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AGROFORESTRY IN LANDSCAPE MOSAICS

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Colonial Solutions, Contemporary Problems:

*Digging to the Root of Environmental Degradation
in Kabale, Uganda*

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ALAM's Mission: To improve the science and practice of conservation through better understanding of agroforestry and communities in landscapes that comprise agricultural lands, trees, and protected areas.

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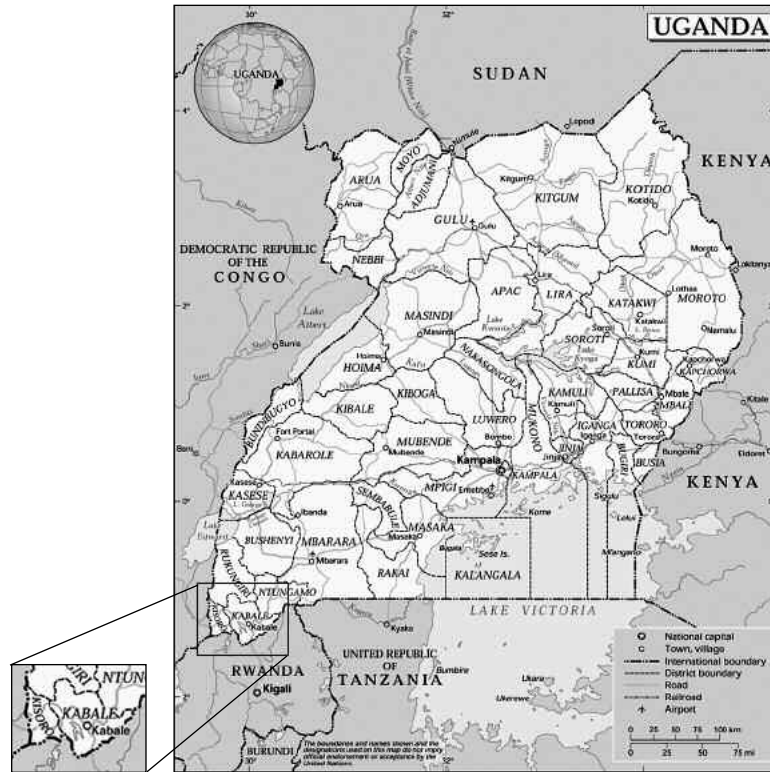
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Introduction

Contemporary interpretations of African landscapes focus on problems of environmental change and degradation. Degradation can take many forms, including deforestation, soil erosion, loss of critical habitat, loss of species diversity, and desertification. But the organizations and governments initiating projects and programs to alleviate this degradation often fail to recognize, as Fairhead and Leach (1996, 2000) among others argue, that what we find today is rooted in a “lived historical experience” (Cline-Cole 2000: 109). Further, Cline-Cole (*ibid.*) makes the claim that a landscape is a “produced, lived, and represented space constructed out of the struggles, compromises and temporarily settled relations of competing and cooperating social actors: it is both a thing and a social ‘process’, at once solidly material and ever-changing.” Recognizing the historical legacy and socio-political ecologies embedded within human and natural landscapes can play a significant role in altering our current perceptions of the African environment, environmental degradation, and proposed solutions. There is now a strong body of literature that challenges ideas about degradation, calling into question the West’s “common knowledge” (Leach and Mearns 1996) and often disproving Western “truths” about the Other (Fairhead and Leach 1996; Lindblade *et al.* 1998; Fairhead and Leach 2000; Neumann 2000: 21). These works have shown that embedded within Western interpretations of the environment is the perception that local people and communities are responsible for degradation due to poverty, increasing population sizes, poor farming practices, and irresponsible extraction of natural resources, but that these perceptions are often false (Leach and Mearns 1996; Dove 1986).

Building on this foundation within the literature, I take a new approach, arguing that one era’s solutions become the next era’s problems. These findings are significant because they will enhance our understanding of the British colonial influence in Africa, and may help to minimize support for the belief that African agriculturalists are primarily to blame for the current state of their environments.

This study focuses on Uganda’s mountainous southwestern region, which includes Kabale and Kisoro districts (see map 1). The data stem from a review of relevant literature and archival research on colonial era documents concerning Ugandan culture, natural resource management, and development efforts, specifically within Kabale and Kisoro districts. The study also draws from semi-structured interviews conducted during the summer of 2002 with thirty-six randomly selected farmers from four parishes (Nangara, Kagarama, Kashasha, and Kitojo) of Kabale District, as well as focus groups conducted within the same parishes. These two mountainous districts, formerly known as Kigezi, lie in the most southwesterly corner of the Ugandan Highlands and the Western Rift Valley, bordering Rwanda to the south and the Democratic Republic of Congo to the west.



Map 1. Districts of Uganda

Site Description

Catering to the imagination and romantic notions of outsiders, contemporary Kabale District is often referred to as the “Switzerland of Africa.” The high peaks of its mountainous topography can reach 2,600 meters before plunging down steep slopes into narrow valleys or broad papyrus swamps. Kabale is also renowned for its afro-montane forests, which house a tremendous diversity of flora and fauna. In fact, much of the attention by outsiders on Kabale and Kisoro is due to the fact that half of the world’s remaining mountain gorillas (*Gorilla gorilla beringei*) reside within the tropical mountain forests of Bwindi Impenetrable National Park in Kabale and neighboring Mgahinga-Gorilla National Park in Kisoro (Wild and Mutebi 1996).

Outside the two parks, Kabale is dominated by an agrarian landscape – a patchwork of scattered field plots, well-terraced strips, fallow land, and grazing pastures that extend from the valley bottoms to the mountaintops. Interspersed among the fields and homesteads that dot the landscape are scattered eucalyptus (*Eucalyptus spp.*) and black wattle (*Acacia mearnsii*) woodlots – the modern version of forests which many people perceive to have covered Kabale in the not so distant past – as well as individual trees of both a local and exotic origin (Levand 2002). These woodlots are primarily reserved for fire-

wood, charcoal, and building for homestead purposes as well as for sale.

Farmers in Kabale District cultivate a rich variety of crops that includes sorghum, millet, Irish potatoes, sweet potatoes, climbing beans, peas, maize, wheat, bananas, plantains, and cabbage. Farm plots tend to be small and scattered across the mountainous topography of hilltops, slopes, valleys within the slope, and valley bottoms. Planting takes place twice during the year in synchronicity with the bimodal rains that typically fall in March and between September and October. Hillsides are often terraced, or fitted with a 'bund' of earth along the bottom edge of the plot to contain topsoil from eroding to the plot below. To secure the bund or the edge of the terrace, farmers either allow trees, shrubs, and grasses to seed in and grow annually, or they plant vegetation. The long-handled hoe is the primary tool used in cultivation. To till the earth, farmers hoe up-slope, pulling the slice of topsoil downhill towards their feet.

Second only to national park tourism, agriculture is the main economic activity in Kabale and Kisoro districts (NEMA 1997). Most of the international and government activity in the two districts is geared toward alleviating the poverty and environmental degradation associated with basic livelihood demands and subsistence agriculture practices upon the rugged and steep terrain. As of 2002, there were over fifteen governmental and non-governmental organizations (NGOs) working on natural resource management within Kabale alone. A review of various government and NGO reports reveals that these organizations have identified deforestation, soil erosion and soil fertility decline, increasing population pressure, land fragmentation, woodfuel scarcity, and loss of biological diversity to be key environmental problems facing the districts.

Theoretical Perspective

Instinctively, we look at an African landscape and compare it to a perceived ideal of nature, thereby subscribing to the idea of anthropogenic-driven environmental change and degradation. Consequently, the cause of this change is easily placed upon those people and communities that are present, active and obvious actors upon the landscape. An excellent example is found within The Uganda Forestry Policy, which concludes

Poor land husbandry practices have resulted in food insecurity, low farm incomes and environmental degradation, including deforestation. In many areas land productivity is declining, soil is eroding, and hill slopes are degrading (Ministry of Water, Land and Environment 2001: 5).

There are two flaws in this logic. The first is our belief in and concept of pristine nature. The second is our reluctance to look into the past and identify the other actors and conditions that have influenced the present condition.

While it is easy to place the blame on local people, this research tests the hypothesis that the "problems" affecting Kabale are either directly or indirectly the result of colonial

¹ *It would be too simplistic to say that other factors have not influenced current farming systems; however, the colonial government did contribute to and in certain cases lay the foundation for today's problems.*

and postcolonial policies, and that the legacy of these policies is visible upon today's farming landscape.¹ This paper begins by describing colonial perceptions of the Bakiga people, and the natural and farmed environment that existed upon the arrival of the British. Second, the environmental problems as viewed by colonial officials are outlined, and the various solutions implemented by the colonial government are described. Next, the influences of these policy solutions on today's farming landscape are identified. In conclusion, the paper demonstrates that Uganda's contemporary environmental problems are linked to the "solutions" that the colonial government constructed to solve past problems.

Colonial Perceptions of the Bakiga and the Natural and Farmed Environment

In 1899, Germany established control of Kigezi, linking the area to then Ruanda-Urundi. After World War I, Kigezi fell under the domain of British East Africa (Tukahirwa and Veit 1992), but the British did not arrive in southwest Uganda until 1908 (Denoon 1972), and Kigezi District was not established until 1912 (Kakiza 1972). Initial colonial impressions of the Bakiga, one of the predominant ethnic groups in the southwest, were unfavorable. Captain Coote recorded his belief, in 1910, that the only way to administer Kigezi was through the Buganda agents,² as the Bakiga were organized within clans and did not recognize the authority of chiefs (Kakiza 1972). In 1922, Sir John Roscoe published an account of the "Mackie Ethnological Expedition in Central Africa, and of the lives and ways of the peoples visited." In it, he found the Bakiga to be wild people without respect for authority or elders. Their unruly nature, he felt, always placed the Bakiga in danger of being killed or killing others (Roscoe 1922).

² *The British established authority in much of Uganda in 1900 with the signing of the Buganda Agreement. This accord allowed the British to establish a means of indirect rule that used the Buganda tribe as colonial middlemen and bureaucrats. The incentive for the Buganda was Britain's granting of freehold land to chiefs and the king of the Buganda in exchange for their cooperation (Dicklitch 1998).*

According, however, to Geraud, a priest who spent a lifetime living amongst the Bakiga, the Bakiga viewed the Europeans as a continuation of a series of natural and human tragedies. Had the outsiders arrived before 1875 they would have found an organized society divided into three ruling families, containing strong traditions, commercial trading routes, and agricultural skills (Geraud 1972). Geraud further explains:

What they saw, however, was the result of 30 years of war. What they saw was the outcome of many years of almost perpetual fighting, disturbances, plunder and raids from all sides. To these misfortunes were added the rinderpest and small-pox epidemics (1882 and 1892), the locust invasion, the famine of 1897, and the famine of 1904. During those years of great distress many things were wiped out. What the foreigners saw, in arriving in Kigezi, was a decimated people in a desolated country (Geraud 1972: 53).

Early colonial descriptions of the Kigezi landscape pay little attention to the extent of forest vegetation, focusing primarily on the agricultural landscape and the people who occupied it. Upon entering Kigezi District, Roscoe wrote

When we crossed the boundary of Ankole into the Kigezi district the country became wilder and fewer cattle people were found, the true inhabitants, who were encountered here and there, being an agricultural tribe. These people of Kigezi are mountaineers,

and find the steep hill-sides no difficulty; their fields extend up the slopes of the mountains and are marked off from each other by ridges where the weeds and stones are gathered together. After a few seasons the fields become regular plateaux, for the rains wash the earth from the higher ground against these ridges and form terraces raised above the lower fields. As I wandered along a path on the side of a mountain and looked out to the opposite side of the valley the fields looked as though they were laid out in terraces and fenced (Roscoe 1922: 101).

While amongst the Bakiga, Roscoe (1992) also remarked on the steepness of the mountain slope, the little gardens the people had made in the mountain valleys, and the presence of terraces and bunds on the cultivated mountain plots. Photographs from the expedition, taken in western Ankole³ on the border of Kigezi, reveal a landscape of both agricultural plots and patches of forest, but not an intact forest canopy covering the hillside. Firewood, at the time, was collected and gathered rather than produced in individual woodlots, as is the case today (Ndebesa 1972). Two observations also worthy of note are Roscoe's description of a well-established method for soil conservation (Roscoe 1922), and a second colonial observer who commented that there was minimal human pressure upon the land (Carswell 2003).

³ Ankole comprised Mbarara, Bushenyi, and Ntungamo districts. The people in this mountain environment are herders of cattle and agriculturists.

While these observations do not speak directly to the extent or condition of the forests in Kigezi, insight into how the British viewed the natural forests and the need for afforestation to support domestic growth is evident in the colonial Scientific and Forestry Department's annual report from 1904:

The time has now arrived to pay attention to afforestation. At present wood-fuel is the fuel of the country and the development of industries, formation of railways, the addition of steamers, all mean more fuel and timber, and diminution of forested areas unless preventive measures are adopted (cited in Uganda Forest Department 1951: 13).

Use of the word afforestation is critical because it does not imply deforestation; rather, it speaks to a growing economy, increasing demand, and the risk of deforesting forested areas, therefore speaking to the potential for a problem, rather than an actual problem.

In sum, these various accounts show us that, at the start of the twentieth century, Kigezi was partially occupied by a comparatively small and struggling Bakiga population whose agricultural plots extended from the valley bottoms up the mountain slopes, employing well-developed methods of erosion control. The forests at the time were a resource for the local people, though the government was not confident that forest resources could sustain the growing economy, and therefore predicted that afforestation would be necessary.

Colonial Era Environmental Problems

According to Benjaminsen (2000: 95), "Malthusian ideas of environmental damage caused by local over-exploitation had a central place in the colonial discourse on the African environment." Adams and McShane (1996) argue that European ideas of

wilderness encompassed a place lacking human control where order breaks down. Both were certainly true in Kigezi by the 1930s and 1940s. Nearly three decades after establishing control, colonial perceptions of the district environment had changed dramatically. Two central themes preoccupied district administrators: over-population and land degradation. Both were linked to the associated problems of land shortage, land fragmentation, and decreasing agricultural yields (Lindblade, Carswell, and Tumuhairwe 1998; Carswell 2003). Further review of colonial documents and scholars' assessments of the period also reveal Britain's preoccupation with an inadequate forest resource base, and farmers' inability to meet agricultural requirements. Emphasis on these issues reveals an interesting shift in priorities from Britain's efforts in other East African nations. Yet according to Neumann, "The European appropriation of African lands for aesthetic consumption is inseparable from the appropriation of African land for material production" (1998: 9). In Kigezi, officials were more concerned with the production of food crops for national consumption, famine stores, and regional export, and the production of timber and other wood products for domestic and export purposes, than they were concerned with maintaining a "natural" or "aesthetic" landscape. This is because Uganda primarily served Britain as a producer of raw materials (Carswell 2003).

One colonial district agricultural officer (DAO), J.W. Purseglove (1944-1952), had a strong influence on reinforcing these perceptions. Quite convinced of the problem of over-population and subsequent degradation of land in the district, Purseglove set out in 1945, using transects, to investigate the overpopulated areas of Kigezi that lay within a twenty-kilometer radius of Kabale town in order to report whether over-population was contributing to poor agricultural methods (Lindblade, Carswell, and Tumuhairwe 1998). Purseglove used each transect to quantify land use,⁴ and ultimately determined that,

As a result of the extremely high population density in the area the proportion of land being rested had seriously reduced, along with the length of time fields were left to fallow. He believed that the region was consequently at great risk from soil erosion and soil fertility decline (ibid.: 566).

One striking contradiction between colonial perceptions of a degraded environmental system at risk of collapse and their political objectives is that, before Purseglove's documentation of over-population and land degradation, previous district officers had recruited "target workers" from Tanzania, Rwanda, and Burundi. These men were valuable because they worked for less than the local Ugandans, and provided much-needed labor for building railways and roads. The immigrants arrived beginning in 1928, due to over-population and famine in their respective countries, initially living in recruitment camps in Kigezi and other districts. Undoubtedly, each worker increased local demand for crops and domestic resources. In total, 50,000 workers arrived seeking employment. It was not until 1940, four years prior to Purseglove's survey, that the colonial government reversed their invitation and shut the door (Carswell 2003).

The 1948 Forest Policy, the first to be published in the gazette, revealed Britain's conviction that the real problem facing the colonial government was in meeting agricul-

⁴ He assessed proportions of land under use in terms of cultivation, fallow, grazing, woodlots, wetlands, bush, and infrastructure (Lindblade, Carwell, and Tumuhairwe 1998).

tural requirements and local demands for wood products, and that maintaining an export of such products could only be deemed a secondary objective.

It is accepted that the satisfaction of the needs of inhabitants of Uganda must take precedence over purely financial considerations and the establishment of an export trade; and that only when these needs have been satisfied can the aim of management be directed, in production reserves, to obtaining the greatest revenue compatible with a continuous yield, and to promoting an external trade in timber and other forest produce (Uganda Forest Department 1955: 7).

In 1954, in order to address the problems associated with agricultural productivity and the potential of forest resources, another land-use survey was commissioned. The survey “aimed at informing a proposed programme for raising agrarian productivity and standards of farming...[and] meant to provide information that would lead to improved land-use and increased production” (Langdale-Brown, Osmaston, and Wilson 1964: 8). The published document, *The Vegetation of Uganda and Its Bearings on Land-Use*, described the vegetative cover in Uganda. Using vegetative maps it lays out ecological zones, painting a picture of a diverse set of ecosystems based on their elevation, moisture regimes, and human influences. This study describes the various regions in terms of their natural vegetation, thus reflecting the colonial ideal of “pristine nature” (Neumann 2000), and then compares the natural state to their assessment of the current land-use, thereby implying degradation by the disordered society of African people. In Kabale, Langdale-Brown and his co-authors characterized the natural state as montane forest. He documented the current land-use as mixed agriculture with annual crops and grazing, and as forest reserves of fuel and pole plantations (Langdale-Brown, Osmaston, and Wilson 1964).

The problem with this interpretation is that it presupposes a natural state, which is juxtaposed against the (then) present-day “degradation”, in addition to presupposing the time frame over which this natural state existed and its degradation occurred. Uganda is not the only country in which colonial forces interpreted the landscape as undergoing recent degradation and blamed the local population. Fairhead and Leach (2000) argue that conclusions about forest health and cover at the turn of the century are riddled with misconceptions and misinformation which naturally bring into question conclusions about the number of hectares of virgin forest that once existed. Citing Hawthorn and Musah (1995) they argue,

The condition of Ghana’s forest early in the twentieth century prior to their reservation was thus anything but pristine, yet it is against the image of pristine forest – not the state of forest when reserved – that today’s forest condition is assessed (Fairhead and Leach 2000: 186).⁵

Colonial Solutions

From the 1920s thru the 1950s district officers in Kigezi developed four main policy responses to combat the region’s environmental problems. Carswell argues that “the

5 Two other sources for examples of colonial policy that incorporated perceptions of deforestation, desertification, and degradation into their natural resource policies, and linked them to local natural resource management, are Fairhead and Leach (1996) and Benjaminsen (2000).

environmental narratives that drove these policies carry with them an assumption that indigenous methods of cultivation were inadequate to cope with change and pressure on resources” (n.d.: 9). While officials may have held such views, their own tactics relied on local systems and technologies, thereby giving a shadow value to the utility of indigenous methods of natural resource conservation. Three solutions addressed the problems of soil degradation and over-population by initiating (1) soil conservation methods, (2) resettlement schemes, and (3) drainage of swamps. The fourth solution addressed an inadequate forest resource base and inability to meet agricultural requirements by introducing plantation species onto the landscape, and limiting the size of the forest estate to the minimum area which would achieve the primary aims of management (Uganda Forest Department 1955). Each of these solutions is explored in detail below.

According to Carswell (2003), who conducted extensive research on soil conservation in Kabale, the success of colonial administrators’ efforts to improve soil conservation methods resulted from their adoption of “traditional” conservation methods, the gradual introduction of the scheme, a major emphasis on propaganda and incentives, and finally use of the structure of indirect rule by relying on “chiefs” to carry out the initiative. Efforts to conserve agricultural soils were directed by three DAOs: Masefield, Stickney, and Purseglove.⁶

6 Masefield took office in 1937, followed by Stickney in 1940 and then Purseglove, who served from 1944 until 1952.

Masefield’s solution closely resembled what already existed in farmers’ fields, but it was supported by extensive propaganda and other anti-erosion measures. He focused on plots that did not exceed thirty meters in width and were buffered by rows of grass. He also created demonstration plots, and even recommended paying greater attention to women. Masefield used agriculture department staff as well as local chiefs to disseminate his plan.

Stickney felt that more land needed to be placed into fallow through uncultivated strips to help stop erosion. According to one participant of a focus group for this study in Nangara Parish, “During this period they introduced *ebibingo* [elephant grass, *Pennisetum purpureum*]. They told them to plant it on terraces to hold the land. Actually, *ebibingo* was already growing but the whites told them that since we were living in the highlands we should use it to protect the terraces.” Colonial officers, therefore, adopted local practices to stop soil erosion.

In 1944, Purseglove arrived as DAO. In his report he also determined that Kigezi needed more land in fallow. His scheme involved using strip-cropping, constructing bunds, and implementing an organized system that used fallows, hedgerows, vegetative compost, and even manure. Purseglove’s accomplishments stemmed from his enthusiastic nature, and his social as well as technical initiatives. He used the native authority to implement these farming techniques, instituted punishments and fines to facilitate adoption, initiated creative competitions, focused on education and field schools, and even ordered extension agents and chiefs to attend lectures on a monthly basis. Purseglove also involved missionaries and teachers to change practices and spread the new rules via school farms as well as leaflets (Carswell 2003).

One point of confusion is when soil conservation measures actually became law. According to Carswell (2003) it was not until 1961, but many Ugandans believe that soil conservation bylaws were initiated during the colonial era. Regardless of when the actual laws were established, soil conservation measures were enforced within Kigezi District and farmers were subject to strict punishments if they did not comply. Punishments included fines and even prison time. In addition, farmers were not the only ones culpable – native authorities were subject to punishment by their superiors, thus creating a clear hierarchy of “incentives” to carry out the rules and adopt the “new” measures (ibid).

Purseglove was also responsible for commencing a second solution to environmental problems: the resettlement scheme. During his time as DAO he resettled 22,000 farmers. His replacement, King, determined that a stronger effort at resettlement was necessary since efforts were not keeping up with population growth. He ordered 50,000 more people resettled and paid particular attention to seasonal migrants, demanding that they take their families with them when they immigrated to other areas for work (Carswell 2003).

The third measure that the colonial government instituted involved reclamation of the papyrus swamps in Kabale. Officials felt that reclamation was a cheap and easy way to increase the amount of land available for cultivation in Kabale. In 1956 a report issued on water resources in Uganda recommended draining 80 percent of the swamp land in the district, however draining had begun prior to this official recommendation. In fact, Lindblade, Carswell, and Tumuhairwe (1998) found that as early as 1940 draining was occurring in an effort to convert swamps to cropland and pasture. But this was not the only reason. During the 1930s, swamp reclamation through the planting of eucalyptus trees occurred in a number of districts “for the dual purpose of reducing mosquito breeding and providing townships fuel supplies” (Uganda Forest Department 1955: 17).

The fourth initiative for combating regional environmental problems focused on increasing the number of plantation species within national forests, particularly embracing the introduction of exotics. Langdale-Brown, Osmaston, and Wilson (1964) determined that if forest reserves were untended, only about one million acres would be capable of any significant yield, and it would be insufficient to supply consumption levels at that time. They therefore recommended that instead of using indigenous species, yields from exotic species such as pine, cypress, and eucalyptus could provide adequate yields (200-600 cubic feet per acre per annum), though it would be questionable whether the cost of planting such trees would merit the effort.

Introduction of exotic species had occurred much earlier. It is estimated that trials with *Eucalyptus spp.* were first carried out in 1907 (Ruyooka 1999). Other reports indicate that in 1912 seed from exotic species was introduced, including *Pinus insignis*, *Eucalyptus spp.*, *Cupressus spp.*, *Cedrela toona*, and *Acacia mearnsii* (black wattle). These trees were raised and distributed for township planting alongside a number of ornamental indigenous species (Uganda Forest Department 1951). In fact, by the time of Purseglove’s study the majority of trees in his transect were exotics, largely comprised of *Acacia mearnsii* and

Eucalyptus spp. (Lindblade, Carswell, and Tumuhairwe 1998). According to farmers in Nangara Parish, bordering Kabale town, the colonials arrived with *burikoti* (*Acacia mearnsii*), and when they could find empty land without an owner they would show the Bakiga farmers how to plant it. When *kartus* (*Eucalyptus spp.*) arrived they did the same, and eventually the Bakiga farmers were stealing seedlings from government land and planting the trees for themselves.⁷

⁷ Information obtained during field research for this study.

Farmers in Kashasha Parish, bordering Bwindi Impenetrable National Park, commented that colonials had encouraged them to plant black wattle so that the outsiders could buy its bark. An eighty-seven year old farmer and entrepreneur from Kabale explained to me during an interview that the Indians bought the black wattle bark from the farmers for medicinal purposes, whereas the farmers only grew it to make money. This ‘medicine’ was used as an extract for tanning hides (Sherry 1947). Given the imposition of taxes, farmers may have planted this tree as a cash-earning strategy in order to pay the poll and hut taxes that the colonial government demanded.

It is also probable that farmers planted black wattle for the same reasons that it is planted today. Black wattle is the preferred firewood and charcoal tree, producing wood that burns long and hot, does not produce excessive smoke, and leaves coals for the next fire. Black wattle is also a very durable wood widely used as a pole in building. It arrived in Kigezi in 1913, not long after the arrival of the British. Initially, one pound of seed was sent to the district and by 1935 there were at least 5 million black wattle trees growing in Kigezi, spreading naturally outside of the plantations (Uganda Forest Department 1951). Recognizing the need to establish supplies of fuel and domestic wood for peasants, the colonial administration mandated the native authorities to encourage small farmers to establish small plantations throughout the country (ibid). In Kabale, this initiative was a success.

By the 1950s, forest department records describe the establishment of extensive *Eucalyptus* reserves, and farmers trying to raise their own seedlings, “which [gave] it considerable hope for the future” (Uganda Forest Department 1958: 74). *Eucalyptus* was introduced as a fast-growing timber species in Crown and native reserves, alongside pine and cypress species. In favorable conditions, *eucalyptus* can attain height growth of eight feet and diameter increments of one inch per annum (Scott 1950).

Crown and native reserves had been established in 1929 with the formulation of the first National Forest Policy. This policy created a tiered system in which crown reserves came under the central government control, and native reserves under the control of the regional administrations with an aim to supplying village-level wood requirements (Uganda Forest Department 1951; Kamugisha 1993).

Another outcome of the 1929 policy was the creation of Forest Protection Regulations. Under these laws Ugandans were required to obtain a government permit before harvesting products from the forest. An exception was made, however, if the forest products were for domestic use, in which case the license was not required (Kamugisha 1993). These laws defined forest produce to include earth, trees, timber,

wattle, firewood, branchwood, poles, slabs, chips, sawdust, grass, peat, reeds, thatch, creepers, fiber, leaves, fruits, moss, seeds, resins, galls, spices, roots, bark, rubber, gum, sap, charcoal, honey, and wax. Later ordinances defined trees to include palms, bamboos, shrubs, bushes, seedlings, saplings, and coppices (Kamugisha 1993), and expanded the list of forest products to include litter, soil, stones, gravel, and sand. It is hard to imagine what was not included in these two definitions, except perhaps climbers and lianas, which the government considered to be weeds. Rules made setting fire to crown forest and clearing vegetation within ninety meters of a stream without permission a punishable offence. The laws required locals to help prevent forests from being damaged by fire, and allowed senior forest officials to “license” encroachment in forest reserves. Finally, the laws also recommended forest clearing methods that left a specified number of trees within an area.

In summary, colonial solutions resulted in four measures: (1) aggressive soil conservation methods whose origin lay in traditional technologies; (2) a resettlement effort that displaced nearly 75,000 inhabitants of Kigezi; (3) the draining and afforestation of papyrus swamps for conversion to agricultural land; (4) limiting the size of the natural forests while afforesting with exotic species that could meet the timber/fuelwood needs of the growing and developing population.

Colonial Influence on the Contemporary Farming Landscape

As both Carswell and Lindblade have extensively documented, the legacy of Kigezi District soil conservation measures is still evident on today’s landscape, where farmers invest labor and resources into maintaining the soil and its fertility. The current system also reflects the colonial objective to intensify agricultural production. Any visitor looking out at the hillsides in Kabale will certainly see the impact of the British colonial administration. What they will not see, however, is the success of the second scheme. Today, papyrus swamps have all but disappeared from the Kabale landscape (Lindblade, Carswell, and Tumuhairwe 1998), replaced by pastures and valley fields where Irish potatoes and beans now grow upon the thick, humic, black soil.

Another impact on the landscape was the introduction of exotic plantation species. Today some youth (my field assistant included) believe black wattle and certain species of eucalyptus to be of an indigenous origin. As Lindblade, Carswell, and Tumuhairwe (1998) and Levand (2002) documented, these species currently dominate Kabale’s landscape. Perhaps more significant is that the introduction of these exotic species, and the creation of reserves and private woodlots, changed people’s relationships with trees and the natural forest. Tree planting and fuelwood collection were distinguished as on-farm activities, whereas forests provided timber and forest products. Today, the most important function that on-farm trees provide to farmers is as firewood and building materials.

One Era's Solution Becomes the Next Era's Problem

In Kabale and Kisoro, colonial policies to ameliorate environmental degradation and development challenges are now at the root of many of the problems that state and district officials and NGOs perceive to be threatening the resilience and vitality of Kabale's natural and social landscapes. Conclusions like those made by the Economic Policy Research Centre are not unique in stating that recent studies have found "progressive environmental degradation in the last two decades" (Adams and McShane 1996). More than just observing landscape changes, however, we should be stretching to understand what factors have combined to influence this degradation.

Deforestation is a prominent concern with regard to Kabale and Kisoro districts. In reference to the tropical moist forests, The Uganda Forestry Policy (2001) identified current concerns to be the deterioration of forests, increasing pressure on forests, and sustainable development of the forest sector (Ministry of Water, Lands, and Environment 2001). Voicing concern about natural, plantation, and on-farm forestry, the 1997 Kisoro District Environment Report stated that, "Trees from woodlots and hill sides have been cleared and cut down for fuel wood. Encroachment by communities living near the two national parks and forest reserve...for agricultural purpose is quite common" (NEMA 1997: 15-16).

There are two significant links between colonial environmental policies and deforestation of the tropical moist forests in Kabale and Kisoro. First, the colonial government authorized the extraction of forest produce without a license for subsistence purposes, and with a license if intended for sale. This policy continued after independence in the form of extractive reserves, and until the gazettement of national parks in 1991, Ugandans from the two districts had the right to harvest timber and non-timber forest products from the forests. It therefore seems problematic to blame local people for the deforestation "problem" as both the colonial government and post-independence government authorized their actions. Second, in an effort to maximize agricultural production, the colonial government deemed it necessary "to limit the size of the forest estate to the minimum area which will achieve the primary aims of management" (Uganda Forest Department 1955). By limiting the size of these natural forests, the colonial administration's policy valued agriculture and fuelwood production over forest conservation.⁸ In effect, the forest department used natural forest resources to meet local and national demand. Today, the opposite is true as the government strives to conserve and protect naturally forested areas. From a historical vantage point, it is this change in values that has created the problem of deforestation.

⁸ See Lindblade, Osmaston and Wilson (1998: 570) for an alternative perspective.

It is ironic that the 1997 Kisoro Report deems cutting the hillsides and woodlots a form of deforestation since the colonial government explicitly introduced eucalyptus, black wattle, and others exotic species to meet the demand for fuelwood, building materials, and tanning products. While the demand may be increasing, colonial

officers intended Kabale farmers to cut these trees for energy and building purposes. The rotational felling of woodlots and subsequent regeneration through coppicing or buried seed systems reflects the colonial administration's objectives. To identify these actions as deforestation is to misinterpret the farming system and lasting influence of colonial policies. Under the colonial system the cutting of woodlots would likely be considered a form of management. Further, it is interesting to note that according to Lindblade's finding, Kabale has actually increased its forest cover of exotic species since the colonial era (Lindblade, Carswell, and Tumuhairwe 1998).

Population pressure was a problem for the colonial government, and it persists today. In Kabale, the population is estimated at 246 persons/km², compared to 140 persons/km² in the 1940s. In 1997 Kisoro's population was estimated at 350 persons/km² (NEMA 1997). Numerous factors, including a high population density and famine in Rwanda, and civil wars and unrest in Uganda, Rwanda, and the Democratic Republic of Congo, have contributed to the population fluxes caused by periods of immigration and emigration (NEMA 1997). Still, it is impossible to separate current trends from British efforts to solve population problems during the first half of the twentieth century.

Initially, Britain's challenge was finding a population of able-bodied men to build the necessary roads, bridges and railways that would make up the colony's infrastructure. The source for this cohort of workers proved to be the neighboring countries of Tanzania and Rwanda, and nearly 50,000 workers arrived to fill the demand. The second measure, which was meant to reduce population pressure, resulted in the resettlement of almost 75,000 people. The obvious contradiction is not unique to Uganda. In Kenya during the 1920s and 1930s the Turkana people were forced into new areas to be "civilized," controlled, and made sedentary. Then in 1958 they were forced to repatriate their "traditional" lands (Broch-Due 2000). This resettlement scheme raises two points of consideration with respect to environmental pressures. The first is that for some in Uganda, resettlement only meant moving to Northern Kigezi's Kinkinzi and Bunyoro/Toro areas (NEMA 1997). Second, resettlement redistributed the population into less densely settled areas, thereby creating a vacuum, which encouraged continued growth. By inviting people into Uganda the colonial officers encouraged and perhaps even set a standard for immigration. Additionally, by resettling people into new, less densely populated areas they alleviated some of the pressure. Colonial policy also enforced farming methods that may have facilitated families and clans to absorb the environmental effects of an increasing population.

Britain's role in increasing the Kigezi population may also have contributed to soil erosion and fertility decline, which are still seen as serious problems on today's farming landscape of Kabale and Kisoro. Colonial efforts to curb the same soil degradation resulted in a vigorous campaign of agricultural intensification. DAO Masfield endorsed "stripped" field plots of less than thirty meters, buffered by strips of grass. DAO Stickney encouraged more fallow land in the form of uncultivated strips, and the planting of elephant grass to help stop erosion. And finally, Purseglove promoted strip cropping, earthen bunds on the bottom edge of each plot, hedgerows, composting, and manuring. All

of these measures used local methods to intensify labor and production, essentially seeking to reap more produce from less land (and presumably depleting the soil at a faster rate) while enabling portions of the landscape to rest and regenerate fertility. In the Report of the Agricultural Productivity Committee (1954), the authors state

With the transition from subsistence cultivation to farming, the raising of standards and the improvement of farming systems, the problems connected with agrarian productivity and crop and stock production are becoming more complex and less easy of comparatively rapid solution. It appears to us, therefore, that if research is to pave the way for the development of farming practices, as indeed it must, a more intensified programme will require to be undertaken (Langdale-Brown, Osmaston, and Wilson 1964: Preface).

One reason for the intensification was to facilitate a higher standard of living by exporting crops, but more simply, an increasing population needs more food (ibid).

The colonial administration relied upon a strong, decentralized system of incentives and penalties to promote intensification and soil conservation measures. Therefore, we must ask what happens when the pressure to practice such farming techniques is removed or lessened. In Kisoro, independence and economic instability eliminated the positive and negative incentives guiding chiefs and agriculture extension officers to enforce the colonial policies managing land use (NEMA 1997). Logically, when the population continues to grow, as it has over time, and land is increasingly fragmented following customary land rights, farming methods must either change to meet the increased demand, or land must be liberated from fallow, despite the continuation of intense farming.

Loss of biological diversity is another environmental problem in Kabale and Kisoro districts. In 1991 the Impenetrable Forest Reserve, which had permitted extraction of forest products, particularly through pit sawing, was gazetted as a national park in response to over-exploitation and the increasing threat to the endangered mountain gorilla population (Cunningham 1996; Wild and Mutebi 1996). Colonial decisions unmistakably contributed to these losses. The British created a domestic and international market for timber products, as evidenced by the active engagement of pit sawyers in all Ugandan districts. In parts, cuts were heavy in Kigezi at the end of the colonial period due to demands from the growing township (Uganda Forest Department 1958).

Finally, the British also facilitated biodiversity loss through their program to drain swamps. Drainage significantly changed the floral and faunal composition of the wetlands, eliminating habitat for numerous species of plants and animals that had medicinal and subsistence, as well as biodiversity value for the region. Draining also lowered the water table in certain areas, causing wells to dry and changing the micro-climate (NEMA 1997), which further contributed to biodiversity loss.

Conclusion

The Kabale landscape is a product of its colonial past. However, implicit within the government and NGO conception of the farmer is that he or she has deforested, drained, and generally degraded the mountainous landscape independent of state initiatives. While contemporary solutions may rest in reforestation, conservation, and rehabilitation with a goal of diversification, such efforts will be misguided unless we acknowledge the root causes of today's perceived problems. The truth is that current farmers' cropping systems, soil conservation practices, and modes of tree integration and use are largely the result of colonial policies that aimed to solve problems of population pressure, soil degradation, and inadequate forest and agricultural resources. The colonial solutions focused on manipulating Kigezi's population, limiting the size of the natural forest, afforesting with plantation species, permitting forest and woodlot extraction, instituting strong soil conservation measures, and draining wetlands. While Britain's environmental efforts were successful according to their development objectives, they effectively altered the social and ecological landscape of Kigezi. These changes are now seen as threats to Kabale and Kisoro districts' environmental health and sustainability. Even worse, many professionals and government officials mistakenly blame local people for causing this degradation instead of digging deeper into the past to understand colonialism's historical legacy upon the landscape.

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