own knowledge. Unlike national and international elites, Chole residents were noticeably eclectic in their knowledge practices, readily combining scientific with popular knowledge. Rather than emphasizing presumed differences between types of knowledge, they instead underscored what they perceived to be the problematic relationship between the 'educated' and the 'uneducated'.

Many Chole residents I knew held an ambivalent attitude towards the 'expert' knowledge which they were assumed to lack, whether in relation to national elites or to Euro-Americans. Although people on Chole shared the widespread hopes for development that flowered across the 'Third World' in the post-independence period, they perceived 'development' (*maendeleo*) less in terms of broader societal transformation with evolutionary overtones than as a means for individuals to achieve greater personal or family prosperity (Walley, 1999, 2002). Nevertheless, an assumption of development ideology also meant an assumption of equally widespread beliefs about the centrality of education to development and the 'backwardness' and supposed lack of knowledge of rural and presumably 'traditional' villagers. Indeed, people on Chole constantly referred to themselves as *sisi tusiosoma* or 'we the uneducated', even though most younger people on the island had attended primary school and many of the older men (although not women) were literate in KiSwahili written in Arabic script (although not the Roman alphabet that had replaced it under British colonial rule). Although residents often boldly expressed their views on the marine park in private, at public meetings attended by government officials they were often silent and at times noticeably nervous. One older man asked to speak on behalf of residents at a village meeting with the government District Commissioner (DC) prefaced his comments by asking the DC's indulgence that he, as 'someone who is uneducated', should presume to speak.

Some Chole residents also possessed exaggerated understandings of 'modern' book-learning as well as respect for the technical knowledge associated in their minds with *wazungu* (Europeans). For example, one elderly woman, Bi Rehema, informed my fellow anthropologist Rachel Eide

that *wazungu* 'knew everything'. When Rachel protested, Bi Rehema countered, 'Tell me, is it true that *wazungu* sent people to the moon?' When Rachel acknowledged this was true, Bi Rehema responded, '*Bas*', meaning 'enough' or 'no more need be said'. Nevertheless, others were more skeptical. Idi Ibrahim, the night watchman at Chole's tourism camp, also asked me whether it was true that *wazungu* had sent people to visit the moon, but this time implying that such a story might have been circulated to mock the presumed gullibility of Africans. My affirmative answer did nothing to alter his skeptical expression. On another occasion, I was looking over a picture book about dinosaurs procured for Chole's primary school through a US-based non-governmental organization. As my friend Fatuma examined photographs of an archeological dig in which crews were uncovering enormous bones, she smiled and announced in a tone conveying both admiration and bemusement that *wazungu* were very 'naughty' (*watundu*) for digging up the remains of the past. The ambivalence in this comment captures both a respect for the technological endeavors associated with Euro-Americans and a perplexity over their motivations which equated Euro-Americans with precocious but naughty children.

In other instances, however, residents seemed confident in their knowledge about the environment on Mafia. Although few would publicly contradict elites whom residents clearly expected to lecture rather than converse with them, in private some displayed a strong assurance in their own knowledge. Mzee Bakari told me how as a young man he had been sent to a fishing school in Mtwara, led by educated mainlanders (i.e. people who were not themselves fishers). Mzee Bakari encouraged the instructor to teach by doing rather than from books, protesting that the men from Mafia already knew what was contained in the books. The teacher, however, ignored his suggestion. Near the end of the course, the class went on a field trip to the ocean and the instructor demonstrated the laying of a fish trap. Mzee Bakari protested that the winds were wrong and that the trap would not catch any fish. The next day, in accordance with his prediction, there was nothing in the trap except a single small fish. Mzee Bakari, who had been chosen leader (*mwenyekiti*) of his group, triumphantly related how he had then set a trap himself which brought in a large haul the following day. Clearly, this story was intended to underscore the value of residents' (as well as his own) knowledge in contrast to 'experts'.

This range of daily encounters suggests the ambivalence that Mafia residents held towards their own knowledge. Drawn from historically diverse origins and compounded by extensive daily experience, such knowledge was nevertheless easily assumed to be insignificant, 'backwards' or inaccurate in both national and international contexts. While proponents of indigenous knowledge often assume the societies they discuss to be bounded social entities, Mafia residents themselves did not. Unlike 'experts', Mafia residents

failed to make rigid distinctions between science and popular knowledge and were open to incorporating scientific understandings into their own knowledge practices. This stance contrasted sharply with some Euro-American researchers and expatriates who were skeptical or even defensive in the face of islanders' knowledge.

The reality that science and 'indigenous' knowledge need not be seen in opposing terms was brought home to me as I translated for visiting Euro-American professionals who were working as part of the community-based tourism project on Chole. To offer one telling experience of this kind, I translated for a British naturalist, Geoffrey Owens, who spent several months on Chole creating a nature trail and an accompanying booklet for tourists. Geoffrey first gathered scattered information about Chole's natural life from conversations with residents who were working or passing through the camp. He constructed the rest of the trail on his own, however, drawing on his prior knowledge as a naturalist. Once the trail was completed, Geoffrey again asked me to translate as he offered two guided tours of the trail: one, with children from Chole's primary school; the second, with members of a village committee involved in the ecotourism project on Chole.

What emerged, to Geoffrey's good-natured chagrin, was less a 'tour' than the give-and-take of a learning session in which he was more often the recipient of information than the teacher. The schoolchildren already knew most of the information the trail was designed to teach. For example, when Geoffrey tried to stump them by asking whether the large fruit bats on the island were birds or animals, the children readily responded that the creatures were animals 'because they suckle their young'. However, the children *were* intrigued to learn information to which they did not have access – the word for 'mangrove' in English, the territorial range of the fruit bats, and the migratory patterns of birds which traveled from Mafia to as far as South Africa and Europe. The tour also created the impression among the schoolchildren that the trail was not simply for foreign tourists but theirs, and I later spied children taking their younger siblings, generally easily captive toddlers, on the tour and explaining to them in worldly tones what was to be learned at each station of the trail. Later that day, the adult women and men of Chole's committees emerged even more clearly as Geoffrey's teachers, correcting information and themselves explaining the role of bats in pollinating the baobab trees, the varieties of mangroves found around Mafia, the ways to differentiate among types of termites as well as their idiosyncratic behaviors, and the nature of parasitic 'strangler fig' trees and why such trees grew on the tops of the stone ruins that littered the island (the answer: birds who had eaten their seeds excreted them on the roof tops). However, they were again fascinated by pieces of information to which they could not normally gain easy access by observation and, when Geoffrey brought out his beautiful ink drawings of the plants, birds and

wildlife of the island, they were particularly thrilled, one elderly woman proclaiming him truly an 'expert' (*mtaalamu*).

Although such scattered moments of shared knowledge were remarkably few within the marine park despite its promotion as a 'participatory' project, the openness Mafia residents demonstrate towards knowledge holds, I believe, a radical potential. Such eclecticness has the ability to contest what Pigg calls the 'narrative of modernity' (1996) which presumes that 'modern' forms of knowledge are inherently superior and inexorably replacing popular knowledge (or, in the view of some 'indigenous knowledge' advocates, a romantic hold-out against the ruthlessly encroaching 'modern' world). Since this radical separation between knowledges, ultimately, works to increase the status of science and its practitioners (and similarly to decrease the status of popular knowledge and those associated with it), the readiness of Mafia residents to bridge this divide – indeed their failure to assume that a divide necessarily exists – serves to challenge the commonplace links between power and knowledge forged within international and national institutions as well as scholarship.

'Stealing education'

The role that knowledge plays as a cultural marker of social class became even clearer when I returned to Tanzania to conduct follow-up research in July 2000. By this point, the relationship between the marine park and Mafia residents had deteriorated markedly. Although residents were happy that the park had been successful in eradicating dynamiting,[16] they declared that park officials were now waging a 'war' against them by unilaterally instituting regulations which fundamentally threatened their livelihoods. One day, Mzee Bakari drew me aside and once again used the social differentiation between the 'educated' and the 'uneducated' to explain existing power relationships within the marine park. He argued:

> . . . Those people [from the marine park] shouldn't be snatching all the decision-making power to themselves to do with as they please. It shouldn't be so. . . . If the fishers could meet together with those from the Maritime Department and if those [from Maritime] would listen, they could reach an agreement. And then, in my view, there wouldn't be any argument. But those people [from the marine park] oppose this and are [instead] robbing us of our birthright. They have already studied and received their education, and indeed they are 'stealing' their education for themselves [i.e. using it for personal advancement rather than to help others]. [But] people here [on Mafia] have their own education [i.e. knowledge]. In other words, they are people from here, their origins and their lineages are from here, and they have been making their living here. Things have turned out as they have [i.e. badly] because [marine park officials] are robbing these people of their livelihoods which have been given to them by God and simply because [people here] are uneducated.

Mzee Bakari elaborated upon the power dynamics at work by noting that the educated assume that their own minds (*ubongo*) 'work well' while denigrating the thought processes of the uneducated. He countered this view with a proverb which translates into standard KiSwahili as *Mjinga akierevuka, mwerevu iko mashakani* – 'When the fool becomes clever, the clever one has doubts'. Its meaning, according to Mzee Bakari, is that when an ignorant person acquires knowledge through experience or long-term residence in a place, the clever become upset. Since their authority over the 'ignorant' is based on the lack of education of the latter, when the formerly ignorant acquire or possess knowledge, the clever then have a 'problem' (*matatizo*). He concluded by explicitly linking the meaning of this proverb to the dynamics of the marine park.

> Those people [from the marine park] are the clever ones and the fishers here are the ignorant ones. But even in their ignorance they [the fishers] understand the situation. . . . The [park officials] continue with their work but it's apparent that [the knowledge] is just in their heads. Just in their heads. [They simply say] 'Things should be done this way', and so they make decisions for us. Basically, I'm saying we should be accorded more worth, but [as things stand] this is impossible, it complicates things [for them]. It would be better for the ignorant and the clever to sit down together and come to an agreement. It's better than this [what's now happening with the marine park], better than robbing a person and then saying don't mention your hunger or don't eat – a person can't agree to that! . . . Indeed our life is based on this [using natural resources in the area]. Now for those who are coming here with their education and forbidding these things, what are they doing? Have they thought about these things?

Mzee Bakari's comments offer a powerful statement of the relationship between power and knowledge and the role that education plays as a marker – and as a purveyor – of class-based distinctions within the Mafia Island Marine Park. In a contemporary climate in which many international organizations and academics are shifting their attention to the virtues of 'participation' and popular knowledge, these unacknowledged power relationships work to exclude both. In this article, I have argued that the tracking of knowledge within the Mafia Island Marine Park was ultimately based, not on the inherent superiority of particular kinds of knowledge or, alternately, the desire to incorporate 'participation', but by broader institutional dynamics and power relationships left unexamined by advocates of both scientific and indigenous knowledge. In his book Expectations of Modernity, James

Ferguson (1999) noted that many Zambians in the post-independence era held high hopes that an unfolding 'modernity' would provide a better life. Yet, like many others in sub-Saharan Africa, they have been bitterly disappointed by growing poverty and hardship in a region that has been widely ignored in contemporary discussions of 'globalization' and redlined in international markets. In order to draw attention to international inequality without resorting to teleological narratives of development or modernity, Ferguson suggests that it might be necessary to combine newer ideas and social movements with those resurrected from what some might view as the dustbin of history (1999: 257). Class, I would argue, is one such concept. This article has suggested that environmental knowledge is not only a utilitarian source of information but a potent cultural marker of class, as Pierre Bourdieu so influentially demonstrated for issues of taste (1984). Although Bourdieu's work on the relationship between taste, education and class might be challenged for its overly deterministic emphasis on a habitus built upon accumulated experiences within particular class locations, his ground-breaking analysis nevertheless opened up a powerful field for exploration. Combining the more open-ended aspects of Bourdieu's account with post-colonial critiques, post-structuralist accounts of identity and recent attempts to rethink Marxism, allows us to examine the role that class plays across international boundaries in ways that are both structural and highly symbolic. It permits us to consider class in terms of both self-identity and the perceptions of others, in relation to hopes and fears as well as currently realities, and through the ways in which knowledge and other class markers come to be actively mapped on others, appropriated, played with, misread and struggled over. In its revitalized form, the concept of class might prove extremely helpful in making sense of the growing inequalities both within countries and between them in what is widely portrayed as a 'globalizing' era. Following Mzee Bakari's lead, a useful place to begin is by addressing the nexus of education, knowledge and social distinctions found in places like Mafia and beyond.

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Notes

1 I conducted 19 months of fieldwork on Mafia between 1994 and 1997. As a way to make the research process more reciprocal, I regularly conducted English classes for both women and men on the island. Such arrangements were made through a community-based 'ecotourism' project on Chole led by a US citizen and two white Africans. See also Walley, 1999.

2 Chole residents did acknowledge that a handful of recent immigrants to Mafia as well as a few socially marginal long-term residents also participated in the dynamiting. Nonetheless, they supported strong measures against all who engaged in the practice, viewing dynamiting as the 'theft' of local resources from other residents. Given the illegal nature of the practice, it was difficult to obtain information about the identity of dynamiters. According to Mafia residents, European expatriates and some government officials, however, dynamiters were wage laborers from Dar es Salaam who were hired by national elites. Although it is illegal to purchase dynamite in Tanzania, such elites were thought to obtain explosives through internationally sponsored road construction projects. For further discussion of the social dynamics of dynamiting, see Walley, 1999.

3 In this article, I rely on the term 'popular knowledge' rather than 'indigenous', 'local' or 'traditional' knowledge. I find the terms 'indigenous' and 'traditional' problematic because of the strong connotations of bounded, static societies cut off from contemporary historical dynamics and interaction with other groups. The term 'local' knowledge implies that such knowledge exists as separate from – rather than as intertwined with – 'global' dynamics, suggesting a false spatialization of social processes. Although not without its own problems, the term popular knowledge is helpful in that it is less symbolically loaded and can refer to non-institutionalized forms of knowledge in Europe and the US as readily as countries in Africa (for example, Lave, 1996). I would like to thank MaryBeth MacPhee for suggesting this term.

4 Concepts of 'participation' are not new in Tanzania, having first made their appearance in the country's post-independence period in the 1960s. In practical terms, however, slogans of 'participation' or 'self-help' as used by the socialist government meant citizens acting out development agendas and other policies determined from above. While it is unclear whether the current attention to 'participation' will in fact be more democratic, as an ideal it differs sharply from past conservation policies in both colonial and post-colonial eras in Tanzania.

5 The Mafia residents I spoke with wanted tourism but were more realistic in accessing its benefits than international organizations. In addition to worries about land rights, residents recognized that only a relatively small number of people would benefit from jobs in the tourism industry and that

below-subsistence wages meant that the families of wage-earners would continue to rely upon both subsistence and market-oriented farming and fishing in order to survive. For this reason, park residents expressed far greater concern with fishing than tourism (see Walley, 1999).

6 Anthropologists in previous eras, for example, challenged stereotypical assumptions of the allegedly superstitious beliefs of non-western peoples by demonstrating that 'primitive' knowledge systems were, in fact, well-reasoned or erected upon similar foundations to western science (Evans-Pritchard, 1937; Goody, 1968, 1977; Horton, 1967; Levi-Strauss, 1966; Levy-Bruhl, 1926). Still others offered an 'ethnomethodological' cataloguing of such knowledge (for example, Garfinkel, 1967; Goodenough, 1981). Although such work originated from a relativistic standpoint that sought to foster cross-cultural understanding, such approaches also tended to reproduce problematic assumptions that the world could be neatly divided into 'modern' societies and their so-called primitive, traditional or small-scale counterparts.

7 The concept of the 'indigenous' has been widely criticized for depicting particular groups – and the knowledge they possess – as static and isolated from broader social and historical dynamics, much like previous concepts of the traditional or primitive (Agrawal, 1995; Ellen, 1986; Gupta, 1998). However, it has also been acknowledged that some minority groups can strategically use the concept of the 'indigenous' as a springboard for political organizing (Gupta, 1998; Spivak, 1995). Mafia residents themselves have an ambiguous relationship to the term 'indigenous'. Originally, 'indigenous' was used to refer to descendants of aboriginal groups living in the New World at the time of European colonization (Brush and Stabinsky, 1996: 1–12). More recently, however, the term has spread to encompass a range of groups in other parts of the world and some, such as Maasai activists in East Africa, have laid claim to this label because of its ability to function as a language of entitlement in international (and to some extent, national) settings (for example, Hodgson, 2002). Indeed, there is a growing tendency for Africans from a range of ethnicities, as well as elites working within international organizations or in universities, to refer to themselves as 'indigenous'.

Mafia residents, however, who rarely speak English and are distant from such international trends, do not refer to themselves as 'indigenous'. Nor are they described in this way by international organizations working on Mafia, presumably out of deference to the coast's cosmopolitan and Islamic historical past (they are instead referred to as 'local communities' – a concept with similar connotations). Nevertheless, the broader framework for discussing popular knowledge within the Mafia Island Marine Park and for incorporating the legal rights of residents within nature parks and reserves in general has clearly drawn upon international discussions of the 'indigenous' and 'indigenous rights'. For example, the European legal consultant who developed the legislation for the Mafia Island Marine Park notes that the provisions for incorporating Mafia residents within the park '... are quite unusual in that they protect local residents who are not tribal groups or ethnically or culturally separate communities' (Young, 1993: 172) – a reference to the primacy of the 'indigenous' paradigm. The obvious question, of course, is why marginalized groups should have to dress themselves in the mantle of the 'indigenous' in order to claim rights.

8 The emerging literature on the anthropology of development includes Benjamin (2000); Escobar (1995); Ferguson (1994); Gupta (1998) and Pigg (1996, 1997) among others. Other critical theorists include Mitchell (1998) and the contributors to Cooper and Packard (1997) and Crush (1995).

9 Cooper and Packard (1997) also emphasize the historical appropriation and re-working of the concept of development. For ethnographies that explore understandings of 'modernity' from non-western points of view, see Donham (1999) and Rofel (1998).

10 I would like to thank Ayala Fader for suggesting this point.

11 For a few of the many ethnographic and historical accounts of coastal Swahili society, see Caplan (1975, 1997); Cooper (1977, 1980); Fair (2001); Glassman (1995); Middleton (1992) and Sheriff (1987). For a discussion of the Indian Ocean trading world see Abu Lughod (1989) and Chaudhuri (1985).

12 All names are pseudonyms including that of the 'Maritime Division'.

13 For discussions of conservation polices in Africa, see Anderson and Grove (1987); Feierman (1990); Maddox et al. (1996); Moore (1993) and Walley (1999) among others.

14 For discussions of the role of education and expertise in Tanzania, see Coulson (1982); Illife (1979); Scott (1998); von Freyhold (1979). For discussion of the dominance of the 'bureaucratic bourgeoisie' as a class, see Shivji (1976).

15 Worries about the proper use of funds was pervasive within the Mafia Island Marine Park. For a more detailed discussion, see Walley (1999).

16 After many political battles, dynamiting was eradicated after a Boston Whaler speedboat was brought to Mafia to patrol against dynamiters in 1997. For a further account of the social struggles surrounding dynamiting, see Walley (1999).

References

Abu Lughod, Janet L. (1989) *Before European Hegemony: The World System A.D. 1250–1350*. New York and Oxford: Oxford University Press.

Adams, Jonathan S. and Thomas O. McShane (1992) *The Myth of Wild Africa: Conservation Without Illusion*. New York: W.W. Norton.

Agrawal, Arun (1995) 'Dismantling the Divide between Indigenous and Scientific Knowledge', *Development and Change* 26: 413–39.
Anderson, David and Richard Grove (1987) *Conservation in Africa: People, Policies and Practice*. Cambridge: Cambridge University Press.
Andrews, Greg (1999) 'Implications of Applying a Marine Park Paradigm in a Developing Country'. Unpublished conference paper.
Baumann, Oscar (1957 [1895]) 'Mafia Island', *Tanganyika Notes and Records* 46: 1–24.
Benjamin, Martin (2000) 'Development Consumers: An Ethnography of "the Poorest of the Poor" and International Aid in Rural Tanzania'. Unpublished PhD dissertation. Yale University.
Bourdieu, Pierre (1984) *Distinction: A Social Critique of the Judgement of Taste*. Cambridge, MA: Harvard University Press.
Brokensha, David, D.M. Warren and Oswald Werner (1980) *Indigenous Knowledge Systems and Development*. Lanham, MD: University Press of America.
Brosius, J. Peter (1997) 'Endangered Forest, Endangered People: Environmentalist Representations of Indigenous Knowledge', *Human Ecology* 25(1): 47–69.
Brosius, J. Peter (1999) 'Anthropological Engagements with Environmentalism', *Current Anthropology* 40(3): 277–309.
Brush, Stephen and Doreen Stabinsky (eds) (1996) *Valuing Local Knowledge: Indigenous People and Intellectual Property Rights*. Washington, DC: Island Press.
Caplan, Patricia Ann (1975) *Choice and Constraint in a Swahili Community: Property, Hierarchy, and Cognatic Descent on the East African Coast*. London: Oxford University Press.
Caplan, Patricia Ann (1997) *African Voices, African Lives: Personal Narratives from a Swahili Village*. London and New York: Routledge.
Carr, Edward (1998) 'Survey: The Sea', Special Section, *The Economist* 23 May: 1–18.
Chaudhuri, K.N. (1985) *Trade and Civilization in the Indian Ocean*. Cambridge: Cambridge University Press.
Cooke, Bill and Uma Kothari (eds) (2001) *Participation: The New Tyranny?* London and New York: Zed Books.
Cooper, Frederick (1977) *Plantation Slavery on the East Coast of Africa*. New Haven, CT: Yale University Press.
Cooper, Frederick (1980) *From Slaves to Squatters: Plantation Labor and Agriculture in Zanzibar and Coastal Kenya 1890–1925*. New Haven, CT: Yale University Press.
Cooper, Frederick and Randall Packard (eds) (1997) *International Development and the Social Sciences: Essays on the History and Politics of Knowledge*. Berkeley: University of California Press.
Coulson, Andrew (1982) *Tanzania: A Political Economy*. Oxford: Clarendon Press.

Craig, Gary and Marjorie Mayo (1995) *Community Empowerment: A Reader in Participation and Development*. London: Zed Books.
Crush, Jonathan (ed.) (1995) *Power of Development*. London and New York: Routledge.
Donham, Donald (1999) *Marxist Modern: An Ethnographic History of the Ethiopian Revolution*. Berkeley: University of California Press.
Ellen, Roy F. (1986) 'What Black Elk Left Unsaid: On the Illusory Images of Green Primitivism', *Anthropology Today* 2(6): 8–12.
Escobar, Arturo (1995) *Encountering Development: The Making and Unmaking of the Third World*. Princeton, NJ: Princeton University Press.
Evans-Pritchard, E.E. (1937) *Witchcraft, Oracles and Magic Among the Azande*. Oxford: Clarendon Press.
Fabian, Johannes (1983) *Time and the Other: How Anthropology Makes its Object*. New York: Columbia University Press.
Fair, Laura (2001) *Pastimes and Politics: Culture, Community, and Identity in Post-Abolition Urban Zanzibar, 1890–1945*. Athens, OH: Ohio University Press and Oxford: James Currey.
Feierman, Steven (1990) *Peasant Intellectuals: Anthropology and History in Tanzania*. Madison: University of Wisconsin Press.
Ferguson, James (1994) *The Anti-Politics Machine: 'Development,' Depoliticization, and Bureaucratic Power in Lesotho*. Minneapolis and London: University of Minnesota Press.
Foucault, Michel (1970) *The Order of Things: An Archaeology of the Human Sciences*. New York: Vintage Books.
Foucault, Michel (1977) *Discipline and Punish*. New York: Vintage Books.
Foucault, Michel (1981) *Power/Knowledge: Selected Interviews and Other Writings*. New York: Pantheon.
Garfinkel, Harold (1967) *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.
Gibson-Graham, J.K., Stephen A. Resnick and Richard D. Wolff (eds) (2000) *Class and its Others*. Minneapolis: University of Minnesota Press.
Gibson-Graham, J.K., Stephen A. Resnick and Richard D. Wolff (eds) (2001) *Re/Presenting Class: Essays in Postmodern Marxism*. Durham, NC: Duke University Press.
Glaesel, Heidi (1997) 'Fishers, Parks, and Power: The Socio-Environmental Dimensions of Marine Resource Decline and Protection on the Kenya Coast'. Unpublished PhD dissertation. University of Wisconsin.
Glassman, Jonathon (1995) *Feasts and Riot: Revelry, Rebellion, and Popular Consciousness on the Swahili Coast, 1856–1888*. London: James Currey.
Goodenough, Ward (1981) *Culture, Language and Society*. Menlo Park, CA: Benjamin Cummings.
Goody, Jack (1968) *Literacy in Traditional Societies*. Cambridge: Cambridge University Press.

Scott, James (1998) *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed.* New Haven, CT: Yale University Press.

Sheriff, Abdul M.H. (1987) *Slaves, Spices and Ivory in Zanzibar.* London: James Currey.

Shiva, Vandana (1988) *Staying Alive: Women, Ecology and Survival in India.* London: Zed Books.

Shivji, Issa (1976) *Class Struggles in Tanzania.* London: Heinemann.

Spivak, Gayatri (1995) *The Spivak Reader.* New York: Routledge.

Tripp, Aili Mari (1997) *Changing the Rules: The Politics of Liberalization and the Urban Informal Economy in Tanzania.* Berkeley: University of California Press.

Traweek, Sharon (1992) *Beamtimes and Lifetimes: The World of High Energy Physicists.* Cambridge, MA: University of Harvard Press.

Verdery, Katherine (1996) *What Was Socialism, and What Comes Next?* Princeton, NJ: Princeton University Press.

von Freyhold, Michaela (1979) *Ujamaa Villages in Tanzania: Analysis of a Social Experiment.* New York and London: Monthly Review Press.

Walley, Christine J. (1999) 'Making Waves: Struggles over the Environment, Development and Participation in the Mafia Island Marine Park, Tanzania'. New York University. Unpublished PhD dissertation.

Walley, Christine J. (2002) *Our Ancestors Used to Bury their Development in the Ground: Modernity and the Meaning of Development within the Mafia Island Marine Park, Tanzania.* Unpublished manuscript.

Weber, Max (1958) *From Max Weber: Essays in Sociology.* New York: Oxford University Press.

Young, Tomme R. (1993) 'Legal and Institutional Issues on Integrated Coastal Zone Management Programs in East Africa', in O. Linden (ed.) *Integrated Coastal Zone Management in Eastern Africa including the Island States*, pp. 143–82. Arusha, Tanzania: Swedish Agency for Research Cooperation with Developing Countries Marine Science Program.

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