Tropical forests, which provide rich resources and critical eco-services, are under severe stress.\(^1\) Some theories regarding the causes of this stress emphasize "irreducible complexity,"\(^2\) while others point to specific factors, such as population pressures or human encroachment through "shifting cultivation."\(^3\) Deforestation is indeed complex, in part because it is linked not only to economic and social dynamics at both global and local levels, but also to questions of power and politics.\(^4\) Nowhere is this more evident than in the ongoing struggle over the Mau Forest in Kenya.

Spanning 900 km\(^2\), the Mau forest is a complex of sixteen contiguous forests and six separated satellite forests. Together, they form a single ecosystem and make up the largest remaining indigenous forest in East Africa. While less is known about this forest than many other East African forests, the Mau forests complex is immensely important, as it serves as a catchment for rivers west of the Great Rift Valley. These rivers in turn feed major lakes in the region, including Lake Nakuru and the trans-boundary lakes of Lake Victoria in the Nile River Basin, Lake Turkana in Kenya and Ethiopia, and Lake Natron in Tanzania and Kenya. Thus, the Mau forest provides critical ecosystem services, not

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only for Kenya, but also for the entire region.\textsuperscript{5}

The Mau is also the home of the Ogiek people, who have lived in the forest hunting and gathering since well before colonial times.\textsuperscript{6} Surrounding communities also use water, firewood, grazing areas, food, and medicines from the forest. The government and the United Nations Environment Programme (UNEP), based in Nairobi, claim that the forest is critical to Kenya’s tea, tourism, and energy sectors as well.\textsuperscript{7} One estimate suggests that in the tea sector alone, approximately 35,000 jobs and the livelihoods of 50,000 small farmers with some 430,000 dependents rely on the eco-services of the Mau.\textsuperscript{8} Thus, the destruction of the Mau would have significant cultural, social, and economic implications.

Little debate exists around the fact that the Mau forest is massively degraded and has undergone substantial deforestation. Satellite data, a useful tool for monitoring deforestation worldwide, shows the damage,\textsuperscript{9} and ground-truthing by the Kenya Forests Working Group, UNEP, and the Kenya Wildlife Service confirms it.\textsuperscript{10} A recent government task force report suggests that in the last fifteen years alone some 107,707 hectares, representing approximately 25 percent of the Mau Complex area, have been converted to settlements and farmlands.\textsuperscript{11}

This paper explores the history of political struggles surrounding the Mau forest and the role that mapping has played in them. This is essential for navigating the current complex politics of the Mau forest and to understanding the way power, maps, and political mobilization, along with other human interactions, shape the ecological landscape. This article will illustrate that one official conservation program (Kenya Indigenous Forests Conservation Programme) actually helped to legitimize the destruction of the forest. Finally, this article will examine a more recent bottom-up mapping process involving local forest dwellers and will highlight how these alternative conservation strategies exemplify new ideas on how best to manage forests and other common pool resources.

Maps and Power. One key theme that emerges in the analysis of the Mau Forest struggle is the question of who creates and controls forest data, particularly maps. Maps are, of course, never simply neutral technical instruments, but throughout history have been linked to power dynamics such as colonial conquest. Maps, as human creations, reflect not only scientific data, but the imagination and interests of those who commission and/or create them as well.\textsuperscript{12} What is interesting, however, is that current democratic pressures demand more open access to information such as spatial data,\textsuperscript{13} and civil society groups are claiming the use of this satellite imagery and GIS technology to monitor issues such as human rights and deforestation.\textsuperscript{14} Still, precisely because of the “power of maps,” governments in many places are overly restrictive of satellite data and official large-scale topographical maps needed for planning, monitoring and informing public policy discussions.

There is a growing awareness of the ways that power determines who is able to access spatial information and participate in the use of mapping technolo-
Tropical forests, which provide rich resources and critical eco-services, are under severe stress.

Historical Background. Starting when Kenya was under British rule (1895–1963), the region’s main forests came under control of the central state. Forests originally managed by local communities became the locus of a struggle among a colonial government attempting to control access and introduce modern forestry and conservation, local people who did not recognize this right, and settlers and companies eager to gain logging concessions.

Within this political process, the colonial government started to produce cadastral maps that showed boundaries of land appropriated for its own...
The Mau forest became part of this mapping linked to the land appropriation process, and parts of the forest came under colonial state control for various purposes, including settlement. By 1930, parts of the Mau complex were cleared for the establishment of forest plantations and introduced mainly exotic species. Throughout this period, the colonial government refused to recognize the claims of the Ogiek people to the forest and argued that the ultimate way to deal with them would be assimilation into other communities. The Ogiek were spread out across Kenya’s forests, but they did not fit neatly into ethnic “reserves” that the colonial government created to contain Africans in well-defined territories and to protect land expropriated for white settlers.

While the Ogiek had interacted with—and at times assimilated into—the different communities neighboring the forest, they resisted this policy and continued to live in the forest and claim rights to it. Currently, approximately 15,000 to 16,000 Ogiek live in the Mau forests complex.

**Forests and the Politics of Patronage.** After independence, the post-colonial state continued to play a key role in mediating access to forests, which was fundamentally linked to patronage networks of powerful figures in the state. In the 1990s, the Forestry Department came under the Ministry of the Environment and Natural Resources. Under the Forest Act at the time, the Minister had the power to alter boundaries but was required to publish that intention and a map in the Kenya Gazette. The Gazette is written in English and is not easily available, particularly to those living in and around the forest. To make the excision legal, the area needed to be surveyed, a boundary plan drawn up, and approval granted by the Chief Conservator of Forests. If objections were not raised after 28 days of notice in the Gazette, the land was no longer considered protected forest.

Since the Minister of the Environment was a presidential appointment, the President and his associates could alter legal boundaries of forests without informing the relevant forestry officials. This made decisions over forest excisions susceptible to the politics of patronage and rendered foresters “helpless when a logger [or settler] comes armed with a letter from the provincial administration or a high political office.” Thus, as in other parts of the world, this institutional system granted politicians and their supporters preferential access to forest resources and, as in colonial times, top-down mapping played a role in trying to legitimize these appropriations.

With the advent of multi-party politics in Kenya at the end of 1991, high-level state actors, including the
President, used these institutions to leverage forests as valuable patronage resources in order to buy support and fund campaigns. At the time, one top Kenyan government official stated that "if there were an election every year, there would be no forest left." Similarly, an Ogiek activist noted "because trees acquired free of charge fetch millions once made into timber, this free money is to be used in financing elections besides buying political support." During this time the Mau forest became one of the clearest demonstrations of how power and patronage dynamics caused massive deforestation as well as dispossession of the Ogiek.

Kenya Indigenous Forest Conservation Programme and the "Ogiek Settlement Scheme." Between 1991 and 1994, the United Kingdom provided approximately $2.5 million in assistance for the first phase of the Kenya Indigenous Forest Conservation Programme (KIFCON). The project aimed to benefit both the environment and the local people. Its goals included "developing and enforcing guidelines for the sustainable exploitation of forest resources, providing for the effective management and conservation of forests, promoting social forestry, and improving forest cover mapping and monitoring;" it also sought to conserve "the biodiversity, ecological services and productivity of indigenous closed forests, and improve[ing] the welfare of poor people hitherto dependent on the forest for their livelihood." As is the usual practice, consultants were brought on board to carry out the task of mapping boundaries, studying the dynamics of forest degradation, and providing recommendations for conservation.

In the course of the KIFCON study, researchers observed Ogiek living in scattered settlements. Replicating a long history of "fortress conservation" in Africa, KIFCON recommended the settlement of Ogiek families in a suitable section of the forest. Failing to understand the complex politics around power and land in Kenya, KIFCON made a recommendation that would legitimize settlement in the forest. The KIFCON-recommended "Ogiek settlement scheme" became a cover for massive and irregular appropriations.

Throughout Kenya’s history, in the absence of checks and balances, public monitoring, and transparent allocation processes, settlement schemes have allowed those in power to mediate who has access to land. In practice this meant that political supporters, friends, and relatives were favored, and at times the settlements expanded beyond their original borders. This is one reason why the families of Kenya’s past two presidents own vast tracts of land and Kenya has some of the highest levels of land inequality in the world. Predictably then, the "Ogiek settlement scheme" became a site of land accumulation and patronage politics by those in power, producing exclusion, conflict, and environmental destruction.

KIFCON took time to survey and compile a list of Ogiek to be settled. Given the complexity of this task, which involved highly mobile and sometimes elusive people, even those working for KIFCON doubted the accuracy of the list. Nevertheless, it was passed on to the government and grew as it moved...
through the corridors of power down to the local provincial administration. One Ogiek source suggests that after an initial KIFCON estimate of 1,800 families, the new list contained 3,500, only 200 of which some sources claim were Ogiek.33 By the time the first settlement scheme (25,000 hectares) commenced in Kiptagich34 in southwest Mau in 1996, the number of families had climbed to 9,000.35 By that time, KIFCON had ended and phase II was discontinued.

In 2001, one year before the historic election that would see President Daniel arap Moi step down and the Kenya African National Union lose power, the government announced the excision of 61,586 hectares of the Mau forest for a number of different "settlement schemes," some of which had already existed on the ground as early as 1994. Among the official reasons for the excisions was the need to settle Ogiek and people who were displaced because of state-instigated violence surrounding the elections of 1992 and 1997.36 The announcement sent shock waves through international environmental groups and local civil society, who raised their objections through official channels. Regardless, the government moved forward with the publication of legal notices and subsequently became embroiled in court cases, including one led by the Ogiek Welfare Society. Throughout this period, many Ogiek protested their treatment, the influx of large numbers of people into the Mau, and the ensuing destruction of the forest.37

Public anger was high over irregular land appropriations by the old KANU regime. When a new government came to power it initiated a series of investigations in 2003 that confirmed what many Kenyans already knew: "[t]he real intention of excising the forest was definitely not to resettle the Ogiek community. The objective was to allocate forestland to influential personalities in the former KANU regime."38 These influential personalities parceled out land at minimal prices to their supporters. Some of those who received land were indeed poor, but others simply accumulated land because it was cheap, sometimes owning plots in different schemes.

As political alliances shifted and high-level politicians lost power, reclaiming parts of the Mau forest became politically possible. It was inevitable, however, that the process of addressing Mau deforestation would be embroiled in contestation. Indeed, the push to reestablish Mau forest boundaries and conserve the forest meant evicting large numbers of KANU supporters who perceived this as punishment for losing power. In 2005 a series of haphazard and brutal evictions reinforced this view, and human rights groups like Amnesty International became involved.39 The Ogiek continued to protest that their rights and needs were being ignored and that they were being grouped collectively with those who settled in the forest and hence—as in colonial times—were being cruelly and unjustly evicted.40 Powerful beneficiaries, including the former president, demanded compensation and turned the Mau evictions into a high profile political issue.

Mapping and Counter-Mapping. KIFCON embodied a kind
of technical approach to conservation that ignores both power and institutional dynamics and the "power of maps." The project, of course, did produce helpful scientific knowledge about the forest and did not cause the deforestation in the Mau. The President, the Ministry of Environment, and provincial administration used the KIFCON maps showing the boundaries of existing indigenous forests and seized their recommendation to create an Ogiek settlement scheme there. This attempt to accelerate and legalize irregular settlements ultimately contributed to forest destruction. For this reason, some Ogiek remember KIFCON with anger; they feel that KIFCON collaborated with a government that at the time was the source of many of their problems. KIFCON phase II was discontinued in part because of these unintended negative impacts, couched diplomatically as "lack of government support.

Since the 1990s when KIFCON operated, understanding of power relations and local knowledge in the management of forests and other resources has grown. Based on their historical experience, Ogiek activists are keenly aware of the need to counter-map the Mau Forest, and have tapped into sympathetic local and international support to do this. After attending a Mapping for Change Conference in Nairobi in 2005, they grew interested in working with the local NGO Environmental Research Mapping and Information Systems in Africa (ERMIS-Africa) on participatory three-dimensional modeling (P3DM). This kind of modeling is a collaborative process involving "grassroots participation in spatial problem analysis and decision-making" and "integration of people’s knowledge and spatial information (contour lines) to produce standalone scale relief models." Discussions among community members help to determine which critical features (e.g. hills, rivers, cultural areas, and clan territory) should be documented and mapped through use of aerial photographs and participatory Geographical Information Systems (GIS).

The models that emerge out of these processes are actual physical models with topographical and cultural features marked. They are easy to comprehend and, when executed well, relatively accurate ways to store, visualize and discuss spatial information. ERMIS argues that these models and the participatory process of creating them is a useful way to transmit local knowledge and preserve historical memory and culture. Furthermore, by using these new mapping technologies to reassert a historical narrative about their century-old presence in

As political alliances shifted and high-level politicians lost power, reclaiming parts of the Mau forest became politically possible.
the Mau, Ogiek activists can bolster their efforts to reassert their rights to inhabit and manage the forest. This counters attempts to render the Ogiek invisible and that fail to distinguish between them and the large numbers of settlers brought into the forest through patronage politics.

**Conclusions.** After the last tumultuous election in December 2007, Kenya’s new Prime Minister Raila Odinga assembled a Task Force on the Conservation of the Mau Forests Complex. Kenya’s hard-won democratic space, the advocacy of local and global environmentalists and civil society, the media, and the changing political alliances that allowed for the creation of the task force forcefully showed how policy around forest conservation relies on political factors. The task force executed a careful audit of the destruction of the forest and recommended a number of concrete and important steps for its conservation. One key recommendation is that all those who were involved in "the irregular allocation of forestland in an irregular manner and/or against the government’s stated purposes of the settlement schemes should be investigated and prosecuted in accordance to the law." All of this represents significant progress.

In September 2009, the Ministry of the Environment and UNEP announced a multi-million dollar appeal for funds to rehabilitate the forest. One encouraging development was that besides USAID, the European Union, and other foreign donors, Kenyan businesses and civil society, including Nobel Laureate Wangari Maathai’s Greenbelt Movement, mobilized to create their own "Save the Mau" campaign and trust fund that has already allowed some reforestation to occur.

Serious political hurdles remain in translating Kenya’s continuously more democratic institutional order into an ecological landscape. Contention continues over evictions, as well as the mapping of where the Mau’s boundaries are or should be, and hence, who must leave and who can stay. These negotiations over saving the forest are also embroiled in the politics of alignment before the next election in 2012. The struggle over reforestation and revival of the Mau forest, like deforestation in the first place, is intimately linked not only to social and economic forces, but to politics, patronage, and the power of maps as well.
NOTES


5 These include river flow regulation, flood mitigation, water storage, reduced soil erosion, biodiversity, carbon sequestration, carbon reservoir, and microclimate regulation.


8 Ibid., 15-16.


13 See, for example, the project by Open Street Map to make a freely accessible map of the world, Internet, http://wiki.openstreetmap.org/wiki/Main_Page.


15 OpenStreetMap, Internet, http://www.openstreetmap.org/


17 By the post-colonial period, Kenya’s forest cover had dwindled from about 90% of the total landmass in 1895 to approximately 3% today. Large amounts of forest loss occurred during the colonial period.

18 Stone notes the shift from the topographical maps of the early explorers to cadastral maps during the colonial period that focus on where people to be administered were located. See Jeffrey C. Stone, "Imperialism, Colonialism and Cartography." *Transactions of the Institute of British Geographers*, New Series 13, no. 1 (1988), 57-64.


25  F. Seymour and J. Mugabe, The Right Condi-
tions: The World Bank, Structural Adjustment and
Forest Policy Reform (Washington: World Resources
Institute, 2000), 115. See also Republic of Kenya
Law System of Kenya (Nairobi: Government Printers)
misson of Inquiry into the Illegal/Irregular Allocation
of Public Land. (Nairobi: Government Printers) 83,
150-9.
27  Towett Kimaiyo, Ogiek Land Cases and His-
torical Injustices 1902–2004 (Nakuru: Ogiek Welfare
Council, 2004), 88.
28  Department For International Development,
Internet, http://www.odi.org.uk/work/projects/98-
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accessed: 30 December 2010).
29  “Kenya Indigenous Forest Conservation Pro-
30  Dan Brockington, Fortress Conservation: The
Preservation of the Mkomazi Game Reserve (Bloom-
ington.: Indiana University Press, 2002).
31  Otsieno Namwaya, “Who Owns Kenya?” Inter-
net, http://blog.marsgroupkenya.org/?p=92 (date
32  A recent World Bank Kenya Poverty and
Inequality Assessment notes that land inequality in
1997, as measured by the Gini coefficient of the whole
population, was .612. By 2005/6, it appeared to rise
to about .83. The report suggests that, “the increase
in land inequality in most parts of the country over
the past decade has been at a rate that suggests that this
issue is rapidly becoming more serious in objective
terms as well as in terms of political salience. World
Bank, 18.
33  Recent interviews with local people who worked
with KIFCON revealed that approximately 800 Ogiek
families on KIFCON’s list never got land, yet, they
were part and parcel of the commons that had been
registered. Interview with Chesilim Kimutai and
Gabriel Too, Nakuru, August 2010.
34  Credible evidence exists that the “most of
the 653 Ogiek families that had settled in Kiptagich
Extension Settlement Scheme were evicted, paving the
way for the fresh allocation to prominent civil servants
and Moi’ allies.” David Okwembah.
35  Daily Nation, “How Moi allies acquired land
meant for Ogiek,” Internet, http://www.nation.co.ke/
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