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TRANSFORMATIONS ALONG THE GRADIENT: ECOLOGICAL CHANGE IN THE MOUNTAINS AND PLAINS OF NORTHEASTERN TANZANIA'S WEST USAMBARA MOUNTAINS, C.1860-1970

By

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ABSTRACT

TRANSFORMATIONS ALONG THE GRADIENT:
ECOLOGICAL CHANGE IN THE MOUNTAINS AND PLAINS
OF NORTHEASTERN TANZANIA'S WEST USAMBARA MOUNTAINS,
C.1860-1970

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Christopher Allan Conte

This study presents a history of ecological change in northeastern Tanzania's Usambara mountains during the late pre-colonial, colonial, and early independence periods. My thesis considers long-term changes in the interrelationships among the region's local agrarian communities, the regional environment, and the exogenous forces of the world economy and the colonial state. It explains under what circumstances indigenous communities alter land management practices and social relations in the face of changing market forces, environmental uncertainty, and political transformation. Moreover, by carefully collating data collected from interviews with African informants with those of the European documentary sources, this analysis demonstrates how Usambara's inhabitants' changing relationship with nature led to ecological stress.

My study adds to the scholarship on ecological stress and breakdown by describing a century of ecological change on a Tanzanian mountain massif where pastoralists and

farmers exploited 3 ecological zones differentiated by vegetation and climate. In this varied environment, mountain-based (1600m el.) pastoralists, who during the eighteenth and nineteenth centuries carved out a mode of production dependent on forest conservation, had, by the 1960s transformed themselves into farmers on a completely deforested landscape. In precolonial times, their neighbors, who lived in permanent villages sited down slope at about 1400m, had cultivated bananas, sorghum and various legumes in well-watered mountain basins ringing the Usambara massif. In response to the opportunities and challenges of the slave trade and later, colonialism, these farmers continually reorganized both production systems and their choice of cultigens. Moreover, on the semi-arid plains below the mountain escarpments, where a patchwork of forest, pasture and gardens dotted the landscape in 1850, agribusiness plantations dominated by the 1940s. Thus, by Tanganyika's independence in 1961, not only had the precolonial socioeconomic links among the pastoralists and cultivators been broken, but the mountain population had become increasingly vulnerable to food shortages and disease in an environment marked by degradation from accelerated soil erosion.

Dedicated to

Sabine and Marcus

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Without the assistance of Sufian Shekoloa and Peter Mlimahadala, the field research in Usambara would not have been possible. Mr. Shekoloa generously arranged for and helped carry out the interviews in the Mlalo area, while Mr. Mlimahadala did the same for the central plateau region. Mr. Mlimahadala also performed the momentous task of translating and transcribing the taped interviews into Kiswahili from Kimbugu, Kipare and Kishambaa. I, and those who subsequently work with these valuable sources, owe him a debt of gratitude. In this regard, my sincere thanks goes out to the people of West Usambara, who tolerated our prying queries with grace and patience.

For their intellectual input, I wish to thank Professors David Campbell and David Robinson. Both have influenced substantially my growth as a scholar. I cannot

adequately express my debt to Professor Harold Marcus, my mentor. Simply, if, in the sections that follow, the reader finds moments of precision and clarity, Professor Marcus had a hand in it. No one could ask for a better editor.

Finally, I reserve my most heartfelt appreciation for Sabine Barcatta. She lived through this and, by some miracle of providence, stayed with me all the way.

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The Environment and History in East Africa

I. Introduction

The West Usambara mountains form just one of several highland zones in what today constitutes northeastern Tanzania and southeastern Kenya. The highlands, although comprising a relatively small percentage of total area, support the vast majority of the region's population. Not surprisingly then, colonial and post colonial governments have expended a great deal of money and effort in developing them. In support of these efforts, researchers of all stripes have visited the area and built up a substantial corpus of literature. Historical treatments have concentrated primarily on local political economy, both precolonial and colonial. Steven Feierman and Isaria Kimambo in particular have produced important works in this regard.[1]

This dissertation thus follows many others which have considered this region. However, my scholarship emphasizes ecological change in Tanzania's western Usambara mountains

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[1]Steven Feierman, *The Shambaa Kingdom: A History* (Madison: University of Wisconsin Press, 1974 and *Peasant Intellectuals: Anthropology and History in Tanzania* (Madison: University of Wisconsin Press, 1990); Isaria Kimambo, *A Political History of the Pare of Tanzania, c. 1500-1900* (Nairobi: East Africa Publishing House, 1969) and *Penetration and Protest in Tanzania: The Impact of the World Economy on the Pare* (Athens, OH: Ohio University Press, 1991). See also Ann Frontera, *Persistence and Change: A History of Taveta* (Waltham, MA, 1978).

over the long term, between the mid-nineteenth century and 1970. As a work of what has come to be called "environmental history," it joins a growing body of scholarly literature which seeks to explain how society and nature interact to alter landscapes.[2] It approaches change through an exploration of the dialectics among plant and animal husbandry and the region's varying environment and ideologies which grew out of and governed human/environmental relations. The thesis reveals how environmental degradation has proceeded during the past century and argues that it is rooted in the tension between African and Western notions of the proper appropriation of nature.

II. Analyses of Ecological Change

Analyses of Usambara's environmental deterioration define husbandry narrowly and ahistorically. In their 1975 article, "The Development Crisis in the Western Usambaras,"

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[2]For areas outside Africa see: William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983)and *Nature's Metropolis: Chicago and the Great West* (New York: W.W. Norton and Company, 1991); Donald Worster, *Nature's Economy: A History of Ecological Ideas* (New York: Cambridge University Press, 1977); Alfred Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (Cambridge: Cambridge University Press, 1986); Clifford Geertz, *Agricultural Involution: The Process of Ecological Change in Indonesia* (Berkeley : University of California Press, 1971). For Africa see Robert Harms, *Games Against Nature: An Ecocultural History of the Nunu of Equatorial Africa* (New York: Cambridge University Press, 1987) Douglas Johnson and David Anderson eds., *The Ecology of Survival: Case Studies from Northeast African History* (Boulder, CO: Westview Press, 1987); Jim McCann, *From Poverty to Famine in Northeast Ethiopia: A Rural History 1900-1935* (Philadelphia, PA: University of Pennsylvania Press, 1987); Helge Kjekshus, *Ecology, Control and Economic Development: The Case of Tanganyika, 1850-1950* (Berkeley: University of California Press, 1977) and Juhani Koponen, *People and Production in Late Precolonial Tanzania: History and Structures* (Helsinki: Finnish Society for Development Studies, no. 2, 1988).

Lionel Cliffe et al. suggested that chronic soil erosion and exhaustion and overpopulation had led to a crisis of major proportions. They pointed out that traditional crop husbandry techniques, land tenure arrangements and sociopolitical structures, which once supported one of the most complex and advanced societies in East Africa, had become impediments to the development of productive forces. In order to stop the downward spiral to complete ecological breakdown in the mountains, the authors prescribed the radical transformation of land management practices, social relations and political institutions, which would allow the western Usambara mountains to carry a even larger population.[3]

Half a century earlier, British administrators, soil scientists, agriculture officers and foresters had likewise cited grave imbalances in Usambara's ecology and warned of impending ecological crisis unless indigenous agricultural practices were radically altered. Like Cliffe et al., they drew up elaborate plans for regional integrated development.[4] Both of these snapshot views of Usambara's environmental degradation, although 50 years apart, offer similarly negative views of 'traditional' African husbandry and dire accounts of ecological disequilibrium.

By presenting African agriculture in stasis, both pictures obscured change and adaptation in crop husbandry and

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[3]Part of TIRDEP (Tanga Integrated Regional Development Project) which is ongoing in Usambara under the German Development Corporation (GTZ) and the Tanzanian government.

[4]John R. Watson, "Conservation Problems, Policies and the Origins of the Mlalo Basin Rehabilitation Scheme," *Geographiska Annaler* 54a.3.4 (1972), p.

failed therefore to clarify the roots of crisis. Imbalances in the relations between human beings and their environment have periodically occurred in Usambara, but an argument which demonstrates causation must account for spatial and temporal differentials of change in Usambara's environment, where climate, rainfall, vegetation and modes of production vary over very short distances.

III. The Case for Change

For centuries, Usambara's societies have reproduced themselves by cultivating mountain soils. As their neighbors in the Taita, Pare, Uluguru and Nguu highlands, Usambarans continuously manipulated their production systems to minimize risk from environmental calamity. The key to agricultural success was the exploitation of the varying environments ringing the massif. Farming systems operated along the elevation gradient stretching from mountain to plain (1500 m. to 400 m). Neither the highland nor lowland agricultural systems were homeostatic, nor did they always function successfully. Indeed over the past 150 years, severe famines have victimized Usambara's farmers, who responded with a general extensification of production, which actually increased vulnerability to soil erosion and watershed degradation.[5]

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[5]In "Social and Political Aspects of Intensive Agriculture in East Africa: Some Models from Cultural Anthropology," *Azania* 24 (1989), p. 12-20 Thomas Hakansson makes the argument that agriculture has proceeded from intensive to extensive practices in Usambara and Pare, the reverse of Boserup's hypothesis, in *The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure* (London: George

Although farming communities dominate the scholarly literature devoted to Usambara's history, late nineteenth century German observers noted that a patchwork landscape of forest and pasture, i.e. a landscape derived for grazing, covered tens of thousands of acres of the central and western regions of the massif. As recently as the 1930s, forest and grazing habitats still clothed much of West Usambara. For the herders who created this landscape, survival depended upon the successful management of the forest ecology and an ability to procure vegetable foods from their farming neighbors downslope in a warmer, wetter ecological zone. Changes in nineteenth-century trade patterns and, later, the articulation of the world market economy, sent pastoralists scrambling to create a new relationship with nature. Thus, radical social change stimulated an unprecedented simplification of forest biology.

This sketch of Western Usambara's agrarian history argues for a deeper analysis which considers how changing pastoral and agricultural societies responded to and altered a number of environmental conditions across the temporal divide of precolonial, colonial and post colonial frames of reference.

IV. Literature Review: Environmental History and African History

There is a very broad historical literature which has considered human/environmental relationships from a variety

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Allen and Unwin Ltd., 1965).

of analytical perspectives. Donald Worster argues that the field evolved from a recent scholarly interest in global and regional interdependencies and environmental degradation.[6] According to Worster, environmental history seeks to explain an extremely broad encounter between the human and non-human worlds and the reciprocal effects of one upon the other.[7] Nature, then, becomes a historical actor.

Worster's environmental history is the product of an integrated tri-level structure with nature serving as a foundation for human society and economy which, in turn buttresses culture, law, ethics, myths and other forms of meaning.[8] This approach draws liberally from *Annales* history, particularly Fernand Braudel's three levels of inquiry in his classic analysis of the early modern Mediterranean world.[9] *Annales* historians have long advocated a sustained discussion of nature within the context of long-term socio-economic change.[10] In fact, over forty years ago Braudel argued against simplistic geographies offered up by most historians:

I do not wish to make one of those traditional

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[6]Donald Worster ed., *The Ends of the Earth: Perspectives on Modern Environmental History*, (Cambridge: Cambridge University Press, 1988), p. 5.

[7]Worster, "Appendix: Doing Environmental History," Ibid, pp. 292-93.

[8]Ibid, p. 293.

[9]Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, translated by Sian Reynolds, 2 vols. (New York: Harper and Row, 1966, first published in 1949).

[10]Emmanuel Le Roy Ladurie, *The Peasants of Languedoc*, translated by John Day (Urbana: University of Illinois Press, 1976); *Montaillou: The Promised Land of Error* translated by Barbara Bray (New York: George Braziller, Inc., 1978); *Times of Feast, Times of Famine: A History of Climate Since the Year 1000*, translated by Barbara Bray (New York: Farrar, Straus and Giroux, 1988).

> geographical introductions to history, which one finds placed to such little effect at the beginning of so many volumes, with their brief reviews of the mineral deposits, the types of agriculture, and the local flora, none of which is ever mentioned again....[11]

Worster distances himself from *Annales* history at the level of politics. Where Braudel had included the political "history of events," Worster substitutes an anthropological approach which seeks to explain the discourse between culture and nature.[12] But while it would seem that Worster's blueprint for environmental history simply carries a slightly modified *Annales* approach to America, his colleagues in the history of North America, namely, William Cronon, Richard White, Robert McEvoy, Carolyn Merchant and others have sustained and expanded the scholarly discourse on the interrelationships among economy, society, culture, law, climate, flora, fauna, hydrology and soils.[13]

Any analysis which seeks to combine human and natural history is problematic. One difficulty stems from the historian's attempt to fuse the fields of ecology and history, the former viewing human activity as only one

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[11]Fernand Braudel, *On History*, translated by Sarah Matthews (Chicago: University of Chicago Press, 180), p. 3.

[12]For a discussion of such a layered history see, Fernand Braudel, "History and the Social Sciences: The *Longue Durée*," in Fernand Braudel, *On History*, translated by Sarah Matthews (Chicago: University of Chicago Press, 1980), p. 27.

[13]See for example, William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983); Richard White, *The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos* (Lincoln: University of Nebraska Press, 1983); Arthur F. McEvoy, *the Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980*, (New York: Cambridge University Press, 1986); see also recent issues of *Environmental History Review*.

element of environmental change in a closed ecosystem while the latter considers human agency as central. Because much variation in restricted ecosystems often remains inexplicable, ecologists have begun increasingly to argue that the human impact on ecosystems is of current and of long term significance, even in supposedly pristine environments.[14] Moreover, ecological concepts like equilibrium, succession, stability and balance have been jettisoned by some in favor descriptions of ecosystems as mosaics of environmental conditions.[15] Unfortunately, environmental historians have been less circumspect in their acceptance of the inviolability of the science which they incorporate into environmental histories.[16]

> Historians thought ecology was the rock upon which they could build environmental history; it turned out to be a swamp....For although in popular speech ecology has been reified into nature, ecology is, in fact, only an academic discipline.[17]

David Demeritt's recent post modernist critique of environmental history chides its practitioners for failing to realize that ecology, like any other science, is, like nature itself, socially constructed. Demeritt argues that environmental historians in accepting a "realist

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[14]Norman L. Christensen, "Landscape History and Ecological Change," *Journal of Forest History* 33.3 (1989), 116-17.

[15]For an epistemological treatment of these trends see Donald Worster, "The Ecology of Order and Chaos," in Donald Worster ed., *The Wealth of Nature* (Oxford and New York: Oxford University Press, 1993), p. 164.

[16]William Cronon, "Modes of Prophecy and Production: Placing Nature in History," *Journal of American History* 76.4 (1990), p. 1122. p. 1115.

[17]Richard White, "Environmental History: Ecology and Meaning." *Journal of American History* 76.4 (1990), 1114.

epistemology...remain blissfully ignorant of the unsettling implication of their social constructivist approach to knowledge."[18] There has been some progress for while most environmental historians would still submit that nature exists, they, along with their colleagues in the ecological sciences, understand that they participate in a dialogue with it.[19]

In any event, historians and ecologists, however tentatively, continue to try to find common ground for analysis.

> One of the ironies of environmental history is that historians have themselves helped erode ecological verities even as they used them to evaluate history. Historians revealed to ecologists how far back human manipulations of the environment went and how extensive they were. It became harder for scientists to think that the communities they were describing and studying were the results of natural processes alone. Ecologists themselves turned to historians to help reconstitute their science to study human social and economic processes as well as biological processes. Historians, who had relied on the scientists to provide their basic guidelines, and scientists, who saw historians helping transform their object of study, met [at a recent conference] in a sort of mutual bewilderment.[20]

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[18]David Demeritt, "Ecology, Objectivity and Critique in Writings on Nature and Human Societies," *Journal of Historical Geography* 20 (1994), pp. 27-28. For a rebuttal to Demeritt see, William Cronon, "Comment: Cutting Loose or Running Aground," *Journal of Historical Geography* 20 (1994), pp. 38-43.

[19]Cronon, "Comment," p. 40.

[20]Richard White, "Environmental History," p. 1115.

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The Environment in Africa's History

Africanist historians began increasingly to place ecology and nature into their histories during the late 1970s, when, in response to ongoing ecological crises in the African Sahel, social scientists of all stripes sought out historical antecedents and root causes of food deficits, desertification, and drops in agricultural production.[21] In *A Modern History of Tanganyika*, John Iliffe reflects this concern when he claims that

> One of the central themes of Tanganyika's history has been its peoples' colonization of the land and their struggle with their enemies in nature. [I]ts history is quite literally written on the face of the land.[22]

Although Iliffe's *History* considers Tanganyika's rural agrarian history, it should not be considered an environmental history per se. It is, rather, a work of political economy which uses only the broadest of strokes in portraying relations among Africans, Europeans and nature.

The environmental crises of the 1970s crisis period stimulated other more sustained attempts to explain East Africa's environmental degradation with an ecological approach. Both Helge Kjekshus and Leroy Vail argue that the

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[21]See Michael Watts, *Silent Violence: Food, Famine and Peasantry in Northern Nigeria* (Berkeley: University of California Press, 1983); Paul Richards, *African Environment: Problems and Perspectives*, (London: International African Institute, 1975); Sarah Berry "The Food Crisis and Agrarian Change in Africa: A Review Essay," *African Studies Review* 27.2 (1984), pp. 59-112.

[22]John Iliffe, *A Modern History of Tanganyika* (Cambridge: Cambridge University Press), p. 4.

physical and biological environments belong in the center of the historical picture.[23] But rather than use nature as a foil, these historians idealize the "traditionally" (read pre-colonial) harmonious relations between rural African societies and the natural world. In this paradigm, Africa's Eden disappears as European colonial administrations force their subjects to bite the apple of commercialization. Environmental degradation thus becomes a relatively recent phenomenon, its roots buried in the modern encounter between Europe and East Africa where the relationships among Trypanosomiasis, colonialism and capitalism cause ecological crisis. These early studies point out the important relationship between population, economics, land use and the environment, but they overemphasize the control exerted by colonial administration over African production.[24] Moreover their periodization, which places the beginning of environmental degradation as contemporaneous with and caused by colonization, understates dramatic changes in East African trade, politics and production, which spanned most of the nineteenth century.[25]

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[23]Helge Kjekshus, *Ecology, Control and Economic Development in East African History* (Berkeley: University of California Press, 1977); and Leroy Vail "Ecology and History: The Example of Eastern Zambia," *Journal of Southern African Studies* 3.2 (1977), 130-55.

[24]John McCracken, "Colonialism, Capitalism and Ecological Crisis in Malawi: a Reassessment," in Anderson and Grove, eds., *Conservation in Africa* (Cambridge: Cambridge University Press, 1987), p. 68; for a recent exception, see Elias Mandala, *Work and Control in a Peasant Economy: A History of the Lower Tchiri Valley in Malawi 1859-1960* (Madison: University of Wisconsin Press, 1990).

[25]D.H. Johnson and D. Anderson, "Introduction: Ecology and Society in Northeast African History," in D.H. Johnson and D. Anderson, eds., *The Ecology of Survival: Case Studies from Northeast African History* (Bolder: Westview Press, 1988), p. 2.

Notwithstanding the weaknesses of Kjekshus' romantic view of African ecology, his study raised many important questions about human/environmental relations in eastern Africa. Clearly, "Merrie Africa" never existed, but the question remains, how did Africans control their local environments in precolonial times and how did change proceed? What kind of evidence reveals biological and/or edaphic changes? What were the continuities between precolonial and colonial environmental control and African ideas about nature? How did differing European and African philosophies about nature and land-use translate into accommodation, conflict and change? How can degradation be measured? What constitutes ecological stress and crisis? Scholars have recently begun to answer these questions in terms of broad imperial histories, the history of science and focused case studies in agricultural history.[26]

Revising East Africa's Environmental History: Micro-Studies of Agriculture, Pastoralism

Plant and animal husbandry constitutes the most important point of human/environmental contact in East Africa. Rather than following Kjekshus' ahistorical and evolutionary approach to agricultural change, recent research has pushed the temporal frame of analysis back well beyond the nineteenth century. Based largely on linguistic and archaeological evidence, this scholarship offers a nuanced

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[26]For a good general work which revises Kjekshus' analysis of nineteenth-century Tanzania, see Koponen, *People and Production*.

history of land-use and settlement whereby increases in population densities accompanied by intensification of agricultural and/or pastoral production can signal impending ecological stress, breakdown, site abandonment and population dispersal.[27] John Sutton's work, in particular, suggests that highly specialized technological adaptations in agricultural systems constituted exceptions in the history of East African agriculture.[28] In fact, the scholarly preoccupation with technology has masked the more common picture of long-term adaptation in which African societies learned how to minimize risk through a continuum of extensive and intensive methods of husbandry.[29] Unfortunately, pre-nineteenth century histories remain sketchy because of the imprecise nature of the archaeological and linguistic evidence and the small number of historians who consider this period.[30]

For the late nineteenth-century East African communities, more copious sources have allowed historians to clarify the history of inter-community exchanges which

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[27]See selections in J.E.G. Sutton, ed., *Special Volume of Contributions to the History of African Agricultural Technology and Field Systems, Azania* XXIV (1989)

[28]J.E.G. Sutton, "Irrigation and Soil Conservation in African Agricultural History: With a Reconsideration of the Inyanga Terracing and Engaruka Irrigation Works," *Journal of African History* 25 (1984), pp., 2-41; "Toward a History of Cultivating the Fields," *Azania* XXIV (1989), pp. 98-112. Jim McCann, makes a similar point in "Agriculture and African History," *Journal of African History* 32 (1991), pp., 510-511.

[29]For a good description of intensive and extensive systems for nineteenth century Tanzania, see Koponen, *People and Production*, chapter 6.

[30]CF. Jan Vansina, *Paths in the Rainforest: Toward a History of Political Tradition in Equatorial Africa*, (Madison: University of Wisconsin Press, 1990); and David Schoenbrun, "We are What We Eat: Ancient Agriculture Between the Great Lakes," *Journal of African History* 34 (1993), pp., 32; and in the same volume, J.E.G. Sutton, "The Antecedents of the Interlacustrine Kingdoms," pp. 33-64.

commonly occurred across ecological zones. Histories of pastoral societies, in particular, have forwarded a largely instrumentalist view of the relationship between ecology, economy and identity.[31] The literature builds a textured portrait of complementary social and economic relations between groups occupying environments suited either to pastoralism or agriculture, or both. The relationship between elevation (meteorological, flora and fauna complexes) and trade comes through clearly as, for example, when savanna herders forge economic and social ties through exchanges with mountain cultivators. Rather than focus on environmental control, these works tend to build a case for how identity, economy and crisis interact. Furthermore, because ecological/environmental research grew out of economic history, it placed little emphasis on long-term continuity and change in local environmental control after the great ecological catastrophes of the 1890s.

Studies which concentrate more closely on production have shown that, in response to drought or disease, some East Africans have, over the long term, not only reorganized society, but production itself. Herders became farmers or hunters, and communities which employed a variety of

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[31]Charles Ambler, *Kenyan Communities in the Age of Imperialism: The Central Region in the Late Nineteenth Century* (New Haven: Yale University Press, 1988); Richard Waller, "Emutai: Crisis and Response in Maasailand 1883-1902," in *The Ecology of Survival*, pp. 73-114; "Ecology, Migration and Expansion in East Africa," *African Affairs* 84 (1985), pp. 347-70; "Interaction and Identity on the Periphery: The Transmara Maasai," *International Journal of African Historical Studies* 17 (1984), 243-84; J.L. Berntsen, "The Maasai and their Neighbors: Variables and Interaction," *African Economic History* 2 (1976), pp. 1-11.

production techniques revised production in response to a number of economic, social and climatic conditions.[32] Jim Giblin's adds the political dimension in his study of ecological change in Uzigua (Tanzania). Giblin challenges the preoccupation of economic historians with the late nineteenth century by combining oral sources, mission documents and archival evidence to show how growing vulnerability to famine in Uzigua proceeded far across the precolonial/colonial divide.[33]

Imperialism, European Science and the History of Ideas

By definition, the regional histories of politics, exchange and production, although explaining vital parts of human/environmental relations, do not show how Western science and development imperatives operated on broader scales. Early on in Africa's colonial experience, European botanists, foresters, and soil scientists began to shape a discourse about natural resource exploitation. As the colonial period progressed they began to exert a considerable influence on development policy, including conservation of soil and water resources while raising alarms regarding environmental degradation. Richard Grove, among others, has drawn attention to colonial efforts to control natural

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[32]David Anderson, "Cultivating Pastoralists: Ecology and Economy among the Il Chamus of Baringo, 1840-1980," in *The Ecology of Survival*, pp. 241-260.

[33]James L. Giblin, *The Politics of Environmental Control in Northeastern Tanzania, 1840-1940* (Philadelphia: University of Pennsylvania Press, 1992).

resources and indigenous responses to them.[34] This very important branch of imperial studies, which includes a history of European scientific discourse about nature, will remain incomplete until supplemented by histories which describe African understandings (constructions) of nature.

V. The Evidence

Traveler Accounts

European explorers began to traverse northeastern Tanzania during the second half of the nineteenth century. Whether their interests were religious or commercial, they entered a region locked in the throes of violent political and economic change. Of all the sojourners who entered West Usambara, Oscar Baumann provides the most extensive description of the region's political economy between 1888 and 1892.[35] Likely because he undertook his journey with the

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[34]Richard Grove, "Colonial Conservation, Ecological Hegemony and Popular Resistance: Towards a Global Synthesis," in MacKenzie ed., *Imperialism and the Natural World* (Manchester: Manchester University Press, 1990), p. 15-17; John MacKenzie, "Introduction," in *Imperialism*. See also, Richard Grove, "Scottish Missionaries, Evangelical Discourses and the Origins of Conservation thinking in Southern Africa, 1820-1900," *Journal of Southern African Studies* 2 (1989) 163-88; Grove and Anderson, "The Scramble of Eden: Past, Present and Future in African Conservation," in *Conservation in Africa;* William Beinart, "Soil Erosion, Conservationism and Ideas about Development: A Southern African Exploration, 1900-1960," *Journal of Southern African Studies* 11.1 (1984), p. 52-53; Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Botanical Gardens*, (New York: Academic Press, 1979).

[35]Dr. Oscar Baumann, *Usambara und seine Nachbarbebiete: allgemeine Darstellung des nordöstlichen Deutsch-Ostafrika und seiner Bewohner auf Grund einer im auftrage der Deutsch Ostafrikanischen Gesellschaft im Jahre 1890 ausgeführten Reise* (Berlin: Dietrich Reimer, 1891); *In Deutsch-Ostafrika Während des Aufstandes. Reise der Dr. Hans Meyer'schen Expedition in Usambara* (Wien und Olmütz: Eduard Hölzel, 1890); "Karte von Usambara," *Petermanns Geographische Mittielungen* 35.11 (1889), 257-61; "Usambara," *Petermanns Geographische Mitteilungen* 35.2 (1889), 41-47; Hans Meyer and Oscar Baumann, "Dr. Hans Meyer's Usambara

express interest of assessing their potential for agricultural development, Baumann's observations offer invaluable insight into local ecological conditions.

Archives

Tanzania's National Archive in Dar es Salaam holds the largest collection of colonial materials which consider land-use in West Usambara. Annual reports of the Lushoto District Office, Agriculture, Forestry, Land, Native Affairs all shed light on trends in land use. In addition, secretariat files, especially concerning soil and water conservation, show the Colonial Office's increasing preoccupation with these issues throughout the late 1930s. Several important soil and water surveys appear in Secretariat files for this period. For Usambara in particular, G. Milne's soil survey of the Kitivo/Mlalo region stands out not only by virtue of its detail, but also because of the acrimonious response it stimulated among Lushoto district officials.[36] From reading the report and accompanying correspondence, one certainly senses the disharmony between colonial science and administration regarding conservation and agricultural policy.

For the 1940s and 1950s, the archives hold scores of reports on the Mlalo Basin Rehabilitation Scheme and its

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Expedition," *Mitteilungen aus den deutschen Schutzgebieten* 1 (1888), 199-205.

[36]Also published as G. Milne, "A Soil Reconnaissance Journey through Parts of Tanganyika Territory. December 1935 - February 1936," *Journal of Ecology* 35 (1947), 192-265.

successor, the Usambara Scheme (the British implemented similar schemes across East and Central Africa). The monthly reports especially, illuminate day to day operations, successes and failures, and problems of the schemes in each sub-chiefdom. Predictably the reports and letters concentrate on the most populated areas. Except for the early years of the scheme, when Agricultural Officers tended to be extremely blunt, after 1951, they provide mostly optimistic assessments of the Usambara Scheme's progress.

More detailed sets of reports and correspondence are located in Lushoto's district offices, but they do not seem to be organized in any particular fashion and gaining access, even with research permits, proved almost impossible. However, I was fortunate to obtain, with letters of permission, a set of files from a closet in the District Office of Natural Resources (Mali Asili). Even these few files included extremely valuable insights into local land disputes and forestry issues. For example, one file included a series of letters of complaint from the late 1930s filed by a British settler at Kwai farm, formerly an important German research station and experimental farm. The correspondence provides an extraordinarily detailed description of the conditions at the farm and reveals historical continuity with the German period. The Lushoto file set also contained detailed foresters' safari reports from the 1920s and a set of correspondence concerning a serious land dispute at Nzeregembe.

Scientific Journals

German environmental thinking is evident in turn of the century scientific journals like *Der Pflanzer, Der Tropenpflanzer, Mitteilungen aus den Deutschen Schutzgebeiten, Berichte über Land- und Forstwirtschaft,* among others. This literature, which contains numerous reports of scholarly research on tropical agronomy and forestry, is especially rich for the Usambaras, where the Deutsch Ostafrika Gesellschaft launched several experimental farms. The discourse provides insight into the Western scientific strategies for the development of tropical landscapes. There is a similar literature from British colonial science published mostly after World War II in the *East African Agricultural Journal* and *East African Agricultural and Forestry Journal,* although little of it deals with the Usambaras.

Oral Sources

Much of the evidence for the post 1930 period comes from testimony from Usambara's inhabitants. They offer an African view of resource use and management not available in the published and archival accounts. The oral evidence for this study comes from seven months of taped interviews with male and female elders who identified themselves as either Taita, Shambaa, Pare or Mbugu. Geographically, I covered the various ecological niches, but concentrated mostly on the Mlalo basin for the Shambaa farmers and central plateau

region of Mshangai/Malibwi/Kwamekame for the Mbugu herders.[37]

I conducted interviews with the help of two assistants, both of whom taught at secondary schools in the mountains. They helped to locate informants and conduct the interviews. One of my assistants, who holds a BA in history from the University of Dar es Salaam, proved an extremely talented interviewer. We learned that discussions of famines helped to elicit information regarding land use. Informants regarded one famine in particular, *Njaa ya Chankola* (and to some extent its successor, *Njaa ya Maendaleo*) as an important historical turning point in local history. Generally we tried to quickly identify the informant's expertise and direct the questions toward it.

V. The Approach

This study treats its subject from the perspective of "political ecology," which is a mode of analysis developed in recent social science literature on land degradation.[38] The approach assumes, first and foremost, that degradation is a

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[37]The list of informants, interview dates and locations and questions appears in an appendix. Tapes (in Shambaa, Maa'a, and Pare languages), transcripts (in English for the Mbugu transcripts and in Swahili for the others) will be deposited with the University of Dar es Salaam oral history repository.

[38]See Chapter 1 "Defining and Debating the Problem," in Harold Brookfield and Piers Blaikie, eds., *Land Degradation and Society* (London: Meuthen and Co., 1987), p. 1-26; and D.J. Campbell and Jennifer Olsen, "The Kite," CASID Occasional Paper no. 10; but for close antecedents in anthropology, see, Marshall Sahlins, "Culture and Environment: The Study of Cultural Ecology," in Sol Tax ed., *Horizons of Anthropology* (Chicago: Aldine Publishing Company, 1964) and Clifford Geertz, *Agricultural Involution: The Process of Ecological Change in Indonesia* (Berkeley: University of California Press, 1966); Roy Ellen, *Environment, Subsistence and System: The Ecology of Small-Scale Formations* (Cambridge: Cambridge University Press, 1982).

social problem, and furthermore, that social and environmental change proceed in a dialectical manner.[39] "Political ecology" is thus inherently historical, although political ecologists seek most often to describe contemporary problems and focus on current policy rather than on the past. This dissertation seeks, therefore, to integrate social, political and natural history in order to build an intricate long-term picture of changes in Usambara's landscape and provide the kind of deep history which will supplement social scientific research on land degradation.

Time

This study draws on Braudel's idea that history is layered temporally. Rather than use the environment simply as a determining or limiting element in history, I seek to show how economic and political processes accelerate change in physical and biological environments, which, in turn, stimulate adaptations in human societies. Thus forests, soils, climate are treated with a dynamism not commonly present in historical analysis. The argument here is that the past century and a half constitute a period in Usambara's natural history when human intervention on the physical landscape has caused unprecedented acceleration in natural processes. Some changes in flora, fauna, climate, and the soil structure, normally reckoned in tens of thousands of years, can now be remembered as occurring over a couple of

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[39]Brookfield and Blaikie, pp. 16-17.

generations. This is not to argue that all physical processes have speeded up, however. The challenge lies in explaining how political, secular and natural time-scales interact.

Culture and Nature

In Usambara's mountain communities, long standing economic and cultural rhythms gave rise to sophisticated systems of subsistence production, some intensive, some extensive. Usambara's inhabitants have also developed a complex cultural relationship with nature. Describing it involves an assessment of the changing ideological relationship of a community with nature in a context where Western ideas increasingly encroach on African modes of settlement and production. To illuminate this, my dissertation highlights crisis events such as drought and famine which reveal the inner workings of a society's relations with nature and with other societies.[40] At this level, oral sources become particularly important.

Conflict over Resources

Negotiation and conflict over soil, timber, water, and labor is characteristic of Usambara's environmental history. Moreover, political crises often can be linked to ecological stress, crisis and breakdown. During the colonial period, the state's role in negotiation and conflict, as well as in

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[40]Johnson and Anderson, p. 4.

the competition over ideas, became all important.

Scale

The question of scale is central. Usambara's history shows that it has been, for several centuries, part of a regional economy of exchange which operated in what is today southeastern Kenya and northeastern Tanzania. As the nineteenth century progressed, economic and political ties widened and the regional economy became subsumed in a web of mercantile capitalism centered on Zanzibar. Again the scale widened during the colonial period. Regional and global economic and political issues thus influenced local decisions regarding production and land use. In Usambara's case for example, one can see how depression era drought in the midwestern United States influenced conservation issues in Usambara.

VII. Synopsis of Subsequent Chapters

Chapter Two: Usambara's Early Natural and Human History: Differential Rates of Change

Chapter two describes, in the nineteenth century the evolution of West Usambara's physical, biological and cultural landscapes. After reconstructing the physical and biological stages, I introduce Usambara's human actors, whose early iron age economies have been most thoroughly researched. The evidential basis for this section is grounded in scientific literature on climate, phytogeography,

as well as archaeological and linguistic studies. In this chapter, I will argue that over the long-term the mountainous Usambara region constituted a refuge for both people and plants. By reconstructing the organization of the physical, economic and cultural landscapes up to the mid nineteenth century, I set up the argument for accelerated change described in subsequent chapters.

Chapter Three: Reorienting Exchange and Production: Changing Ideologies of Environmental Control

This chapter argues that the socioeconomic components of nineteenth century historical change in northeast Tanzania persisted across the precolonial/colonial divide. I argue that historians who correlate environmental degradation with German, and later, British, colonialism misunderstand both local economic and environmental processes. Persistent ecological changes can be linked with the region's growing importance as a supplier of food and human beings for mid-nineteenth century slave caravans. I stress here that deleterious ecological changes, associated with economic change, proceeded the epidemics, droughts and famines of the 1890s, in themselves signals of a generation of ecological stress. The ecological aftershocks which rocked Usambara's local economies and social relations until the 1920s were thus only partly related to European colonialism.

The second part of chapter 3 describes the inchoate effect of German notions of nature economics and resource use. The Germans failed, however, to reorganize nature in

their preferred image, as is obvious from the especially rich sources for this period, including published articles concerning research conducted at Amani, an experimental station situated in the Usambara Mountains.

Chapter Four: Reorganizing Nature, the British Way

After a half century of disruption, Shambaa and Mbugu communities reorganized indigenous life as the British government attempted to establish political control during their post World War I takeover. This period of ineffective colonial administrative control, 1916-1928 is clearly represented in the Archival record. Here I explain how the Shambaa, Pare and Mbugu peoples reorganized land use in various ecological zones while, simultaneously, the colonial government formulated policy imperatives regarding commercial agriculture and forestry.

From the late 1920s, the colonial government became preoccupied with issues of environmental degradation and soil and water conservation. Colonial administrators and scientists forged a policy of resource management that persisted until independence. I trace the implementation of environmental policy from the Secretariat down to the local level, showing how sharp disputes over land highlight the dissonance between policy and actual practice in Usambara.

An especially interesting aspect of the chapter is the organization and implementation of colonial forestry. My Mbugu informants describe the introduction of pine and

cypress monocultures as forest sterilization. This changeover to pure stands created a habitat which today supports a large population of rodents. They, in turn, spread bubonic plague, a persistent and very deadly problem in central Usambara.

Chapter Five: Njaa ya Chankola (Chankola's Hunger): Famine as Historical Benchmark

This chapter highlights conflicts stemming from European and African principles of land use, political change, ecological degradation, drought and famine. It presents a case study of ecological crisis in the Mlalo Basin during the 1940s. The *Njaa* episodes of 1942-43 and 1946-49 signal the northern side of the massif's growing vulnerability to food shortages during rainfall deficits. The period of *Njaa* also coincides with the British attempts to reorganize political power in the mountains by firing Mlalo's sub-chief and renowned rainmaker, Hassani Kinyassi, and replacing him with a tax clerk. The discussion highlights indigenous views of drought and famine mitigation and uses this evidence to argue that vulnerability and ecological stress have their roots in a generation of ecological change.

By the late 1940s population increases, changes in crop choices, and colonial prerogatives had altered precolonial famine mitigation techniques to the point where they no could longer function without the infusion of large quantities of emergency food relief. The Mlalo situation quite clearly supports Steven Feierman's arguments about the relationship

between rainmaking and social health.[41]

Chapter Six: Ecological Reform and Transition

This chapter shows how modern demographic, ecological and political pressures led to environmental catastrophes. Following directly on the principles developed in the Mlalo Basin Rehabilitation scheme, the colonial government attempted to impose its conservationist ideology across the mountains. A coalition of colonial Agricultural Officers, African Agricultural Instructors, and Native Authorities doggedly, yet unsuccessfully, attempted to enforce soil erosion control measures in every mountain subchiefdom. Ironically, the colonial policies of the 1950s led, in the early independence period, to the unprecedented destruction of forests, drastic changes in drought mitigation measures (esp. breakdown in irrigation systems across Usambara), changes in stream flow, and rainfall patterns and amounts of occult precipitation (dews and mists common during certain seasons).

The chapter charts a transformation of the indigenous view of land use and resource management. A new generation comes to accept market-led agriculture based on the production of fruits, vegetables and maize. Hybrid varieties of maize and beans and exotic tree species become accepted as legitimate and necessary. In response to land shortages spurred by population growth, farmers clear cut and

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[41]Feierman, *Peasant Intellectuals*, pp. 5-13.

burn over 50 square miles of cedar forest and plant it in maize and exotic fruit trees (mostly pear), an event unthinkable in this area at the turn of the century. Clearly by the 1960s, a new set of ecological relationships had been established.

Chapter Seven: Conclusions: Degradation and Reform

The Conclusion's discussion ties together the historical threads of ecological change in West Usambara. The Epilogue discusses post colonial development efforts and their ideological grounding. The chapter concludes with a description of the most recent ecological catastrophes in Usambara: plague epidemics in the forest zone and the floods of January 1993, which washed away Mlalo town and wiped out crops throughout the upper Umba river watershed.

Chapter 2

Usambara's Early Natural and Human History: Differential Rates of Change[1]

I. Overview

This chapter describes the evolution of Usambara's early nineteenth century physical, biological and cultural landscapes. Together these landscapes form a unique historical environment, which determined the evolutionary pattern of the region's dominant mountain habitats, the montane forests. Change is as much tied to climate and geology as it is to the formation and reproduction of plant, animal and human communities. To understand such complexity requires an appreciation of physical, biological, and social processes and an explanation of the time differential in their rates of change. What follows is a brief overview of the more persistent pre-nineteenth century patterns of social and environmental transformation.

Rising from the dry savanna, the Usambara mountains form an elevated environment of cooler temperatures and more predictable rainfall. From the standpoint of natural

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[1]'Usambara' refers to a region which corresponds to the Usambara mountains, which are divided into eastern and western groups. West Usambara is a larger and more heavily populated massif. Literally, the Swahili term 'Usambara' refers to the place where the Shambaa people reside, the noun for location in Swahili being derived from the noun for the region's majority ethno-linguistic group plus the prefix 'u.'

history, the massif's proximity to the stable Indian Ocean rainfall regime, its geology and soils, and its physical isolation from the drier, hotter plains surrounding the massif has engendered the evolution of an unprecedented diversity of flora and fauna (see Figures 1 and 2).[2] It has provided human communities with refuge from enemies and droughts, soils for agriculture, and fuel for iron smelting and forging. Over the past 4 or 5 millennia, human beings increasingly fired and cut trees, cultivated the forest soils, collected plants for medicines, and almost everywhere shaped the secondary growth which nineteenth century European explorers mistakenly described as primeval.

II. The Context for Human Habitation

The Usambara mountains stand out in stark relief from the surrounding plains, 4000 feet below the almost sheer escarpment wall.[3] The Pare and Taita massifs, also islands rising from this savanna, can be easily seen from Usambara's outer scarps. In fact, the Usambara massif is similar in age and geologic composition to a chain of partly forested crystalline basement block mountains stretching southward

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[2]Jonathan Kingdon, *Island Africa: The Evolution of Africa's Rare Animals and Plants* (Princeton, 1989), p. 130; W.A. Rodgers and K.M. Homewood, "Species Richness and Endemism in the Usambara Mountain Forests, Tanzania," *Biological Journal of the Linnean Society* 18 (1982), pp. 197-242; see also "Ecological Islands and Their Conservation," Proceedings of the Arusha Symposium, *African Journal of Ecology* 19 (1981). — Figures 1 and 2 adapted from Rodgers and Homewood, p. 202.

[3]Reginald Ernest Moreau, "A Synecological Study of Usambara, Tanganyika Territory with Particular Reference to Birds," *Journal of Ecology* 23 (1935), 14.

Figure 1. Relationship between altitude and distance from the coast

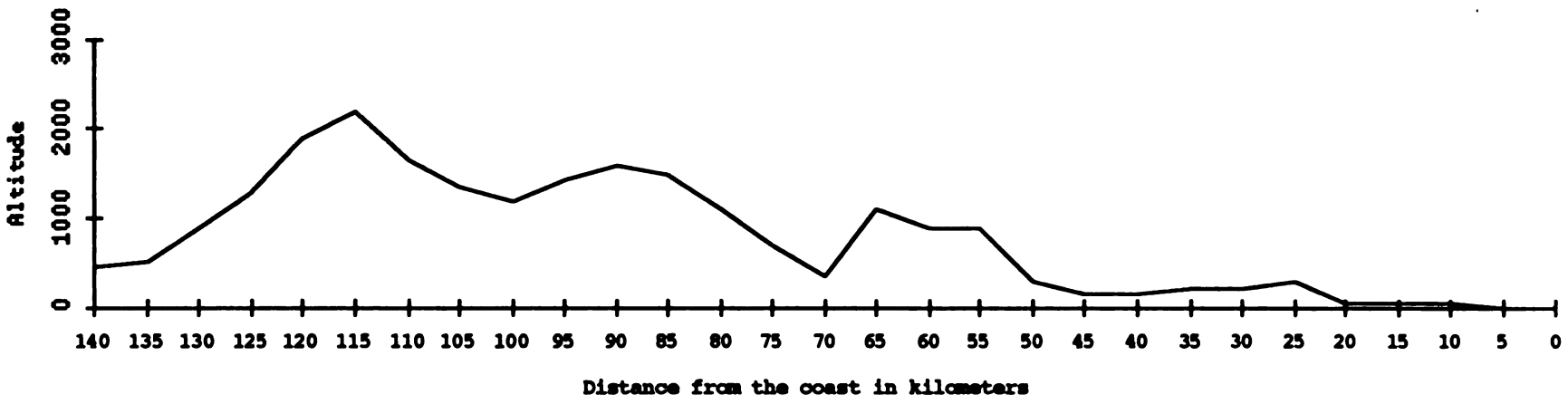
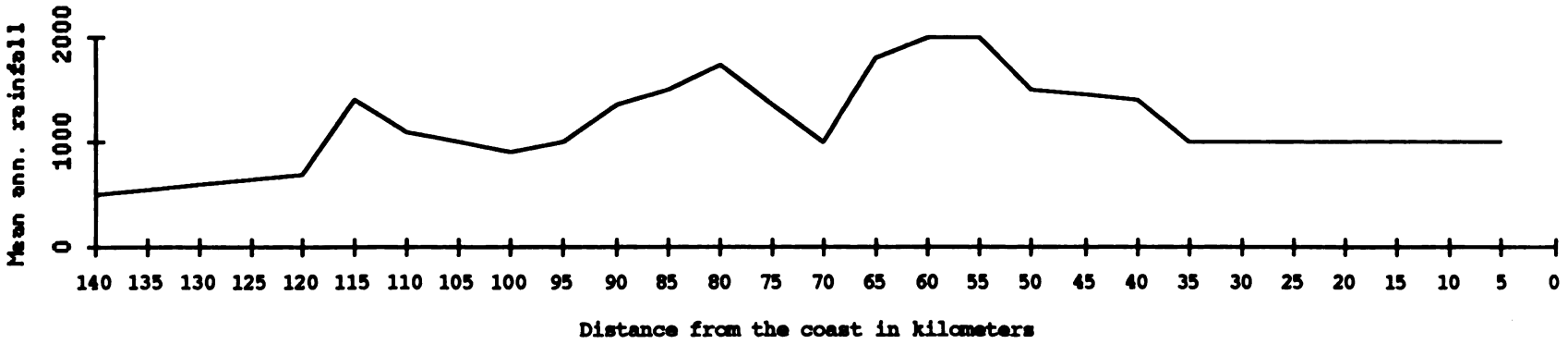


Figure 2. Relationship between rainfall(mm) and distance from the coast



from the Kenya/Tanzania border region.[4] In these two countries, the mountain ranges include Taita, Uzungwe, Ukaguru, Uluguru, Nguru, North and South Pare, and East and West Usambara.

These crystalline formations underwent several cycles of folding, metamorphism and magmatization from 2000My ago to 600My years ago, and they comprise a thick series of highly metamorphosed sediments (granulates, gneisses and schists) with minor intrusive igneous bodies. Block faulting, a major structural feature in the area, raised the western Usambara range up to elevations 2000 meters above sea level. The main faults, and thus the escarpment faces, travel NNW with complementary faults diverging to the NNE. The NE tending Lwengera valley fault cuts between East and West Usambara, and there are numerous bowl-shaped basins scattered throughout the mountain plateau. Uplift and dissection lasted approximately 25My. Compared with the neighboring volcanic mountains of Kilimanjaro/Meru, whose lava deposits are only 1My old, the Usambaras are of great antiquity.[5]

The mountain soils evolved from the acidic bedrock differ locally in depth, color and composition. Soils on slopes are red-brown, acid, leached and highly laterized, and give way to gray-black sandy clay in valleys and basins. These soils have 30-50% clay content, but are nevertheless

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[4]For the sake of clarity, I will refer throughout the chapter to geographical units using their current names.

[5]Rodgers and Homewood, "Species Richness and Endemism," p. 198-200.

free-draining, loamy and easily pulverized ('friable'). Soils and slopes are resistant to erosion, but cannot withstand prolonged crimping without rapid loss of nutrients.[6]

For millennia, Usambara's soils have nurtured forest ecosystems of great diversity and complexity, whose evolution related to global and regional climatic patterns. R.E. Moreau, an internationally respected ornithologist and long-time resident of the Usambara mountains, claimed that, in response to temperature changes, Usambara's forests had expanded down-slope and contracted up-slope during glacial and interglacial epochs. According to Moreau's "pluvial theory," worldwide glacial cooling and therefore decreasing potential evapotranspiration allowed forests to migrate from the cool upland core areas like Usambara into the lower, now wetter and cooler savanna zones.[7] The higher temperatures of the interglacial periods, therefore, would have increased evaporation and caused forest contraction. In their truncated form, forests provided a ecological and evolutionary sanctuary for species which could not survive on the drier plains.

Recent climatic studies, based on pollen samples from East African bogs and stratigraphical dating of East African lake levels, confirm that climatic variation played an important ecological role over the past 20,000 years; but

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[6]Ibid, p. 201. Crimping, or crumbling, occurs when soils are exposed to the cultivator's wooden digging stick or iron hoe.

[7]Reginald Ernest Moreau, *The Bird Faunas of African and Its Islands* (New York: Academic Press, 1966), p. 42.

assert that water availability, not temperature, played the decisive role. Sharon Nicholson and Hermann Flohn claim that during the glaciation of the Pleistocene, climatic fluctuations expressed themselves in terms of changes in the hydrological balance among precipitation, evaporation and runoff, with rainfall clearly the decisive factor.[8]

Nicholson and Flohn conclude that, coincidental with the last glacial maximum, tropical and subtropical aridity marked the period between c.20,000-12,000 BP. In equatorial regions, where tropical rain forests now prevail, relatively dry conditions probably characterized the period from about 18,000 years ago. Their evidence for Uganda shows that prior to 12,500 BP, the evergreen forest virtually disappeared. Also, in much of the rest of the Eastern Africa Rift Valley, the arid conditions which prevailed in the late Pleistocene caused forest contraction.[9] During the subsequent early Holocene period (c.10,000 BP), however, rapid glacial retreat and global warming caused a rise in lake levels throughout tropical Africa, and moderately high lake levels characterized most of the Holocene from about 12,000 BP until three of four millennia ago, when a dry phase again resulted in forest contraction.[10]

Although the pollen studies prove Moreau wrong about the

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[8]Sharon Nicholson and Hermann Flohn. "African Environmental and Climatic Changes and the General Atmospheric Circulation in Late Pleistocene and Holocene." *Climatic Change* 2.4 (1980), 314.

[9]Ibid., p. 318-19.

[10]Ibid., p. 314; for a similar discussion see A.C. Hamilton, "The Quaternary History of African Forests: Its Relevance to Conservation," *African Journal of Ecology* 19 (1981), 2-4.

causes of forest expansion, his theory of the forest as a biological refuge still holds. Indeed, botanists recognize that such Afro alpine regions as Usambara, Uluguru, Pare and Taita, among others, are phytogeographically distinct. The vegetation on the lower slopes of the higher mountains and the upper slopes of the lesser mountains differs so significantly from the surrounding lowlands that these areas of high elevation form an archipelago-like Afro-montane, floristic region.[11] As one of these islands, the Usambara's forests constituted a refuge for plants and animals in the face of thousands of years of climatic change.[12]

In the description below, Moreau provides a romantic view of a closed forest ecosystem, which perpetuates itself in the face of climatic disturbance.

> By the power of its foliage and its epiphytes [non-parasitic mosses, lichens and some orchids] to condense moisture from the air, by the beneficial effect of its shading of its own roots, by the utilization of nutrients in its own leaf-fall and by so checking run-off that any rain is fully effective, a patch of forest on a mountainside may be capable of maintaining itself long after the local climate has deteriorated to such an extent that it would be impossible to establish forest anywhere in the neighborhood. Hence, on the one hand, there may in certain cases be a considerable time-lag before a marked climatic change fully asserts its effect on the vegetation and, if the patch of vegetation is big enough, on its

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[11]F. White, "The History of the Afromontane archipelago and the Scientific Need for its Conservation," *African Journal of Ecology* 19 (1981), p. 33.

[12]Rodgers and Homewood, "Species Richness and Endemism," p. 198. In fact, of all these highland areas, East Usambara's forests still show the greatest levels of biological diversity and endemism and provide a uniqueness of flora and fauna comparable to the Galapagos islands.

> associated birds; on the other hand plant species of certain vegetation type may persist locally long after the associated birds have been wiped out.[13]

Usambara's rainfall patterns are closely tied to those of the Indian Ocean. Stretching WNW, 20 to 80 kilometers inland from the coast, the Usambaras are well situated to catch the ocean moisture. Most rain occurs during the passage of the Inter tropical Convergence Zone, an ill-defined low pressure zone of convectional rainfall, where the NE and SE Indian ocean trade winds meet. The ITCZ migrates with the seasonal inter tropical solar migration, pumping moist air over the East African land mass during two well marked wet seasons.[14]

In West Usambaras, rains usually fall between March and May, and again sometime in either November or December, but location determines their volume and intensity. The early rains, coming from the SE, are heaviest on the southern and eastern slopes, whereas the December rains, moving from the NE, fall most heavily on the northern and western slopes. Local disparities in rainfall in the mountains, for example, can be clearly seen when comparing the relatively dry rain shadow climate of the central plateau described in this case study, with Mazumbai only about 30 kilometers to the southeast (see rainfall figure).

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[13]Moreau, *The Bird Faunas of Africa*, p. 5.

[14]A.C. Hamilton, *Environmental History of East Africa: A Study of the Quaternary* (London: Academic Press, 1982), p. 13.

Distinct communities of forest flora and fauna adapted to Usambara's patchwork of climatic conditions.[15] For generations of East African farmers, Usambara's reliable rainfall and cultivable soils provided a living, but only on very specific sites near the outer edges of the massif at about 1400 m. elevation. On the preferred sites, farmers cut and burned forest transforming its biology to suit their nutritional needs. At the same time, they built up a vast knowledge of the possibilities offered by local ecological conditions and adapted land use accordingly.

III. Shaping the Environment

Archaeological evidence confirms the presence of Neolithic settlements in Usambara and by 1000 - 1500 BP,[16] the ancestors of East Africa's Bantu speaking Iron Age communities began to occupy and use the montane forest havens much more intensively than their predecessors. David Schoenbrun claims that since the introduction of iron working and pastoralism in East Africa, human communities increasingly replaced the old growth forest with secondary forest, crops or savanna communities. His data for the interlacustrine region suggest that a period of deforestation began roughly three thousand years ago and accelerated around

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[15]Rodgers and Homewood, "Species Richness and Endemism," p. 205.

[16]BP dates denote radiocarbon dates and are subject to greater margins of error with age. Also, they date the death of organic matter and thus, for example, charcoal remains found in smelting furnaces reflect the age of wood at cutting, rather than the age of a particular smelting event.

two thousand years ago.[17] Given the links between Lacustrine and Usambara ceramic traditions and the archaeological data introduced below, similar deforestation in Usambara must have begun around this time.

By the early nineteenth century Usambara was inhabited by farmers who spoke Bantu languages and herders who spoke a Southern Cushitic tongue. Differences in language and in economy followed the respective ecologies of land use and settlement patterns. The Bantu (Washambaa, Wapare, Wataita) and Cushitic (Mbugu)[18] communities had not completely segregated themselves however. Over several centuries they had fashioned a web of economic and social ties which persisted well into the twentieth century.

The Early Southern Cushites

The great increase in aridity between 5000 and 4000 BP might well have determined population movements out of southern Ethiopia into Kenya and Tanzania. Although it remains to be seen whether other patterns of change, including linguistic, can be fitted into the scene accordingly,[19] the approximate dates for climatic change correlate with the linguistic evidence for the increase in the presence and antiquity of Southern Cushitic languages in

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[17]David Schoenbrun, "We are What We Eat: Ancient Agriculture Between the Great Lakes," *Journal of African History* 34 (1993), p. 4.

[18]Bantu and Cushite here refer to linguistic classifications. The Mbugu people refer to themselves as *Vamaa'a*.

[19]Gowlett, "Human Adaptation and Long-Term Climatic Change," p. 45. Gowlett's modified BP dates correspond with Ambrose's dates cited below.

East Africa and the antiquity of their East African presence.[20] Their speakers herded cattle, goats and possibly sheep, and they cultivated grains.[21] Before the arrival of the Southern Cushites, there is no evidence for food production, and the newcomers must have spread rapidly in the absence of competition for essential resources.[22] The ancestors of Usambara's *Vamaa* people, who trace their ancestry to central Kenya's Laikipia plateau, were among these migrants to East Africa, although their arrival in Usambara was relatively recent.

By AD. 500-1000, Cushitic settlement was of some centuries standing.[23] Given the similarly favorable environmental conditions in the nearby Usambaras and the presence of Southern Cushitic loan words in local Bantu languages, the Neolithic archaeological sites in the Usambaras are likely southern Cushitic settlements.[24] However, important questions of cultural and technological transfer between these two groups still remain unanswered by the scant linguistic and archaeological record. Did, for

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[20]Stanley Ambrose, "Archaeological and Linguistic Reconstructions of History in East Africa," in Christopher Ehret and Merrick Posnansky, eds., *The Archaeological and Linguistic Reconstruction of African History*, (Berkeley: University of California Press, 1984), p. 113. That Southern Cushitic loan words occur in almost every language between Lake Victoria and the Indian Ocean, argues for prolonged and often intimate contacts between Southern Cushites and the Southern Nilotes, Eastern Cushites and Eastern Bantu. In many areas of Kenya and Tanzania, the late-comers displaced or absorbed the Southern Cushites.

[21]Christopher Ehret and Derek Nurse, "The Taita Cushites," *Sprache und Geschichte in Afrika* 3 (1981), p. 127.

[22]Ambrose, *Reconstructions*, p. 113.

[23]Ehret and Nurse, "Taita Cushites," p. 140-141.

[24]Robert Soper, "Iron Age sites in Northeastern Tanzania," *Azania* II (1967), p. 31.

example, the Bantu peoples adopt irrigation and manuring as the bequests of Cushitic ancestors? Did they cultivate the same grains? Evidence for Taita suggests that hunting and gathering played an important role in Cushitic economy and that Bantu speakers borrowed this technology.[25] Was it so in the Usambaras? How intensively did the Cushites use the forest since they did not smelt or forge iron tools?

Bantu Expansion into Usambara

The Bantu expansion into East Africa is difficult to date, but it probably began around 2,000 years ago.[26] Archaeologists have associated the movement of Bantu peoples with various types of ceramics and a related iron industry because decorated bowls were often found near smelting or forging sites. Pottery from the earliest East African Bantu-related ceramic tradition, Kwale 'ware', has been recovered from the North and South Pare Mountains, the Usambara Mountains, and Kenya's Shimba Hills and has been dated to between about 1850 BP and 1450 BP. In Usambara, a number of archaeological sites contain incised 'ware'' which is related to the coastal pottery from sites of the 14th and 15th centurieslike Kilwa, Manda and Shanga. Also dotted and graphite sherds have been identified but no sites excavated

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[25]Ehret and Nurse, "Taita Cushites,"p. 140.

[26]Derek Nurse, "Bantu Expansion into East Africa: Linguistic Evidence," in Posnansky and Ehret, eds., *The Archaeological and Linguistic Reconstruction of African History*, p. 222.

or dated.[27]

Whatever their migratory route and origins, the economy of the East African Bantu peoples clearly depended on agriculture and iron working. The picture for Usambara is of an extensive spread of early Iron Age languages and technology as early as the second century AD, represented by Kwale ware, followed by a series of diversified and localized groups whose cultural and chronological interrelationships are not yet clear.[28] Archaeologists now refer to these migratory and technological characteristics as the "Mwitu" tradition.[29] Its inheritors form the Bantu-speaking communities of today's Usambara: the Chaga-Taita (Pare, Taita) and Northeast Coast Bantu (Shambaa) groups.[30]

Settlement Sites

Archaeological evidence from Taita and Usambara suggests that early occupation by "Mwitu" communities was confined to the wetter montane or sub-montane woodland/forest areas.[31] Evidence from the distribution of pottery sherds shows a gradual spread down the hills onto the drier plains.[32]

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[27]David Phillip Collett, "The Spread of Early Iron Producing Communities in Eastern and Southern Africa," volume 1. Ph.D. Thesis, Cambridge University, 1985, pp. 23-24.

[28]Soper, "Iron Age Sites," p. 19-36.

[29]Collett, "Spread," p. 131; and Peter Schmidt, "Eastern Expressions of the 'Mwitu' Tradition: Early Iron Age Industry of the Usambara Mountains, Tanzania," *Nyame Akuma* 30 (1987), p. 36.

[30]Derek Nurse and Tom Spear, *The Swahili: Reconstructing the History and Language of an African Society 800-1500* (Philadelphia: University of Pennsylvania Press, 1985), p. 41.

[31]Schmidt, "Mwitu Tradition," p. 37; Collett, "Spread," p. 50.

[32]Ibid., p. 50

Movements to marginal agricultural areas may have been spurred by population growth, a wetter climate, movement of topsoil from hills to plains, or all three.

In the Usambara and Taita hills, sites indicate that access to valley alluvium was extremely important.[33] Robert Soper describes Usambara sites with Kwale 'ware' around Mlalo and in the Lwengera valley. The sites on the northern (Mlalo) and eastern (Lwengera) side of the main range are generally in upland valleys or basins close to permanent streams, and none is on a hill-top, suggesting that access to water and fertile soils, rather than defense, were the primary considerations in the placement of early settlements.[34] In subsequent investigations, Schmidt discovered similar situations near the southwestern Usambara escarpment at elevations between 4800 and 5400 feet. He was able to date the furnace material at mid-second century AD. In the Taita Hills, Collett found similar settlement patterns at high and medium altitudes in the hills. Like Schmidt's finds, these sites tend to be located on the ends of spurs projecting into the valley.[35]

The settlement patterns show that the "Mwitu" peoples understood the difference between soil composition on slopes and in valley bottoms and situated themselves to take advantage of the possibilities offered by agriculture at both

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[33]Ibid.
[34]Soper, "Iron Age Sites," p. 31.
[35]Collett, "Spread," p. 50.

high and low elevations. By locating at areas like Mlalo, Vuga, Bumbuli, Mlola, and Mbaramo, they could farm the alluvial soils of the nearby upland basin, or, in a couple of hours, walk to gardens on alluvium which had washed down to the plains below the escarpment. Less reliable rainfall in the plains made agriculture more precarious, but higher temperatures significantly shortened the growing season allowing for a quick harvest when rains proved adequate.

Forging and Smelting, Nature and Culture in the 'Mwitu' Tradition.

The "Mwitu" tradition represents a system of production practices which spread into East Africa from the Lacustrine region. Archaeological evidence indicates a two stage iron production process mostly used decorated cylindrical pit furnaces associated with special types of rituals.[36] David Collett argues that iron smelting symbolized the crossing of boundaries between the chaotic natural world and ordered world of cultured human beings. In other words, through fire, man brought order to nature.

> In its simplest form heat mediated transformations can be used to convert the raw, natural world into cultural 'cooked' products. Thus the mode of thought enables man to 'control' the boundary between culture and nature and so impose on his world....This mode of thought provides a plan for cultural action in the world and consequently it allows man to 'control' nature.[37]

This is clearly represented in oral traditions from south-

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[36]Ibid., pp. 108, 130.
[37]Ibid., pp. 121-122.

central Africa, where fire and cooking are used to differentiate "cultured" from "wild" man.[38] Furthermore, a metaphorical differentiation of "wild" (one who eats uncooked meat) and "cultured" (one who eats boiled meat with starch) exists also in Shambaa oral traditions.[39]

The Iron-Age peoples of the Taita, Pare, Nguru, and Usambara highlands spoke related languages, farmed similar ecological niches, and smelted and forged iron implements. Moreover, the very hills they inhabited shared similar geological and biological histories. The argument for unity is buttressed by migrations stories in Usambara, in which Shambaa descent groups claim to have migrated from one of the other mountain regions. In the northwest around Mlalo, for example, most Shambaa claim Taita or Pare origins, while in the southern Usambaras most refer to an ancestral residence in Nguru.[40] Their choices of settlement show their tendency to seek out familiar niches appropriate to their farming technology and cultural constructs.

Over time Usambara's Bantu-speakers adapted their patterns of occupation and exploitation to local environmental conditions. In *The Shambaa Kingdom*, Steven Feierman describes how, by two to three centuries ago, Usambara's farmers had organized their settlements into

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[38]Ibid., p. 121.

[39]See Chapter 2, "The Myth of Mbega," in Steven Feierman, *The Shambaa Kingdom: A History* (Madison: University of Wisconsin Press, 1974).

[40]Ibid., pp. 72-73.

permanent towns like Ubiri, Bumbuli, Vuga, Mlalo and Mbaramo, which served as capitals for various chieftaincies (lineages). Permanent banana groves immediately surrounded the town and less permanent and more dispersed gardens were located anywhere within a five mile radius. Notwithstanding Feierman's lack of sources for this period, nineteenth century descriptions tend tentatively to support his reconstruction. For example, the sophisticated intensive and extensive husbandry practices described for 1890s Mlalo suggest a long period of local adaptation ecological conditions.[41]

Organizing large scale banana production and intensive farming technologies, which in Usambara included irrigation furrows and dams, depended on a dense population and the ability of political leaders to organize labor gangs. Permanently settled populations would have simplified recruitment and required farmers to locate swidden cultivation further from dense populations. Supported by oral traditions, Feierman argues that before the eighteenth century, lineage heads allocated plots to their wives and sons. However, the availability of land allowed a young man the freedom to increase his holdings simply by clearing a section of forest.[42] Also in pre-eighteenth century Usambara farming communities, Feierman's "clan organizations," served

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[41]See especially Professor Doctor O. Warburg, "Die Kulturpflanzen Usambaras," *Mitteilungen aus den Deutschen Schutzgebeiten* 7 (1894), 131-199.

[42]For the age of permanent towns, see Feierman, *Shambaa Kingdom*, p. 29; for allocation of garden plots, see p. 33

as the basis for local political unity.[43] Subsequently, kingship replaced clanship, and Kilindi overlords fostered a previously nonexistent political unity among all Bantu speaking farming communities in West Usambara.

By the early nineteenth century, oral traditions agree that a Shambaa political and cultural unity existed in Usambara under the Kilindi king, Kimweri ye Nyumbai. The ecological situation, however, was less clear in much of central Usambara, specifically at Shume and Magamba, where Bantu-style agriculture was undermined by low temperatures and an aridity hostile to banana cultivation. The niche in the highest reaches of the mountains became home to herding people called the *Vamaa*.

Precolonial Usambara's Highland Forest People, the Wambugu[44]

Mbugu informants refer to their ancestors as the *Vamaa*, who in centuries past occupied Kenya's Laikipia plateau until Maa-speaking pastoralists pushed them southward and eastward across the Rift Valley. These movements were punctuated by interludes with Cushitic- and Bantu-speaking farmers in what is today northern Tanzania. This history may explain the

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[43]Ibid., chs. 3 and 4.

[44]The Wambugu refer to themselves as Vama'a and speak a language which has been classified as a branch of Southern Cushitic in Derek Nurse, "Extinct Southern Cushitic Communities in East Africa," in Marianne Bechaus-Gerst and Fritz Serzisko, eds., *Cushitic—Omotic. Papers from the International Symposium on Cushitic and Omotic Languages, Cologne, January 6-9, 1986* (Hamburg 1988), p. 93-104; see also A.N. Tucker and M.A. Bryan, "The Mbugu Anomaly," *Bulletin of the School of Oriental and African Studies* 37 (1974), pp. 188-207 and Morris Goodman, "The Strange Case of Mbugu," in Dell Hymes, ed., *Pidginization and Creolization of Languages* (Cambridge 1971), p. 243-54.

traditionally close social and cultural ties the present-day Wambugu maintain with the Pare people and the ritual importance of certain places in the Pare hills just to the northeast of Usambara.[45] Some accounts also recall a time of residence among Zigua farmers in the region immediately to the south of Usambara.[46]

The traditions suggest a series of conflicts and accommodations between the *Vamaa* and their neighbors, and a high degree of adaptability to a variety of environmental, social and political contexts. Vamaa residence in Usambara fits this model of contact. In fact, eighteenth-century Usambara would have presented immigrant herders with an especially advantageous social, political and ecological situation.

Mbugu oral histories recount *Vamaa* settlement in Usambara as a series of movements by affiliated groups into the mountains from the southern and western sides of the massif.[47] Although now recalled as specific lineages, Mbugu community histories might well have been constructed after

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[45]For linguistic and historical ties to Upare see: E.C. Green, "The Wambugu of Usambara (with notes on Kimbugu)," *Tanzania Notes and Records* 61 (1963), 176. Green describes a "colony" of Wambugu still residing in North Pare and occasional Mshitu ceremonies in South Pare; B.D. Copland, "A Note on the Origin of the Mbugu with a Text," *Zeitschrift für Eingeborenen-Sprachen* 24 (1933-34), p. 243; Tucker and Bryan, "The Mbugu Anomaly," p. 190; MUIT Mz. Seuya and Baharia, p. 2-3 and 11, T. Mganga, at Kwefingo 29/3/92, p. 13.

[46]MUIT, Dominque Ndala at Batai (Magamba), p. 21; Salim Kadala at Mshangai 27/4/92, p. 27.

[47]MUIT informants recall these lineage names as follows: the Londo (Ombweni), Ombeji, Gonja, Nkandu, Ngarito Ngarire and Kwangwana. Feierman, *Shambaa Kingdom*, ch. 3 and E.C. Green, "The Wambugu," also note lineage names in their treatments of Mbugu history.

settlement. In any event, the migrants, whatever their affiliation, ended up occupying the driest and coldest of the massif's micro-climates. Naturally those were areas not favored by the resident cultivators, the Washambaa, who, like their iron age ancestors, preferred to remain within reach of the plains below the massif in order to exploit the region's warmest and wettest micro climates.

Occupation of central Usambara coincided with a period in Shambaa history, when farming communities lived in locally centralized neighborhoods under the auspices of certain lineage heads, but did not exhibit any degree of political unity across the massif. By exploiting the potential pastures of the mountains, the *Vamaa* offered individual Shambaa leaders in the neighborhoods of Ubiri, Gare, Vuga, Bumbuli and Mlalo easy access to an important source of wealth.[48] In fact, Steven Feierman argues that Mbugu migrations into Usambara helped to precipitate a political revolution which resulted in the unification of Shambaa communities under the Kilindi dynasty.[49]

Although the Wambugu had entered the mountains in separate groups, they came to occupy a contiguous region, whose rainfall varied with aspect and elevation. They also shared a common myth of origin in Laikipia. In addition,

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[48]MUIT, Seuya and Baharia, p. 2. Informants claimed that the Shambaa then had no cattle and that the Wambugu purchased their rights of residence with cattle.

[49]Feierman, *The Shambaa Kingdom*, for Shambaa agriculture see chapter 1, and for Mbugu/Shambaa relations during the eighteenth century chapter 3.

their tradition of migration to and residence in Upare fostered a powerful cultural unity, which was renewed regularly when Mbugu initiates and elders met in the forests of the South Pare hills for *mshitu* (adolescent male initiation) ceremonies. Moreover, their Cushitic language, their pastoral economy and their forest enclave clearly separated them from their Shambaa neighbors.

The ecological transition from plains savanna to highland forest must have marked the beginning of an economic and cognitive shift. The Wambugu remained pastoralists in an economic sense but, having left the more open savanna, the retooled their land-use practices and their social relations to fit the highland forest environment. The traditions recall the forested uplands of central Usambara as a sanctuary, an ideal place to practice pastoralism removed from the disorder of the Rift Valley plains they had traversed throughout their history.

Mbugu Culture and Economy in Usambara: Defining the Human/Environmental Discourse and Neighborly Relations

If the forest offered less immediately available pasture than the plains, it had the advantage of being an area of higher precipitation. Oral accounts note that upon arrival in the Usambara forests at Shume and Magamba, the Wambugu found large open glades suitable for grazing (*viringo*).[50]

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[50]MUIT, Seuya and Baharia, p. 3, Dominique Ndala, at Batai, 4/92, p. 21, T. Mganga, p. 14. These glades may have been conditioned by buffalo, bush buck and other ungulates common in central plateau forests until the 1940s.

Testimony is contradictory on the subject of pasture creation, although Mbugu herders probably fired the edges of these glades and other suitable areas to expand the amount of pasture.[51] Councils of Mbugu elders regulated access to pastures in their respective settlement regions, though it seems that entry was easily negotiated, especially during droughts.[52]

Within the settlement regions, the Wambugu lived in dispersed homesteads. Each small settlement maintained exclusive rights to a particular area close to its houses (*mvera*), where animals could be herded in the early morning and evening.[53] The houses themselves were built among the trees and were large enough for the livestock to sleep indoors, but sturdily built fenced outdoor cattle enclosures (*boma*) also dotted the landscape. Moreover, Mbugu leaders sanctioned the construction of large defensible enclosures called *heiboma* which, hidden in the forest, served as animal sanctums and hideaways during times of war.[54]

In addition to pasture, the forest provided fuel and building materials. Mbugu women foraged for specific species

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[51]For evidence of burning forest to create pasture see: B.D. Copland, "A Note on the Origin of the Mbugu with a Text," p. 244; MUIT, Paulo Mwavoa and Mlango Msasu at Kinko 3/3/92, p. 39; MUIT, T. Mganga, p. 14, Mzee Mganga claims that the Mbugu never cleared forest to create pasture.

[52]MUIT, Mkanda Shusha, at Mshangai, 2/92, p. 25.

[53]O. Baumann, "Usambara," *Petermann's Geographische Mitteilungen* 2 (1889), p. 47; MUIT, T. Mganga, p. 14 and 20; Seuya and F. Baharia, 1/92, p. 11.

[54]MUIT, T. Mganga, p. 16. This feature might have become more common during the late nineteenth century. Place names in central Usambara also indicate the former presence of large bomas especially around Kwai, Mshangai, and Malibwi.

of dead trees and shrubs of *mihaghio* (*Maba buxifolia*), *ngiti*, *mziragembe* (wild olive, *Olea chrysophylla*), and *muandala* (*Ptaeroxylon obliquum*) for their cooking fires.[55] Just what effect this had on the nineteenth century forest ecology is difficult to determine; but because collection was carried out fairly close to the homestead, the lack of ground litter and decrease in nutrient cycling may have impoverished nearby stands of forest. The Wambugu also stripped cedar bark to use as roofing material and collected it, along with other forest plants, for medicinal purposes.[56]

Human and animal population densities would have affected forest ecology. Mbugu prohibitions on premarital sex, child spacing and delayed marriage probably slowed population increase.[57] Control of herd size, essential to the maintenance of the pastoral economy, was regulated through the regular ritual slaughter of animals and exchanges between the Wambugu and the Washambaa.[58] They also exchanged livestock, hides and dried meat for the vegetable produce and iron implements available from the neighboring Shambaa cultivators.[59] After the advent of Kilindi rule in Shambaa neighborhoods, the Wambugu cultivated relations with the

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[55]MUIT, T. Mganga, p. 15. As far as I know, no extensive list of indigenous plant names exists for Mbugu forest areas.

[56]MUIT, D. Ndala, p. 22. Cedar bark for roofing was used exclusively by the Wambugu. The Shambaa thatched their roofs with grass gathered from the waterlogged basins (*dau*) near their neighborhoods. Foraging for firewood in nearby forests was common practice among Shambaa women.

[57]MUIT, Seuya and Baharia, p. 9-10.

[58]Ibid., p. 11. Maddox also notes herd culling and availability of meat through regular ritual slaughter of animals. Maddox, personal communication.

[59]MUIT, Seuya and Baharia, p. 7.

chiefs by paying regular tribute in livestock, labor and women.[60]

In addition to exchanges outside Mbugu territory, herders wealthy in cattle could spread their animals across several Mbugu- controlled localities by marrying several times and distributing their livestock among their wives' sons. These marriage patterns fostered Mbugu unity across the plateau while the dispersal of livestock limited overgrazing and mitigated the effects of localized rainfall failure.[61]

The Wambugu thus built a network of social relations which suited local rainfall variability and allowed for movements of livestock and people within Mbugu territory in times of localized drought.

> We'd hear that there grazing was abundant and here was a desert[62]...there would be a cousin there who would take the animals. In fact all over the Usambaras we had relatives with animals. People sometimes moved with their families, sometimes not if they expected to return. People had their clan areas, so that when they came back they had their place that they own.[63]

Such movements could be temporary or permanent, but only as a last resort did it involve leaving Mbugu territory altogether.

Temporary movements (*urang'a*) were usually no more that

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[60]Steven Feierman, *Peasant Intellectuals: Anthropology and History in Tanzania* (Madison 1990), p. 49 and *The Shambaa Kingdom*, p. 155; MUIT, T. Mganga, p. 20.

[61]MUIT, T. Mganga, p. 20.

[62]Informant used the swahili word "jangwa" to describe an area without adequate grazing.

[63]MUIT, M. Shusha, p. 25; my translation.

a day's walk from the home camp.[64] The herders could be visited regularly by family members, who brought them food and news of home. During severe droughts, entire Mbugu families might migrate permanently in search of food. Playing on their ties with Shambaa farmers, they sought out areas on the edges of farmlands, where agricultural produce was readily available in exchange for labor or for livestock, the latter an important marker of wealth for the Kilindi and the Washambaa.[65] Thus, in spite of claims to a cultural propensity toward reclusiveness, Mbugu economic history in Usambara is closely tied to that of their farming and herding neighbors down-slope.[66]

The relationship between the Wambugu, honey and the forest environment illustrates this paradox. Honey had cultural importance for the Wambugu, since it served as the main ingredient for the beer brewed for all ritual and social occasions; and dowries required partial payment in honey, causing one informant to claim that the Wambugu had a "honey culture."[67] Since forest flora greatly facilitated Mbugu honey production, informants saw a clear relationship between their identity as forest dwellers, honey production, honey's cultural significance, and their cultural separation from the

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[64]MUIT, Paulo Mwavoa and Mlango Msasu, at Kinko 3/92, p. 39.

[65]MUIT, T. Mganga, p. 14; P. Mwavoa and M. Msasu, p. 39.

[66]For reclusiveness see Green, "The Wambugu of Usambara," p. 175. For another example interactions between pastoralist and farmers in East Africa see J.L.Berntsen, "The Maasai and their Neighbors: Variables and Interaction," *African Economic History* 2 (1976), p. 1-11.

[67]MUIT, T. Mganga, p. 17-18, and 20.

Washambaa.[68] Honey, however, had much more than cultural significance for the Wambugu.

Informants recall honey's importance as a dietary supplement, especially during seasons of hunger. Honey's regional economic value was manifest in its importance as a medium of exchange in transactions with Maasai pastoralists, who also used honey ritually. Moreover, Mbugu honey gatherers purchased their hives from the Washambaa.[69] The context of honey production served not only to tie the Wambugu economically to their neighbors, but also to separate them culturally.

Over the course of about a century and a half, Usambara's Cushitic-speaking communities had transformed themselves into the Wambugu. They had shifted successfully from their tenuous existence as clients and refugees on the plains to a much less risky forest-based pastoralism in the Usambara mountains. The viability of Mbugu pastoralism depended on reciprocal relations with their neighbors.

This situation of relative stability began to change with the introduction into the Pangani Valley of a regional merchant economy based on the East African coast and its offshore islands. This economic shift, along with the

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[68]MUIT, T. Mganga, p. 19, D. Ndala, pp. 21 and 22, Mkanda Shusha, p. 27. For honey production in East African forest ecology see R.H. Blackburn, "Honey in Okiek Personality, Culture and Society," Ph.D. dissertation, Michigan State University 1971, chs. 1 and 2.

[69]MUIT, T. Mganga, p. 17-18, M. Shusha, p. 27. Once mixed with maize, honey could be stored for months until needed; See also Blackburn, "Honey in Okiek Personality," ch. 3 for honey-related economic relations between Okiek (highland forest) and Maasai (plains).

ecological disasters which affected East Africans during the 1880s and 90s, so disrupted their economy and society that Mbugu relations with their Shambaa neighbors and with their environment were transformed.

IV. Conclusion

One finds no mention of ecological change or degradation in the histories, oral or written, of pre-nineteenth century Usambara. However, because their production systems made extensive use of mountain forests, pastures and soils, the ancestors of the present-day Shambaa and Mbugu populations shaped environments from the time they entered the mountains.

By the beginning of the nineteenth century, the physical, biological and social continuities of the highlands were about to be broken. The Bantu-speaking cultivators had already destroyed large areas of upland forests by cutting trees to fuel their smelters, forges and cooking fires, and by opening to cultivation slopes and basins near the massif's outer scarps. To what extent they altered the floristic makeup of the forest beyond the settlement zones remains unknown. What is certain is that they cleared parts of the most luxuriant forests at several elevation levels to take advantage of temperature and rainfall patterns.

The *Vamaa* herders also actively shaped their highland environment by firing parts of the drier cedar forests of the mountain plateau in order to create pasture. Some of the Cedar forest's evergreen scrub, noted by Moreau in the 1930s,

may well have resulted from Vamaa pastoral practices.

The scope of pre-nineteenth century change is difficult to establish. As long as population densities remained low, the forest would regenerate in swidden gardens, though in an altered state exhibiting a poverty of species and different dominant trees. Nonetheless, by the selective use and conservation of Usambara's forests, farmers and herders created a markedly humanized landscape within which functioned an interactive relationship between nature and culture. By the mid-nineteenth century, when Kimweri ye Nyumbai's rule reached its apex, an aerial observation of Usambara would have revealed a massif largely clothed with primary and secondary forest with open patches of several square miles surrounding permanent settlements. Besides the open patches, human presence would also have been marked by smoke rising from the smiths' furnaces, the farmers fields in preparation, and the herders' pastures, all of them burning a humanized order onto the landscape.

Chapter 3

Reorienting Exchange and Production: Changing Ideologies of Environmental Control

I. Introduction

This chapter describes how war, rapid economic change, and the imposition of German colonial rule combined to alter human/environmental relationships in northeastern Tanzania's West Usambara mountains between the mid-nineteenth century and 1916. It shows that, in the decades before the German incursion, African farmers and herders had shaped their physical environment in response to a number of political and economic challenges. While failing to alter completely the direction of indigenous ecological change, the imperatives of German colonial science and administration opened a new ecological discourse, one which would persist throughout the colonial period.

II. Changing Regional Political Ecology: an Overview

The mid- to late-nineteenth century constituted the most violent phase in Usambara's modern history. For much of the century, the Kilindi kings, ensconced in their mountain capital at Vuga in West Usambara, collected tribute over much of what is today the northeast corner of Tanzania. During the late 1860s, the ruling family experienced a structural

crisis when the long-time king, Kimweri ye Nyumbai, died. The successional dispute between Kimweri's sons precipitated a regional civil war. Almost simultaneously, the demand for slaves on the clove plantations of Pemba island and the widespread sale of guns for their procurement led to a period of unprecedented violence across northeastern Tanzania, which, in turn, transformed local politics and human/environmental relations in Usambara.[1]

The conjuncture of a local political crisis with an expanding regional slave trade marked the beginning of the end for Kilindi political legitimacy across much of the kingdom. Kilindi chiefs who were involved in the successional war needed soldiers, arms, ammunition, and means of payment. Slaves were the currency used to purchase these war goods, and plunder paid for soldiers' services. Enslavement of outsiders and criminal offenders was not new to Usambara in the 1860s and 70s.[2] However, when Kilindi rulers extended the status to ordinary subjects for very minor offenses, hired foreign mercenaries to seize slaves and livestock, they undermined their own legitimacy as the official arbiters between people and nature. Depopulation and attendant losses in agricultural production subvented the chiefs' prowess as rainmakers responsible for the fecundity

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[1]For an extensive explantion Kilindi politics during this period see, Feierman, *Shambaa Kingdom*, chs. 6 and 7. For an explanation of how this process operated in Uzigua, just to the south of Usambara, see James Giblin, *Environmental Control*, parts I and II.

[2]Feierman, *Peasant Intellectuals*, ch. 2.

of the land,[3] and centralized rule in the mountains began to disintegrate. These political and economic transformations had important consequences for Usambara's colonial ecology.

Following closely on the violence and uncertainty of the slave trade era, the German invasion presented its own set of challenges. Early in the 1880s, international competition pushed Germany reluctantly toward colonial adventure in East Africa. This imperial hesitation was not shared by Carl Peters, a young German entrepreneur influenced by British visions of empire, who, in March 1884, founded the Society for German Colonization (later the Deutsch Ostafrika Gesellschaft, hereafter DOAG). By 1886, the Society claimed 60,000 square miles of the East African mainland. Within two years, Peter's concession had been swallowed up by a powerful banking syndicate which established eighteen small trading and experimental stations. When coastal peoples revolted in 1888 and the company's stations were attacked, the German government responded militarily, with the moral argument that it intended to eliminate the slave trade. Once the "Bushiri" revolt had been suppressed, however, a German governor claimed control of military and civil affairs over what is today mainland Tanzania.[4]

The DOAG concentrated its early development efforts on the Usambara highlands, which they believed had potential as a productive coffee-growing region. Further, the mountains

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[3]Feierman, *Shambaa Kingdom*, chapters 6 and 7.

[4]W.O. Henderson, *The German Colonial Empire, 1884-1914* (London: Frank Cass, 1993), pp. 50-66; John Iliffe, *Modern History*, pp. 88-98.

lay along a major caravan route and close enough to the German port at Tanga to lead planners to believe that transport costs could be kept low. The society held concessionary rights in Usambara and between 1891 and 1895 had purchased huge tracts of land from local Kilindi rulers, who claimed they owned lands depopulated during the nineteenth century disasters[5] The DOAG, anxious to exploit what they believed to be luxuriant mountain soils, initiated the construction of a Pangani Valley railway which would serve their interests. Economic success, however, depended upon the railway's rapid completion and favorable world market coffee prices. The railway only reached Mombo (129 kilometers from Tanga and main entry point into W. Usambara) in 1905, six years after the government took over its construction from the failed DOAG effort. To make matters worse, by then coffee production in Usambara had proved to be an abysmal failure. Of all the plantation crops, only sisal made substantial sums for investors. These setbacks limited Germany's ability to transform the local exchange relations. Nonetheless, they made substantial inroads toward reorienting the local human/environmental relations still in recovery.

The difficult ecological conditions of the late nineteenth century continued to challenge farmers and herders across German East Africa well into the German colonial period. During the 1890s, rinderpest swept across East Africa wiping most of the domestic livestock. As pasturage

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[5]John Iliffe, *Modern History*, p. 126.

returned to thicket, tsetse flies multiplied spreading Trypanosomiasis over much of the colony. Other diseases followed: small pox, influenza, East Coast Fever, and bovine pleuro pneumonia.[6] In Usambara, effective mitigation of the natural and man made disasters depended on settlement location, local and regional social and economic relations, and flexibility in modes of production. Generally, the evidence suggests that the period coincided with a general depopulation and loses of environmental control over much of the mountain landscape.

As Usambarans tried to rebuild their communities in the early years of the twentieth century, German colonial administrators, scientists and settlers attempted to impose their vision of colonial development across much of the massif. German administrative policies regarding taxation and labor worked against the historical continuities of African agricultural and pastoral production. Nineteenth century land use patterns use gave way, around mission stations, DOAG experimental stations, and in forest reserves, to Western notions about the proper organization of nature. However, European ideas regarding resource management filtered through to Usambarans only in vague outlines. To those whose pasture became forest reserve, or who watched settlers clear hundreds of acres of ancient forest stands to

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[6]Residents of Usambara often refer to the period as "njaa ya pato," which translates as the hunger of greed. For a discussion of the broader region see, Juhani Koponen, "War, Famine, and Pestilence in Late Precolonial tanzania: A Case for a Heightened Mortality," *African Economic History* 17 (1988), 637-676.

make room for coffee trees, colonial policy must have looked simply like a land grab.

Although the colonial apparatus seized control over large swaths of West Usambara's landscape, German suzerainty lasted only a generation. In 1916 when the British evicted Usambara's enemy population, farmers and herders moved to regain control of formerly German areas. However, they did so in a new ideological and ecological context. In terms of husbandry, African farmers adopted some exotic cultigens, and expanded the cultivation of others, especially maize. Moreover, the Germans had erected new types of legal boundaries around settler farms and forest reserves, forcing Africans to recognize foreign control, albeit temporarily, over tens of thousands of acres of mountain forest. Inside the forest reserves, German silvicultural experts had begun a process of biological simplification which would persist thereafter. Finally, on the plains alluvium, formerly an essential component of highland food production, the Germans had sown sisal and rubber, crops for industrial rather than human consumption.

Tracing Ecological Change

Chapter 2 showed that Usambara's natural history fostered the evolution of very distinct floral communities which corresponded to elevation and rainfall patterns, and which supported very different agroecologies. These observations, based on imprecise oral traditions,

archaeological evidence, and extrapolations from biological descriptions only provide a vague picture human agency. However, by the late 1880s, a clearer picture of human-induced ecological change begins to emerge from traveler accounts. For the period between 1888 and 1892, Oscar Bauman's writings stand out in this regard. Bauman and his partner, Hans Meyer, geographers operating on behalf of the DOAG, carefully observed ecological conditions with an eye to future exploitation. Coupled with subsequent observations of German scientists, and a remarkable gardener at the Mlalo Lutheran Mission, the evidence suggests that radical changes in Usambara's agricultural ecology marked the years between the mid nineteenth century and the end of German colonialism.

Numerous photographs document the region's most visible ecological change, the destruction of old growth forests both in the mountains and on sisal estates.[7] Botanical inventories provide another valuable source for ecological change in both primary and secondary forests. The floristic makeup of an areas speaks volumes to the mode and extent of human intervention. Taken together, these sources begin to illustrate changes in the environment. However, they also point out that changes were extremely complex and that they operated on scales which range from farmers' gardens to entire river valleys.

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[7]See for example, Josef Brunnthaler, "Vegetationsbilder aus Deutsch-Ostafrika. Regenwald von Usambara," *Vegetationsbilder* 11.8 (1914), tafel 43; photos also accompany articles in *Mitteilungun aus den Deutschen Schutzgebieten*. The mission archive at Wüppertal holds a vast collection of landscape photos from the German colonial period.

III. Change along the Elevation Gradient.

Plains, from Agriculture to Trade

On the plains a general pattern emerges in which population movements within and around the mountains resulted in losses of environmental control in some areas and intensification of production in others. The differentials help explain why some mountain farmers, in northern Usambara for example, managed to expand the plains component of their farming system, while on the other fertile plains lands, Shambaa farmers lost the use of an area of supplementary agriculture.

Stark contrasts in elevation and related rainfall and vegetation patterns occur throughout East Africa. Its human history is therefore replete with examples of people from one zone seeking to live within close range of another to gain a measure of food security should local environmental conditions deteriorate. Moreover, West Usambara's demographic history suggests strongly that its varied environment had for centuries attracted various East African peoples. It is not surprising then to find evidence that, during the nineteenth century, people who spoke Zigua, Pare, Kamba, Taita and Maasai settled around the base of the West Usambara massif. They had easy access to mountain produce when droughts, locusts, or disease killed their millet and sorghum crops and/or their livestock. Kamba and Taita colonists from southern Kenya settled at Lunguza and Mngaro

below the Mlalo basin.[8] Other Kamba settlers occupied cultivable sections of the Lwengera valley, the eastern border of West Usambara. On the southern side of the massif Iloikop Maasai had established a settlement at Vuruni, near the Zigua trading town of Mtaarwanda.[9] These settlement ringed the massif along the 400-450 meter elevation gradient and were almost always located in *vitivo*, areas of heavy silt deposits where mountain streams slowed as they entered the plains.[10]

Although much drier than the uplands, the *vitivo* offered opportunities for productive agriculture to resident lowland farmers or to highlanders moving down to cultivate seasonally.[11] Along with the periodic floods, abundant ground water and irrigation furrows leading from streams flowing down the escarpment provided enough moisture for a riverine farming system along stream courses and their immediate flood

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[8]Bauman, *Usambara und seine Nachbarbebiete: allgemeine Darstellung des nordöstlichen Deutsch-Ostafrika und seiner Bewohner auf Grund einer im auftrage der Deutsch Ostafrikanischen Gesellschaft im Jahre 1890 ausgeführten Reise* (Berlin: Dietrich Reimer, 1891), p. 172. Feierman, *Shambaa Kingdom*, p. 126-130, argues that these colonies operated as ivory collection stations and trading posts throughout the eighteenth century. Whatever the case, they served as refuges for those fleeing famine in Ukambani during over much of the course of the nineteenth century. For a discussion of nineteenth century Kamba migrations, see Charles Ambler, *Kenyan Communities in the Age of Imperialism* (New Haven: Yale University Press, 1988).

In fact the Usambara mountains themselves had been peopled by Bantu speakers from Taita, Uzigua, Ukambani and Upare.

[9]Baumann, *Usambara*, p. 175 for Iloikop Maasai settlement at Vuruni. For Mtaarwandasee, Feierman, *Shambaa Kingdom*, p. 125.

[10]I believe it likely that increased soil erosion in the mountains made the Vitivo attractive during the early nineteenth century. The settlements mentioned above are directly downstream from Mlalo and Bumbuli/Vuga, centers of dense population and intensive agriculture.

[11]TNA Sec. 24732, Geoffrey Milne, "Report on a Soil Reconnaissance in the Neighbourhood of Kitivo, Lushoto District, Tanganyika Territory, and in adjacent Highlands, September - October 1937," p. 11.

plains.[12] With an estimated annual rainfall of less than 500mm, these plains agricultural systems depended on ground water and also on an adequate volume of water in the upper watershed, where rainfall averaged at least 3 times that amount.[13]

Using both irrigation and swidden systems, nineteenth century plains farmers produced mainly pulses and drought-resistant sorghums, and likely various millets.[14] They also grew maize and rice in the northern *vitivo*, but they were probably nineteenth century additions to the local crop repertoire.[15] When periodic drought hit the mountains, plains agriculture, tied as it was to mountain runoff, suffered as stream flows decreased. During these episodes, mountain surpluses of bananas and livestock sustained plains farmers.

A critical innovation in plains/hills trade and production patterns began sometime during the mid-nineteenth century, when slaving caravans began moving in increasing numbers up the Umba and Pangani river valleys. Those plains settlements which could provide slaves, ivory and food gained access to guns, powder and cloth, the newest forms of wealth and political prestige. For West Usambara, the newest and

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[12]Baumann, *Usambara*, p. 178.

[13]Milne, "Report," p. 13;

[14]O. Warburg, "Die Kulturpflanzen Usambaras," *Mitteilungen aus den Deutschen Schutzgebeiten* 7 (1894), 141, notes cultivation of sorghum by Kamba at Kitivo and that surpluses were sold in mountain markets. Bauman, *In Deutsch-Ostafrika Während des Aufstandes. Reise der Dr. Hans Meyer'schen Expedition in Usambara.*(Wien und Olmütz: Eduard Hölzel, 1890), p. 166, also notes the importance of mtama, which can be translated as either sorghum or millet.

[15]Warburg, "Kulturpflanzen," p.135 for maize and p.140 for rice.

most important of these settlements, Mazinde, lay below the massif's northwestern side, directly along the Pangani Valley's major caravan route. Mazinde existed exclusively for trade purposes.

Unlike other older plains settlements, which Baumann could identify according to language group, Mazinde was populated by a mixed bag of slaves, freebooters, mercenaries and traders from across the region.[16] From here, Semboja, the town's appointed Kilindi chief and self-styled warlord, took full advantage of the new regional trade patterns and gathered around himself the military and political power necessary to lead a successful coup against the Vuga Kilindi. During the twenty-year-civil war which followed, the center of Kilindi political power shifted from mountain to plain, where the slave-based caravan trade provided the goods and wealth necessary to modern warfare. In these violent times, the inhabitants of Mazinde, and of other plains towns allied with it, began to view the Usambara hills no longer as a source of trade, but as a repository of plunder for slaves, foodstuffs and livestock.

Violence in the Mountains, Njaa ya Pato

Local traditions recall this period, which corresponds roughly to the 1870s and 80s, as the "Hunger of Greed," when hunger, fear of kidnap and violence permeated mountain life.[17]

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[16]Baumann, *Usambara*, describes each village as "Shambaa, Kamba, Taita, Kwavi, Pare, etc., but does not explain his criteria for judgement. ch. 5.

[17]See Chris Conte, "Nature Reorganized: Ecological History in the

There is evidence that the years of violence led to the depopulation, with attendant environmental degradation, in several mountain regions. Those who remained in the mountain enclaves seem generally to have moved closer together into heavily fortified towns, even, at times, fencing off entire areas of cultivation. Other families hid themselves in isolated mountain glens and eked out a living as best they could.

The regional violence seems to have penetrated the Lwengera valley as early as the 1840s, when raids from the south by Zigua slavers, and from the north by Iloikop Maasai scattered the valley's Kamba population. If Baumann's sources are correct, settlers subsequently returned to the valley in large numbers until 1865, when, once again, the valley's inhabitants scattered, this time in response to attacks during the Kilindi civil war. Thus an important lowland agricultural area with a permanent water source became by 1890 an impenetrable thicket of secondary forest.[18]

Upstream in the mountain district of Bumbuli, an ancient center of Shambaa settlement, extensive depopulation had occurred by 1890, when Baumann found much of the town abandoned and fields neglected.[19] Feierman's informants recall Bumbuli as an area where Kilindi chiefs unjustly

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Plateau Forests of West Usambara Mountains c.1850-1935," in Jim Giblin, Greg Maddox and Isaria Kimambo eds., *Custodians of the Land: Environment and Hunger in Tanzania* (London: James Currey, 1995).

[18]For conflict in the 1840s and earlier, see Johann Krapf, *Reisen in Ostafrika ausgefürt in den Jahren 1837-1855*, (Stuttfart: F.A. Brockhaus Kimm.-Gesch., GmbH., Abt. Antiquarium, 1964), p. 122; For oral evidence of later abandonment see Baumann, *Usambara*, p. 170.

[19]Ibid., p. 173.

enslaved the people.[20] In fact, German accounts argue for extensive depopulation over much of the area between Vuga and Bumbuli. Thus, by the mid 1890s, the core region of Kilindi rule had reverted to the secondary forest vegetation characteristic of long abandoned gardens.[21]

On the central plateau, the regional chaos forced the Wambugu herders out of their regular patterns of social relations as they sought to avoid the violence. Slave raiders occasionally kidnapped Mbugu men and women, and at least one Mbugu lineage reportedly participated in slave raiding.[22] To escape the dangers, the Shume Mbugu fled away from the western edge of the Usambara escarpment to the more inaccessible areas around Malibwi, Kwai and Mshangai.[23] Here, in the cedar forests of W. Usambara's central plateau region (1700m - 2000m, el.), Mbugu families gathered together their remaining livestock and constructed stockades (*heiboma*), where young men of the warrior age-set could protect the community's wealth. On detecting a threat, herders quickly brought the livestock into these bomas, where they would be held until the raiders retreated from the area.[24] Others left

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[20]Feierman, *Shambaa Kindom*, p. 177.

[21]Buchwald, "Aus dem Ostafricanische," p. 223; "Westusambara, die Vegetation und der wirtschaftliche werth des Landes," *Der Tropenpflanzer, Zeitschrift für tropische Landwirtschaft* 1 (1897), p. 84.

[22]Mbugu Interview Trancripts (hereafter MIT), Seuya and Baharia, p. 3, Salim Kadala, p. 28.

[23]E. Eick, ""Bericht über meine Reise ins Kwai und Masumbailand (Usambara) vom 12 bis 16 März 1896," *Mitteilungen aus den deutschen Schutzgebieten* 9.3 (1896), p. 187; Copland, "A Note on the Origin of the Mbugu with a Text," *Zeitschrift Für Eingeborenen Sprachen* 24 (1933-34), p. 244; MIT, Kadala, p. 29.

[24]MIT, T. Mganga, p. 16, P. Mwavoa and M. Msasu, p. 38.

the massif altogether, traveling as refugees to East Usambara and Bondei.[25]

The crisis intensified again during the early 1890s, when the Wambugu, along with practically every other pastoralist community in East Africa, experienced the spate of animal diseases which threatened pastoralists (especially the Maasai) throughout East Africa.[26] Wambugu informants relate that the rinderpest (*kidei*) epidemic, which struck just before the Germans arrived (at Mlalo in 1892), substantially reduced their herds.[27] Some Wambugu restocked by acquiring animals from the herders of the Pare hills, whereas others likely raided their neighbors.[28] For the Maasai, also desperate to rebuild, raids on the Mbugu cattle became chronic.[29]

Baumann's observations suggest that those who remained in the vicinity of the western side of the massif lived in fear. Some families found refuge in hidden valleys tucked in along the escarpment wall above the Mkomazi valley. North of Shume, in the district of Mbaru, which overlooks the Mkomasi valley, Baumann found a hamlet called Maringo. The village's

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[25]Feierman, *Shambaa Kingdom*, p. 166.

[26]Sometimes also referred to by informants as *njaa ya pato* although most informants recognize a difference between an earlier famine associated with the slave trade and crisis called *njaa ya mchele* which likely occurred in the 1890s. For effects on the Maasai see Richard Waller, "Emutai: Crisis and Response in Maasailand 1883-1902," in Douglas Johnson and David Anderson, eds., *The Ecology of Survival: Case Studies from Northeast African History* (Boulder, 1988), p. 73-112.

[27]MIT, Salim Kadala, p. 29; Dr. Neubaur, "Die Besiedelungsfähigkeit von Westusambara," *Zeitschrift für tropische Landwirtschaft* 6 (1902), p. 504.

[28]MIT, Paulo Mwavoa and Mlango Msasu at Kinko 3/3/92, p. 39.

[29]MIT, T. Mganga, p. 16; D. Ndala, p. 21; M. Shusha, p. 27; S. Kadala, p. 28; P. Mwavoa and M. Msasu, p. 39.

inhabitants had built their ten "poor" huts on the edge of a cliff and had surrounded the entire community - gardens, pastures and homes - with a thick fence of interlaced thorn bushes which measured 1/2 hours walk in circumference. Traps designed against human intrusion (*fussangeln*) covered the fields to deter Maasai raiders.[30] Similarly fortified Shambaa settlements ringed the massifs northern side at Mtae, Mabaramo, Mlola and Mlalo.

The difficulties notwithstanding, some communities in northern Usambara prospered. The contrasting ecological conditions in the neighboring areas of Mlalo and Mlola illustrates the differentials of adaptation to violence. Mlola, historically an important Kilindi subchiefdom and thus a population center, experienced regular rainfall deficits because of its location in a rain shadow of both the NW and SE monsoon rains. During occasional droughts, Mlola's viability as a settled agricultural community depended, therefore, upon its access to the riverine soils of the plains below the escarpment and trade with more prosperous neighbors. That Baumann, in 1888, should find the people of the basin living in intense poverty, fear and hunger signals a breakdown in mitigation measures.[31] Crisis seems not so much tied to Mlola's environmental marginality, but to the threat of political violence with limited free movement up and down-slope.

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[30]Bauman, *Usambara*, p. 177.
[31]Baumann, *In Deutsch Ostafrika*, p. 77.

As in much of the rest of Usambara, Shambaa traditions recall violent encounters for the Mlola basin. Sometime in the late 1860s, Taita mercenaries in Semboja's hire, attacked Mlola in a tactical feint designed to draw fighters out of Vuga while another Taita force attacked the Kilindi capital from the west.[32] Taita mercenaries' booty would have come from the sale of captives and stolen livestock. Several years later, either in the late 1860s or early 1870s, the Bonde of East Usambara attacked the Western Usambara Kilindi. During this campaign, Bondei soldiers killed Mlola's Kilindi chief. In the late 1870s, the western Kilindi placed another chief at Mlola to deflect the eastern Kilindi, who had a stronghold at nearby Makanya.[33] Mlola's inhabitants, like those of Bumbuli to the southeast, found themselves caught in a vortex of terror and uncertainty, which crippled production and trade. In this militarized context, where war captives constituted a major medium of exchange, travel to the plains gardens would have left farmers liable to kidnap. Thus in September 1888, Baumann found them unwilling even to open village gates to discuss provisioning his caravan. Everything about the village spoke to its poverty:

> There lay the miserable hamlet of Uandani at the foot of a steep slope [near present day Mlola] surrounded by miserable, half-dried crops. The people, shy and dirty, were as unfriendly as their surroundings. When we approached they closed the village gates.... It was so sad and barren that we

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[32]Abdallah bin Hemedi'lAjjemy, *The Kilindi* (Nairobi: East African Literature Bureau, 1963), p. 236-37.

[33]Feierman, *Shambaa Kingdom*, p. 193.

> must ask ourselves if such a land is even worth exploring and exploiting.[34]

Nonetheless, Baumann's party needed provisions, and when villagers quoted high prices, members of the caravan fired a off a mortar round, whereupon the price dropped.[35] To the people of Uandani, Baumann must have seemed like another in a long line of violent visitors.

Baumann's party skirted the northern edge of the massif and arrived two days later at Mlalo, fortified like Mlola, but looking southward over a lush upland basin and northward out across an ocean like savanna 1000m below. After his difficulties in Mlola, Baumann indicated that his preoccupation with food procurement had ended. However, caution still ruled at Mlalo, and when guards saw the Germans' caravan, they sounded the alarm which sent people scrambling toward the safety of the town walls. The basin was heavily settled: Baumann estimated that Mlalo town alone contained 150 huts and additional walled villages lay scattered along the basin's surrounding hilltops.[36] The well clothed and apparently well-fed denizens grew a variety of crops under both swidden and intensively irrigated arrangements, which produced surpluses even in the middle of the dry season (Sept. 1888).

Bananas figured in both the intensive and extensive

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[34]Baumann, *In Deutsch-Ostafrika*, p. 75.
[35]Ibid.
[36]Ibid., p. 78.

production systems.[37] Carl Holst, amateur botanist and Mlalo mission gardener, placed the amount of land devoted to banana production (several varieties) at eighty percent of arable land. Banana trees of several varieties were planted in virgin fields, or in fields which supported intercroppings of maize, beans, pumpkins, potatoes, sugar cane, and tobacco. Bananas were dried and ground into flour, eaten raw or cooked, and the tree fibers and leaves served as material for making various containers.

It appears that, in addition to the swidden system, farmers invested labor in intensive irrigated gardening. Farmers surrounded their gardens with fences. Along stream banks, they organized gangs of laborers to dig and maintain furrows and dams. Moreover, farmers invested in their gardens by planting shade trees and walling them with field stones, which they also used to line the paths which marked field boundaries. Agriculture in Mlalo suggested permanence and stability.

This complex system suggests strongly that Mlalo's political leadership had been able to avoid at least some of the region's generational violence since there was surplus labor and a relatively dense population. Moreover, the Mbugu on the central plateau, also independent of Kilindi control, buffered Mlalo from the political violence. The basin's dense population suggests that Mlalo may have attracted

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[37]The following description of Mlalo's agriculture is based on O. Warburg, "Kulturpflanzen." Warburg's article based on the writings of Carl Holst, gardener at the Mlalo mission in the early 1890s who conducted extensive botanical inventories for W. Usambara.

political refugees from places like Mlola and Bumbuli and Shume.[38] A population increase would help explain the labor intensive gardening.

Location also provided Mlaloans with food security. A permanent river, the Umba, rose in the heavily forested hills of Shagai northwest of the town, then traversed the basin in a meandering circular sweep. With the upper watershed covered in ancient closed canopy forest, the Umba's flowed continually through the basin and down to the plains at Kitivo. Although rainfall was less abundant than on the southern and southeastern sides of the massif, Mlalo caught the November - December northwesterlies, which brought the Vuli rains. Finally, Mlalo town, situated within easy walking distance from both the productive lowland *vitivo* and the Mbugu highlands had become by the late 1880s, a center of regional trade in livestock and produce.[39]

Bauman found another pocket of productive agriculture at Tewe and Mbaramo on the northern side of the Shagai forest .[40] Too high up for banana production, Tewe's farmers grew yams in abundance.[41] Tewe ironworkers, famous throughout Usambara, added to the northern region's trade. Further north, the Mbaramo river allowed farmers to engineer a hydroculture both in the mountains and on the plains below.

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[38]l'Ajjemy, *Kilindi*. A reading of the many war suras reveals large numbers of refugees.

[39]Baumann, *In Deutsch Ostafrika*. p. 168, notes that Mlalo constitutes the only operational market in the western mountains, though Gare must have been operational at this time.

[40]Ibid., p. 88.

[41]Ibid.

In the northwest region then, pre-war patterns of interaction still operated. Mlalo, although having suffered from the slave trade and the Kilindi civil war, seems to have attracted, through its periodic market, access to animal products from Mbugu pastoralists and drought-resistant tubers and iron products from nearby Tewe. Moreover, northern farmers insured themselves against droughts with hill-furrow irrigation cultivation along the Umba river and in their Kitivo on the plains below the town. A dense population, which was likely augmented by refugees from Pare or other parts of the mountains, would have facilitated labor intensive agriculture. Finally, the presence of nearby mature forest helped to protect the Umba watershed and thus the irrigation lifeline both in the hills and in Kitivo.

A New Ideology of Environmental Control

With all the zeal characteristic of late nineteenth century positivism, missionaries, concessionaire companies and the German colonial government moved confidently into Usambara early in the 1890s. Each of these groups acted to alter the local ecology within the precepts of market-led agriculture and resource management. Missionaries, most notably at Gare (Neu Köln) and Mlalo (Hohenfreidberg), experimented with coffee and market gardening and introduced new cultigens to local farmers. Similarly, a few well capitalized plantation societies received thousands of hectares of leasehold properties from the government and

began to experiment with cash crops and animal husbandry. Meanwhile, the concessionaire firms began to explore the possibility of culling indigenous species of trees and replacing them with fast growing species introduced from the Americas and Australia.[42]

Early Research

Following Oscar Baumann's lead, Eick, the Deutsch Osfafrika Gesellschaft's (hereafter DOAG) economy director toured West Usambara in mid-1890, in search of Africa's Switzerland. He found it at Kwai, on the central plateau at about 1700 meters.

> From there, traveling in a northerly direction, I arrived at the highland plateau of Kwai, a true paradise for the German farmer. All of the vegetation and mountain formations were as if transformed. Between the hills there were large grassy plains, broken here and there by small or large stands of trees. On the mountains one sees in places, thick, beautiful primeval forest, which, as one climbs higher, loses its tropical character and at 1600 meters and above is mixed with numerous conifers, podocarpae, falcata, and Juniperus procera. The plains are cut by many small streams, which, due to the slight gradient, have a swampy appearance and are surrounded by thick stands of reeds and rushes. The inhabitants of this land, as well as of the bordering regions with the same vegetation, are the Wambugu, exclusively cattle herders, who cultivate their luxuriant shambas only for their own needs.[43]

Mbuguland's pasture, forest and luxuriant gardens so

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[42]This trend captured for German East Africa in a number of German colonial periodicals. For Usambara in particular see *Berichte über Land- und Forstwritschaft*, *Der Tropenpflanzer*, *Der Pflanzer*, *Usambara Post*, and *Mitteilungen aus den Deutschen Schutzgebeiten*.

[43]My translation of Eick, "Berichte," p. 186.

impressed Eick, that he began the DOAG's experiment in agricultural production at Kwai.

Although suitable for experiments with European grains and vegetables, Kwai's relatively dry, temperate climate and high elevation precluded experiments in lowland tropical agriculture. Therefore, in the late-1890s, the DOAG erected several additional experimental farms at various elevations around East and West Usambara (for example, Mombo 450m, Sakarre, Amani 900m, Lwengera 500m). By 1900, economic necessity drove the DOAG's scientists to push for one large centralized station with labs, experimental gardens, meteorological and cartographic research facilities. Because investment had been concentrated at Kwai, it seemed the logical choice for a larger station, with a link to the lowland station at Mombo, a day's ride away. Hindorf, the DOAG's chief agronomist, argued that instead of Kwai, the research station should be in East Usambara's tropical rain forest zone, where the DOAG (and other plantation societies) already held in freehold tens of thousands of hectares of ancient forest stands.[44] Moreover, at this point, German scientists believed that closed tropical rain forest, so abundant in East Usambara, clothed the colony's richest soils appropriate for coffee production.[45] At 900m elevation, Amani also offered easy access to both highland (>1000m) and

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[44]R. Hindorf, "Die Versuchsstation für Tropenkulturen in Usambara," *Der Tropenpflanzer, Zeitschrift für tropische Landwirtschaft* 5 (1901), pp. 268-69.

[45]L. Sander "Usambara." *Der Tropenpflanzer, Zeitschrift für tropische Landwirtschaft* 7.5 (1903), p. 203.

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lowland (<500m) ecozones and thus gave agronomists the opportunity to set up experimental gardens anywhere from 400m to 1000m and reach them easily on horseback.[46] In June, 1902 the colonial government chose Amani as its central botanical garden and research station, and Kwai farm faded into the scientific background.

Nonetheless, at Kwai, and other large West Usambara farms like Balangai (2000 ha), Ambagulu, Sakarre (5000 ha), Sakarani, German farmers continued their attempts at ecological management with experiments in highland agriculture and animal husbandry. Ludwig Illich, who managed both Kwai and Sakarre farms, experimented with numerous exotic vegetables, grains and horticultural crops. Furthermore, he brought into the mountains European swine and poultry.[47] In 1905, he acquired canning equipment, a butcher and began shipping sausage, bacon and canned pork, to (würst-starved) Germans in Tanga and Dar es Salaam.[48]

These farms proved without doubt that European vegetables and horticultural products could be produced in great variety and profusion.[49] Africans noted some of these successes, particularly with Irish potatoes and cabbages, and quickly incorporated them into swidden systems around the

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[46]Hindorf, "Versuchsstation," p. 270.

[47]Dr. Neubaur (no first name provided), "Die Besiedelungsfähigkeit von Westusambara," *Der Tropenpflanzer, Zeitschrift für tropische Landwirtschaft* 6 (1902), p. 502-505.

[48]On milk production, Neubaur, p. 498; on meat processing see Herman Paasche, *Deutsch Ostafrika* (Rüsch'sche Verlagsbuschhandlung, 1927), p. 252. Paasche's account based on a 1905 trip.

[49]Neubaur, "Besiedelungsfähigkeit," p. 500.

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Mlalo and Gare basins.[50] By 1903, however, the chances for profitable European agriculture in the West Usambara mountains had become problematic. Periodic drought coupled with its inability to get produce or milk products to market led the DOAG to declare failure and to sell Kwai in 1902.[51]

Delays in railroad construction had left the railhead at Korogwe, at the southern end of the western massif, far from most W. Usambara's farmers, who complained that produce simply could not be transported economically to coastal markets until rails reached Mombo. For small holders in West Usambara, like Hedde at Kwamkusu, the expense of transporting goods to the Korogwe railhead by porter caravan and the difficulties in procuring local labor precluded any export reducing them to subsistence agriculture.[52] Hindorf went so far as to suggest that West Usambara be abandoned by settlers altogether.[53]

In addition to transport woes, German unfamiliarity with local ecosystems hindered production. For example, livestock diseases plagued Illich's attempts to manage a cattle herd at Kwai in Usambara's pastoral heartland. Rinderpest epidemics among Wambugu cattle of had restricted Illich's ability to build a herd of local Zebu cattle. Zebus brought in from

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[50]Teichmann, "Auszüge aus en Jahesberichten der Bezirksämter und Militärstationen für die Zeit vom 1. Juli 1900 bis 30. Juni 1901, 2. Bezirksamt Wilhelmstal (West Usambara)," *Berichte uber Land- und Forstwirtschaftt* 1 (1903), p. 27-38. See also report from Gare and Kwai in same volume.

[51]Price based on assessed value of farm's tin roofs.

[52]Hedde, Report on the farm at Mkusu, June 12, 1901 in *Berichte über Land und Forstwirtschaft in Deutsch-Ostafrika* 1 (1903), p. 45-46.

[53]Hindorf, "Versuchsstation," pp. 268-69.

outside to stock Kwai's pastures proved particularly susceptible to East Coast Fever and yearly mortality rates went as high as 80%.[54]

The presence of German settlers in the Kwai/Mkuzi area also played havoc with indigenous patterns of work and residence. Settlers desperately needed farm laborers, but could not always procure them locally because many Wambugu managed to evade corvée requirements.[55] The local resistance to forced labor induced settlers to bring in outside help from other regions of German East Africa. Informants remember the Nyamwezi in particular, as farm laborers whose presence reduced settler dependence on local labor, which, in turn, allowed Europeans to force the Wambugu away from the vicinity of their estates by confiscating their cattle and destroying their homes. These evictions spurred Mbugu migrations away from Kwai and Mkusu to the plains at Mombo and Mazinde, to Shambaa agricultural areas at nearby Gare, and to remote high mountain areas like Kinko and Mgwashi, far from effective German colonial control.[56] Kwai remained a symbol of Mbugu disaffection well into the British period.

In another example of ecological mismanagement, coffee planters not only destroyed thousands of hectares of indigenous forest, but their limited knowledge of forest soils also doomed to failure their hasty experiment in coffee

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[54]Paasch, *Deutsch Ostafrika*, pp. 250-51.

[55]MIT, D. Ndala, p. 23; and for Salim Kadala on Mlimahadala, see also Hedde, Report, pp. 45-46.

[56]MIT, T. Mganga, p. 13; F. Baharia and Seuya, p. 6; D. Ndala, p. 23.

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growing. At Ambagulu and Balangai and on Gare mission land, hundreds of thousands of coffee trees stood on what had been several thousand hectares of cleared and burned over primary forest. The young trees proved susceptible to wind damage, root fungus and coffee borers. Moreover, by 1903, Adolph Engler, a renown botanist, advised against further coffee cultivation in rain forest clearings.[57] Cultivators revised their earlier prognostications noting that the forest soils lost most of their fertility after four years.[58] Thus in less than a decade thousands of hectares of forest cover had been completely cleared and stripped of fertility.[59] Not surprisingly this situation caused headaches for the forestry service, which had a keen interest in conserving Usambara's watershed.[60]

The Timber Industry

German scientists quickly understood the importance of Usambaras forests as reserves of great species diversity and argued for the conservation and propagation of indigenous trees both for timber and watershed conservation.[61] The

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[57]A. Engler, "Bemerkungen über Schonung und verständige Ausnutzung der einzelnen Vegetationsformen Beutsch Ostafrikas," *Berichte über Land - und Forst wirtschaft in Deutsch Ost-Afrika* 2 (1904), p. 3.

[58]For Hemileia see Warburg, "Die Notwendigkeit einer Versuchsstation für Tropenkulturen in Ssambara und ihre Kosten," *Der Tropenpflanzer, Zeitschrift für tropische Landwirtschaft* 2 (1898), [check p. no.]; for soil fertility see Sander, "Usambara," p. 207.

[59]For an excellent description of the degradation process, see G. Milne, "Essays in Applied Pedology, I Soil Type and Soil Management in Relation to Plantation AGriculture in East Usambara," *The East African Agricultural Journal* 3 (1937), p. 16.

[60]Th. Siebenlist, *Forstwirtschaft in Deutsch-Ostafrika* (Berlin, 1914), p. 54

[61]G. Volkens, "Zur Frage der Aufforstung in Deutsch-Ost Afrika,"

forestry service, however, emphasized economy over conservation.

> Left unattended, the forest will renew by its own force, be it via seeds, coppices or root suckers. This new "urwald" with its mass of trees and bushes, vines, tree fern and other weeds allows for a pictoral image, but doesn't make any profit. The goal of forest administration must be to make profit out of existing woods and to increase it in the future; therefore this *virgin forest* [emphasis author's], after using up all the usable old woods, has to make space for a planned, profitable artificial forest.
>
> In the mountain forests there is a variety of species; those are usually found in single stands; only a few are found in groups or in larger area; the African cedar (Juniperus procera) and the Podos; of deciduous trees there are Mkulo (Ocotea Usambarensis) and Mnyassa (Piptadenia buchananii) Takula (Ochna Holstii) and others. Age of trees varies constantly. Here you see low bushes in a smaller area, grown over by kresserpflanzen; there you can see medium sized boles and weak trunks. One must further consider the difficulty of terrain, where draught animals cannot be practically used, the distance of the forests from existing railways, and inaccessibility of much of the forest, then one can understand why present quality requirements cannot be fulfilled. To satisfy them completely will not be possible until we grow them artificially in large areas in closed stands, pure or in mixture.[62]

The colonial government defined forestry service's sphere of ecological dominance over all unused, or unoccupied lands it deemed suitable for its uses.[63] Usambara figured prominently in the forestry service plans for exploitation, and, by 1909, had laid claim to 15,600 sq. kilometers of W.

Notizblatt Königlicher Botanische Garten und Museum Berlin 2.11 (1897), 13.

[62]Siebenlist, *Forstwirtschaft*, p. 39 and 50 [my translation].

[63]Ibid., pp. 9-10.

Usambara, mostly in the Shume/Magamba area. The Mbugu had begun in small numbers to recolonize the area, but under forestry service rules, individual huts or pastures did not grant usufruct rights.[64]

Within the German reservation scheme, the Wambugu retained their usufruct rights only in those forest glades which showed continual use over time and which had settled populations. In areas of recent occupation, indigenous peoples were required to leave immediately after harvesting their crops.[65] This had the effect of evicting from the Shume forest those Wambugu frontiersmen who had returned to reestablish pasture after the troubles of the 1880s and 1890s. In forest pastures where the Wambugu could remain, surveyors marked the *viringo* with stone cairns and designated them "free settlements." Although literally ringed in, these Wambugu maintained an important foothold, however small, in their former range which would prove useful when the Germans evacuated Usambara in 1916. The *de jure* restrictions hindered, but did not halt the movement of animals into and out of the government forest reserve. Nonetheless a clear cognitive boundary between Public Land (*raiya*), over which they had some control, and completely restricted government Crown land, and private settler land, became part of Mbugu consciousness.

Aside from their survey and marking of forest

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[64]Ibid., pp. 7-10.
[65]Ibid., pp. 7-8.

boundaries, and numerous silvicultural experiments, German foresters never managed to exploit much of the central plateau forests. The government did grant a 3,000 acre concession at Shume/Magamba area to Wilkins and Wiese Co., who constructed a sawmill at Hornrow (Shume). The colonial government also subsidized commercial forestry by building a spectacular funicular railway which ran between the western escarpment edge and the plains 1,400 meters below.

The Plains

Among crops Germans experimented with in the lowlands, sisal became the most successful. In his search for crops suitable for production in German East Africa, R. Hindorf came across an article in the 1892 issue of the Kew Bulletin which praised sisal as an industrial crop which nullified labor strikes because of its ability to remain in the ground for months without injury. An intrigued Hindorf eventually found a source of sisal in Florida and sent for 1000 bulbils, 200 of which survived the trip to Germany. He immediately sent the specimens off to Usambara where 62 arrived in good condition. These plants became the parents of German East Africa's sisal industry. By 1898, Hindorf's 62 bulbils had multiplied to 63,000 plants in plantations around Korogwe (southern extremity of W. Usambara). By 1908 the DOAG had machines capable of processing 100,000 leaves a day and over 1,000,000 sisal plants growing.[66] Sisal's success would

[66]Lucile H. Brockway, *Science and Colonial Expansion: The Role of*

continue throughout the colonial period.

The expansion of plains acreage devoted to it gradually cut off access to mountain farmers who had used the lowlands on the southern side of the massif. Sisal, and to some extent rubber, expanded right along the Pangani Valley railway, the site of the older caravan route. Although Sisal cultivation required large labor inputs, Usambarans proved very reluctant to respond. In any event, migrants from other regions did come to work the sisal in numbers large enough to create a demand for agricultural produce on the plantations. Even though, by converting the *vitivo* into industrial croplands, the Germans had cut off *vitivo* grain production, enough land remained available in the moutons for farmers to produce surpluses to sell on the sisal plantations.

An important side effect was a shift crop choices in mountain agriculture. Formerly intercropped with a variety of staples including bananas, maize, sweet potatoes, beans, and yams, farmers living near concentrations of migrant laborers began to produce maize in response to demand on sisal plantations and on European farms in the mountains. Maize thus became an important cash crop early on in Usambara's colonial experience.

On the northern side of the moutons, plains cultivation remained in the hands of Africans. In response to demand in the mountains, rice cultivation seems to have increased

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the *British Botanical Gardens* (New York: Academic Press, 1979), p. 178-79.

greatly during the late 1890s and early 1900s. K. Braun described for the plains below the northern massif an intensive system of rice cultivation. Both permanent residents on the plains and entire families moving temporarily down from the mountains area below Mlalo, cultivated three varieties of rice on irrigated fields. To ward off marauding birds, Farmers had covered their fields with a complex of scarecrows and sound alarms made from cowrie shells. Significantly, most of the rice ended up in the mountain markets, especially Mlalo's.[67]

The 1890s Breakdown: Njaa ya Mchele

Between 1897 and 1899, much of Usambara suffered another killing famine.[68] In Mlalo, the time is know as *Njaa ya Mchele*, in other words, the famine when rice from the plains saved their lives.[69] Drought certainly helped increase local vulnerability, but it was not the only factor contributing to famine. Where depopulation had been most severe, production had suffered and no reserves remained. Meat and milk supplements were unavailable because Rinderpest had wiped out Mbugu herds.[70] Feierman notes that when the missionaries brought in food aid, their stations swelled with the hungry.[71]

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[67] K. Braun, "Der Reis in Deutsch Ostafrika," *Berichte über Land- und Forstwirtschaft in Deutsch Ostafrika* 3 (1907), p. 177-79.

[68] Feierman, *Peasant Intellectuals*, p. 127.

[69] UIT Kasisi and Kuambaza Sheiza at Mlalo, 1/18/92, p. 10; Juma Kimako Kingazi, Hoseni Hamsini, Salimu Shekulwavu at Shita, 2/13/92, p. 18; Jafeth Kalata at Mlalo, 3/13/92, p. 23.

[70] E. Johanssen, "Missionsarbeit unter den Wambugu," *Nachrichten aus der Ostafrikanische Mission* 11 (1897), p. 126.

[71] Feierman, *Peasant Intellectuals*, p. 130.

Another disaster struck in 1902-03, when locusts invaded the mountains killing European potatoes and maize. Thus potatoes, a European introduction adopted so readily as a staple in many areas of high elevation, proved more vulnerable than their predecessor, sweet potatoes, whose leaves locusts ignored.

There is little data about the spatial differential of the *Njaa ya Mchele*, but likely the rice production described above helped mitigate it in the Mlalo area. Another adaptation is evident in the increase of the number of new mountain markets founded after 1900.[72] Another response included the extensification of production, as on the plains near Mlalo and Mbaramo.

Conclusion

From the middle of the nineteenth century to the end of the German period Usambara had become an area where famine had become common.[73] Indeed, *Njaa* became the unifying metaphor for informants describing Usambara's history. Although drought often contributed to the difficulties, political arrangements, changing patterns of land use and the widening scale of economic exchange added to growing vulnerability. The development imperatives of German

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[72]Patrick Fleuret, "Farm and Market: A Study of Society and Agriculture in Tanzania," (Ph.D. dissertation, Univeristy of California at Santa Barbara, 1978), pp. 180-83.

[73]Jafeth Kalata , p. 23, describes four separate famines for this period, *Njaa ya Pato, Njaa ya Kigogo* (where people ground banana roots for food), *Njaa ya Mnyime Afe* (where one left his neighbor to die), and *Njaa Ya Mchele*.

colonialism, although unsuccessful in facilitating an economic takeoff, nonetheless, introduced new notions and patterns of resource exploitation that would persist into the British colonial era.

Chapter 4

Reorganizing Nature, the British Way

Introduction

Chapter four covers the early years of the British mandate in Tanganyika. This period is marked as a time when Britain's colonial governments began to attach importance to their ability to shape human/environmental relations. In West Usambara, the colonial administration divided the landscape into Private, Public, and Government realms. Once the boundaries were set, the various organs of government, i.e. forestry, agriculture, government, determined how land use would proceed, often on an ad hoc basis and without any understanding of African methods and rationales of land use. On the Public Lands, where Africans retained some autonomy in their relationship with nature, the colonial government became increasingly preoccupied with what they regarded as poor husbandry techniques and environmental degradation. Accordingly, the colonial government began to intervene more forcefully at the point of production.

Part I. Organizing Space: Public, Private and Government Domains

In its attempt to organize Usambara's landscape, Tanganyika's British administration showed a decided

continuity with its German predecessor. On the Pangani valley plains estates, where German entrepreneurs had planted the seeds of the sisal industry in the 1890s, successor commercial capitalists of the 1920s expanded production as price increases on the world market encouraged investment. In the mountains, the colonial administration was indecisive allowing some former German plantations to deteriorate, while others were leased or sold outright to interested Europeans. All, however, remained legally in European hands, either as private property, or under the auspices of the Custodian of Ex-Enemy Properties. On Usambara's high plateau, British foresters used the German survey line, defining a realm of commercial timber production and watershed conservation. Survey beacons subdivided both mountains and plains into specified areas of land-use and distinct types of ownership. Confined to so-called Public Lands, African farmers and herders continually tested colonial interpretations of Usambara's space and the survey beacons became markers of conflict and negotiation over soil, water, pasture and forest.

The Plains

Prior to World War I, the railway had connected the Pangani Valley below Usambara with the wider world of international capitalism. Europeans raised rubber, teak, and sisal, the last of which actually succeeded. When the British began to administer Usambara in 1916, the Custodian

of Enemy Property assumed ownership of the German sisal estates and let them short-term - until after the war, when they would be sold at auction.[1] Ten years later, the Pangani Valley's slightly acid soils, semi-arid climate and gentle topography contained the largest sisal growing region in Tanganyika.[2] In Usambara district, the acreage under sisal actually declined between 1920 and 1924 from 9000 to 8500. Meanwhile weeds grew over much of what had been formerly German rubber and sisal estates.[3] However, as sisal prices rose in the mid-twenties, estate owners cleared extensive new areas hoping that the crop would thrive on virgin soils. Between 1924 and 1940, Usambara district's sisal output increased significantly along with the rest of Tanganyika.[4]

There is no direct evidence regarding indigenous cultivation in the Pangani Valley, but the most productive soils were in private hands and plains grain cultivation must have suffered. Thus mountain farmers, who in pre colonial days had traded their bananas and tobacco for plains-grown grain at valley markets like Tarawanda, Mazinde, Mombo, and Makunyuni, lost a valuable source supplemental food supplies.

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[1]Gullebaud, C.W., *An Economic Survey of the Sisal Industry of Tanganyika*, Third edition (Digswell Place: James Nisbet and Co. Ltd., 1966), p. 9.

[2]Kapepwa Tambila, "A Plantation Labour Magnet: The Tanga Case," in Walter Rodney, Kapepwa Tambila and Laurent Sabo, *Migrant Labour in Tanzania during the Colonial Period: Case Studies of Recruitment and Conditions of Labour in the Sisal Industry* (Hamburg: Institut für Afrika-Kunde), p. 29-30. Pangani Valley sisal plantations could be anywhere from 1200 to 3000 ha.

[3]TNA 1733/10 and 1733/28, Annual Reports, Usambara District, for 1920 and 1924 respectively. In 1920, some 17,000 acres of former rubber plantation land lay unused.

[4]Gullebaud, C.W., *Economic Survey*, p. 8.

Table 1: Tanganyika Sisal: Annual Output in Tons, 1923-41[5]

Year	Output	*Year*	Output
1923	12,800	*1933*	69,600
1924	18,400	*1934*	72,500
1925	18,300	*1935*	82,700
1926	25,000	*1936*	80,600
1927	33,000	*1937*	90,600
1928	26,200	*1938*	101,400
1929	45,600	*1939*	103,200
1930	50,000	*1940*	102,300
1931	55,900	*1941*	81,000
1932	60,600		

As in German times, manual labor constituted one of the most important inputs in sisal production. In the industry's expansion years, migrant workers from all over East Africa performed almost all estate work. The dependence on manual labor and the growing size of the plantation sector called for an increasing number of these workers, with 4000 in 1925 and steady expansion after that.[6] Although plantation work was difficult and dangerous, wages (24/= per month) were

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[5]Ibid.

[6]TNA 1733/11, Annual Report, Usambara District, 1925, p. 7; neither census data nor annual reports, at least the ones I have seen, provide numbers of migrant workers specifically for W. Usambara, but for figures from Tanga Province, see Kapepwa Tambila, "A Plantation Labour Magnet: The Tanga Case," in Walter Rodney, Kapepwa Tambila and Laurent Sabo, *Migrant Labour in Tanzania during the Colonial Period: Case Studies of Recruitment and Conditions of Labour in the Sisal Industry* (Hamburg: Institut Für Afrika-Kunde, 1983), p. 31.

higher than those for casual labor in the mountains (12/= to 15/= shillings per month).[7] Despite the relatively good wages, Usambara's resident mountain population avoided sisal plantations, where infectious diseases and work-related accidents caused scores of deaths each year.[8]

The plains south of the W. Usambara massif became, once and for all, the privately owned space of European commercial capitalism. Its inhabitants were migrant workers - outsiders nicknamed "manumba" (the numbers) by Usambara's mountain people. The dangerous, miserable lot of the migrants reinforced the Usambara prejudice that, if possible, the plains should be avoided, as they had been during the troubled years of the slave trade. Nonetheless, this area continued to present mountain farmers with a ready market for food products.

Unlike the Pangani Valley lowlands, where rail and road links favored commercial production, the plains alluvium below the massif's northern escarpment remained the domain of indigenous cultivation. African farmers concentrated their efforts on the five major "kitivo" lands which resembled inland deltas, or bays, where streams, which ran down from the steeper hills, periodically flowed over their banks depositing their load of eroded mountain top soils.[9] Certain

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[7]TNA 1733/11, Annual Report, Usambara District, 1925, p. 21.

[8]Kapepwa Tambila, "A Plantation Labour Magnet," p. 30, for hazardous conditions see pp 33-42.

[9]This definition and the discussion which follows comes from TNA 24732, Geoffrey Milne, Soil Scientist, East African Agricultural Research Station, Amani, "Report on a Soil Reconnaissance in the Neighbourhood of Kitivo, Lushoto District, Tanganyika Territory, and in adjacent (West Usambara) highlands, September - October 1937," pp. 2-25.

sections of the kitivos contained great fertility; nevertheless, intense heat, aridity and malaria kept permanently settled populations sparse and confined agriculture to specific, locally well known sites. Permanent water was a particular problem; only one kitivo, which held the Umba River, contained a permanent stream; the others often dried out between rainy seasons.

Kitivos sloped gently away from the steeper mountain foothills forming soil catenas, or sequences of soil types down an incline. Vegetation on the catena indicated both arable soils and points of prior cultivation and farmers had developed different cropping patterns to suit the various soils. Nearest the massif, farmers planted in maize and bananas. A few hundred meters down slope, where the kitivo flattened out and became inundated during floods, farmers planted combinations of rice and maize depending on rainfall/stream flow conditions.[10] Over generations, farmers carefully adapted cultivation techniques to local soil, climatic and flood conditions to assure productivity under various weather scenarios. Interestingly, in 1937, Milne found maize where Baumann in 1892 had seen millets and sorghums.

> [The] peripheral zone (outside regularly flooded areas) carried a great deal of standing maize, nearly mature at time of visit, with cotton fields along outer margin. Here was some maize on land that had already borne rice in central parts of kitivo. Some of this was so immature that it will only be harvested if normal November floods do not

[10]TNA 24732 Milne, "Report," pp. 11-12

> occur. There was even fresh maize seed being planted (29th Sept.) Late planting form of insurance. If river rises normally maize will be lost, but ground will be fitted by floods to carry rice. If the river does not rise, or not till later, rice will fail or will be late, but in the meantime there will be maize. Premium paid is value of seed and labor and is a light one. There is water at about 1 meter so that growth is assured throughout the dry season if germination can be effected.[11]

Farmers had successfully incorporated new cultigens into the plains farming system. Citing land shortages around Mbaramo and Mlalo, informants note that in spite of the presence of malaria and the heat, people moved down to the northern plains kitivos more or less permanently during the 1920s and 30s.[12] Milne describes them as "fully occupied, or at any rate allotted and cultivated from time to time — some of it being held by residents on the highland plateau who grow rice and between season maize down below and kept cattle and maize up above."[13]

In contrast to the large-scale, commercially oriented sisal plantation systems on the southern kitivos, small scale indigenous land use technologies dominated the productive soils of the northern plains and augmented mountain agriculture. Thus the Mlalo subchiefdom, with the lowest annual rainfall totals of W. Usambara's farming regions,

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[11]TNA 24732 Milne, "Report," p. 14.

[12]UIT Jafeth Kalata, at Mlalo, March 13, 1992; Musa Sembe at Lunguza, Feb. 8, 1992, p. 15; Bakari Panduka, Abdallah Mdoe, Musa Athumani, Ahamadi Rashidi Kidumi, at Kitivo, Mng'aro. February 8, 1992. p. 15. The last group argue that many of the kitivo settlers had worked at the coast and thus had developed some resistance to malaria.

[13]Milne, TNA 24732, "Report,"

supported the region's densest population. A significant part of that success stemmed from a degree of continuity with pre-colonial land use patterns on the plains.[14] In spite of its achievements, ecological reform in Mlalo subsequently became an obsession with the District administration.

The Mountains Farming Areas

With the inception of colonial rule in 1916, the British administration attempted simply to gain control of mountain politics and resources. As the 1930s drew to a close, the colonial penchant for control extended down to movement of the mountain soils themselves. The administration' failure fed into an empire-wide perception of political, demographic and ecological crisis, which would preoccupy its bureaucrats and scientists for a generation.

In the context of Tanganyika's population increases, access to land and water resources became an overtly contentious issue which fed the crisis mentality. Land use and ownership revolved around the western notions of "Public" "Government," and "Private" control. Land tenure arrangements on "Public Lands" (known as 'raiya' to African residents) continued to operate under the auspices of locally appointed chiefs, who parceled out rapidly dwindling secondary forest lands. When land availability became strained on public lands, privately owned estates and government forest reserves came under pressure. Increasingly

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[14]TNA 4/183/2 Volume I, Census, 1931.

over the 1920s and 30s, African farmers and herders, missionaries, and colonial administrators and scientists, all participated in a contentious discourse over dwindling resources.

Table 2. West Usambara, Population by Ethnicity, 1920

group	*no. of inhabitants*
Shambaa	54,000
Kilindi	9,000
Mbugu	6,000
Nyamwezi and Sukuma	5,000
Maasai, Kamba, Kwavi	1,000
total	**75,000**

Table 3. West Usambara, Population by Ethnicity, Sex, Age, 1931

group	*male*	*female*	*total*	*male child*	*female child*	*total child*	*total*
Shambaa	16,264	16,472	32,736	11,579	10,947	22,526	55,262
Kilindi	3,056	2,400	5,456	2,592	2.508	5,100	10,556
Zigua	1,190	1,039	2,229	802	724	1,526	3,755
Pare	2,441	2,363	4,804	1,544	1,577	3,131	7,935
Mbugu	2,117	1,561	3,678	1,087	1,034	2,121	5,799
Migr workers[15]	1,546	186	1,732	209	192	401	2.133
Taita	22	16	38	16	13	29	67
Segeju	39	64	103	30	47	77	180
Kamba	114	97	211	46	28	74	285
Digo	8	9	17	2	5	7	24
total	**26,797**	**24,207**	**51,004**	**7,907**	**17,075**	**34,982**	**85,986**

[15]Includes following groups: Manyema, Sukuma, Bondei, Iramba, Ngoni, Nyassa, Wemba, Mabwe, Nyamwanga, Kinga, Nyakyusa, Yao.

Table 4. West Usambara, Mountain Population by Area, Sex, Age, 1931

area	*males*	*females*	*children*	*total*
Lushoto	2,078	1,943	2,637	6,658
Vuga	3,138	3,279	4,339	10,801
Gare	1,097	1,098	1,676	3,871
Mlola	2,699	2,621	3,090	8,410
Bumbuli	3,479	3,237	4,637	11,353
Mlalo	5,912	5,235	7,792	18,939
Mtae	1,691	1,907	3,851	7,449
Mgwashi	732	689	879	2,300
Lushoto town	212	217	345	774
Total	21,093	20,226	29,246	70,555

As early as 1921, the District Officer at Lushoto noted that land alienation for mountain estates under the Germans had been excessive and asked that the Secretariat approve government purchase of ex-enemy properties for the purpose of restoring some of the land to Usambara cultivators and herders.

> In the vicinity of all the farms [10 listed in report] above referred to and some other not mentioned there is insufficient pasturage for the natives' cattle and in some areas the arable land at the natives' disposal is also inadequate for their food requirements. This has caused many natives to leave their homes and settle in foreign villages - to the mutual dissatisfaction of both inhabitants and immigrants.[16]

When the British government evacuated Usambara's remaining German population during 1919 and 1920, the Assistant District Officer (hereafter A.D.O.). had allowed indigenous farmers to use estate land and clearly believed that they should be permitted to continue doing so. Nonetheless, estate land either remained in European (non-German) hands or became the property of the Custodian of Ex-Enemy Properties. The extensive use of these tracts by African farmers, often thousands of hectares of overgrown and abandoned coffee plantations, suggests that they were making a case, successful in the eyes to the A.D.O., for usufruct rights and conversion to Public Lands.[17] Clearly, the government came under some pressure; under the Land Ordinance

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[16]TNA 72/21/1, "Deceased Estates, Non-Native," A.D.O. Lushoto to Chief Secretary, Dar es Salaam, 2/8/21.

[17]Land which remained in continuous cultivation for seven years could be designated as Public Land.

of 1923, the British Government stopped all further alienation of land in Usambara.[18]

Cultivating and herding on estate lands was nonetheless a gamble; African farmers risked eviction if the Custodian decided to sell to a private buyer. Many farmers therefore began to clear and cultivate available Public lands which had been abandoned during the late 1900s famines. However, settlement on Public Lands, where appointed African chiefs controlled access, could bring difficulties as well. On Public Lands, one faced a tax liability and often unscrupulous collection practices by African chiefs (called Zumbe and Jumbe). Administrative reports suggest that many farmers sought to escape colonial control altogether by opening up new gardens out of range of effective administration in isolated mountain glens.[19]

Controlling Agricultural Space: The Politics of Control.

The British colonial administration attempted to control the local political landscape by appointing headmen to each administrative subdivision in Usambara. For the "men on the spot," the District Officers and their assistants, judicial matters and tax collection became the overriding concern of their efforts in the 1920s to establish effective *Indirect Rule*. British administrative officers claimed that the Akidas, political functionaries whose powers had been

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[18]E.B. Dobson, "Land Tenure of the Wasambaa," *Tanganyika Notes and Records* 10 (1940), p. 3.

[19]TNA 1733/25, Annual Report, Usambara District, 1923.

established under German administration, had used their powers as judges and tax collectors to enrich themselves. By 1924, the D.O. observed that the akidas experienced "considerable difficulties" in their administrative duties, "owing to the complete indifference of the native population generally to orders emanating from them."[20] Fryer lay partial blame on the new settlement patterns wherein, as mentioned above, farmers had, in 1917, begun to diffuse across the countryside.

> There is a steady and growing tendency among the people to scatter and live an isolated existence in huts dotted on the crests of hills.... Akidas continually urge the desirability of Government action to reconstruct the old village communities that existed before the occupation of the country by Europeans, and which were insisted upon by the late German government in order to facilitate administration.[21]

By 1925, the local administration had assumed responsibility for overhauling the German inspired political arrangements and began to replace the akidas with their own "chiefs" who, after the training period, supposedly espoused British ideals.[22] Under German colonial suzerainty some Wakilindi had held chiefly appointments, but the Germans administration had seriously undermined Kilindi political legitimacy by forcing chiefs to confiscate land for sale to European planters and to recruit forced labor.[23] Under the

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[20]TNA 1733/25, Annual Report, Usambara District, 1923.
[21]TNA 1733/25, Annual Report, Usambara District, 1923.
[22]TNA 1733/11, Annual Report, Usabmara District, 1925, p. 6.
[23]Steven Feierman, *Peasant Intellectuals: Anthropology and History in Tanzania* (Madison: University of Wisconsin Press, 1992), p. 124.

British system of Indirect Rule, Kilindi power received the official sanction of "traditional paramounts." The Usambara Administrative Officer went so far as to call his political machinations a "restoration" of Kilindi political dominance.[24] The British administration actually restored a chiefship which, by 1925, was essentially moribund.[25]

The colonial mind of the 1920s linked a Chief's (or Sub-Chief's) political efficacy to his ability to collect tax and adjudicate petty civil matters, organize labor, and perform other elementary bureaucratic duties such as registering births and deaths.[26] Agricultural production remained an economic matter, tied to market forces and the weather. Nonetheless by 1925, chiefs appointed by the District Administration, or the Governor, had extensive powers to control daily life, including agricultural production. For example, they were authorized to confiscate home brewed beer and attendant equipment and thus could interfere with the organization of communal farm labor, invariably rewarded with food and beer.[27] Chiefs could confiscate cattle caught grazing near roadways. They could prosecute their constituents for cutting trees, coerce them to labor, and control their movements into or out of a location.[28] Such powers could impinge on one's ability to clear land for

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[24]TNA 1733/28, Annual Report, Usabmara District, 1924.

[25]Feierman, *Peasant Intellectuals*, p. 122.

[26]TNA 1733/11, Annual Report, Usabmara District, 1925, "Regulations Issued Under the Native Authority Ordinance."

[27]Dobson, "Land Tenure," p.

[28]TNA 1733/11, Annual Report, Usabmara District, 1925, "Regulations Issued Under the Native Authority Ordinance."

cultivation. By sanctioning chiefly interference in daily life, indirect rule gave the Kilindi the opportunity to reconstruct and expand their political power beyond its pre-colonial boundaries.

Their additional powers to interfere at the point of production gave the Kilindi kings at Vuga an opportunity to reassert political power over the sub chiefdoms by appointing their own supporters. In the indigenous view, Kilindi political legitimacy and their right to tribute in labor and livestock, depended largely on their local prowess as rain makers and thus, their ability to keep the land fecund.[29] Showing a complete lack of knowledge, the British in 1929 appointed Shebuge Magogo, a member of Semboja's line, as paramount. Magogo had not inherited the major rain charms, and he had a deformity which traditionally, would have prohibited him from entering the royal enclosure or even from coming into contact with t he most important royal charms.[30] As the king tried to remove chiefs and install his own men, he met with resistance, especially if the deposed chiefs were popular rainmakers, such as the Mlalo Kilindi. When in 1932 and 1933, locusts and then drought covered the mountains in hardship, discontent with Magogo's rule linked political unrest to ecological stress.

A letter attached to administrative correspondence of the drought year 1933 explains how Kilindi legitimacy

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[29]Feierman, *Peasant Intellectuals*, ch.3.
[30]Ibid., p. 146.

weakened as the chiefly appointees squabbled over hereditary rights to political power. In a letter signed "All citizens of Usambara," the problems are attributed to Kilindi rule:

> [W]e should only get rain and obtain a good crop. Because if the rain fell we should obtain sufficient food and enable us to get out tax at once. But now there is a great famine that is why we are spending all our money in purchasing foodstuff[s] and it is impossible for us to get tax. The source of all this trouble is the Wakilindi. They are quarreling amongst themselves on account of the country. Everyone says the country belongs to my father, everyone tells the same story, and therefore all the Wakilindi are not on good terms.... Honestly speaking and according to God's arrangements this country does not belong to them. The rightful owners are the Wakinatuli. The Wakilindi are only aliens, their home is Nguu.... Just remember sir, that [the] Wakilindi wish that all people would die of hunger....[31]

This was a direct challenge to chiefly power and its obligation to feed the people. By the following year, the Usambara district administration began to realize that chiefs and sub-chiefs had to play a role in famine relief. Although the Colonial Administration probably did not understand that rain making had been a central feature of pre-colonial Usambara political legitimacy, they seem to have grasped the fact that rulers had a duty to provide succor during difficult times. Rather than bring rain, however, they instructed their appointed Chiefs and Sub-Chiefs to construct maize granaries and plant cassava as a hedge against future famines. Curiously, the report makes no mention of bananas,

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[31]TNA 4/6/2 Native Administration - Usambara District. Acting P.C. to D.O. Lushoto 8/1/33, p. 70.

Usambara's nineteenth century staple and chief source of drought relief.[32]

"All the citizens of Usambara" may have believed that rain would have alleviated the hunger of 1933, but from the inception of colonial rule farmers had altered significantly crop repertoires and marketing strategies toward the acquisition of cash as a hedge against drought. One strategy was the increase in acreage devoted to maize and European potatoes at the expense of bananas. As noted in Chapter 3, African farmers living around mission stations had quickly incorporated European potatoes into their agricultural regime. The District Annual Reports note additional increases of potatoes, along with maize, during 1920s and 30s.[33] At elevations at around 1400 meters, farmers substituted the new crops for bananas. In higher, colder regions, where bananas did not grow well, European potatoes quickly gained popularity as a substitute for a local variety of sweet potato. Patrick Fleuret contends that European potatoes offered higher yields and require less labor than sweet potatoes. Moreover, European potatoes allowed an expanding population to bring into cultivation areas previously considered marginal to a mountain agriculture

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[32]TNA 4/6/2 Native Administration, Acting D.O. Lushoto (C.M. Coke) to P.C. Tanga 8/3/34, p. 93.

[33]TNA 1733/25, Annual Report for Usambara District, May 30, 1921; 1733/28, Annual Report, Usambara District, 1924, W. Fryer; TNA 72/62/6 vol. I "Annual Report, Usambara District, Lushoto Division, 1937; TNA 72/62/6 vol. 1, Annual Report, Lushoto Division, Korogwe Dist., 1938; TNA 72/62/6, Korogwe District, Annual Report, 1939; for dominance of maize see also R.E. Moreau, "A Synecological Study of Usambara, Tanganyika Territory, with Particular Reference to Birds." *Journal of Ecology* 23 (1935), p. 31.

centered around a banana staple.[34]

Maize, the other cultigen gaining rapidly in popularity, had supplemented Usambara agriculture at least since the nineteenth century, especially around Mlalo. In fact, *Kishee*, the main maize variety grown in Usambara, derives its name from the dominant lineage of Mlalo. Having evolved on the relatively dry northern side of the massif at Mlalo and Kitivo, *kishee* was relatively drought resistant. By the 1920s, farmers had begun to plant it as the major staple throughout the district.[35] Given the fact that it required more labor input than bananas, yet yielded fewer calories per acre (11-14 million for bananas, 5-7 million for maize), the rise of maize seems curious. Maize's spread must, however, be explained in the context of the growing cash economy in the mountains, rather than by labor efficiency.

As noted above, during the 1920s and 30s, sisal production on the plains south of the Usambara massif spurred the immigration of thousands of laborers from other parts of Tanganyika and East Africa. Most workers hailed from drier regions where maize, millet and sorghum constituted the staple food. Preference for maize on sisal estates quickly drove up maize production in the hills. Choosing maize over other cash crops, like coffee for example, was advantageous because it served both as a staple and a cash crop. These

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[34]Patrick Charles Fleuret, "Farm and Market," p. 86.

[35]UIT Kasisi Kuambaza Sheiza, Mlalo, January 18, 1992; Khadija Mdoe, Mlalo, Feb. 26, 1992; Sabuni Mbilu and Epiphan John Mntangi, Kwemashai (near Gare), Feb. 23, 1992; Mashambo Mavoo, Kirete (near Kwai), Feb. 21, 1992.

features enhanced its cultural prestige as a rich man's crop. Maize sales to the plains during the 1920s solidified the cash economy in the hills and allowed Usambara's farmers to meet cash needs without laboring on the plains estates.[36] Indeed cash was readily available in the mountains; hut and poll taxes for 1923-24 topped half a million shillings.[37]

Thus within the context of the relationship between economy, politics and production patterns, the so-called "spreading out" of Usambara's population becomes clear. By adopting maize and potatoes farmers could move into new lands away from the 1400 meter elevation zone which fostered the traditional banana growing centers like Bumbuli, Vuga, Ubiri, Mlalo. Population dispersal reflected not only economic opportunities, but also resistance to the restoration of an oppressive Kilindi political power. However, given an increasing population, agricultural extensification could only succeed so long as additional land remained available.

Ordering the Forest: Shifting Notions of Land Ownership and Use

On the central plateau forest region, forest ecologies underwent radical transformation both inside and outside the forest reserve. The 1920s and 30s witnessed the bounding of forest space as Government Land and an attempt strictly to manage husbandry within it. On public land bounding the

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[36]Fleuret, "Farm and Market," p. 92, cites senior agricultural officer Northeast Circle, who reported that 800 tons of maize had been exported to sisal estates alone. One must remember however, that Usambara included S. Pare and part of present day Handeni district, so the 800 tons did not come exclusively from Usambara.

[37]TNA 1733/28, Annual Report for Usambara District, 1924.

reserve, African herders and farmers (predominantly Wambugu and Wapare) struggled to create a workable relationship.

The First World War provided a hiatus of sorts for the Usambara forest dwellers. Between 1914 and 1921 many Wambugu returned to their pre-colonial settlement areas inside the boundaries of the former German forest reserve and in some settler areas. At Kwai and Magamba, several tracts alienated to settlers were reoccupied by the Wambugu. The incoming British district officer even suggested that a large German estate near Kwai be purchased and transferred to the Wambugu as Public Land.[38] This concession to Mbugu needs did not, however, change the legal distinction between public, private and government land.

The forestry service in particular maintained the German former forest boundaries and restricted access. In 1921 and 22, A.S. Adamson reported encroachment in the forest reserve, where both grazing and cultivation took place. Adamson was particularly indigent that most of the boundary markers had either been destroyed or rotted away, and he immediately set about re-cutting the boundary lines and giving notice to indigenous cultivators and herders to clear out.[39]

The evidence of increased Mbugu cultivation suggests

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[38]TNA. 72/21/1 A.D.O. Lushoto to Chief Secretary, Dar es Salaam, Feb. 8, 1921, no page number. The British administration designated former German estates "ex-enemy property" and resold them.

[39]File no. 11/B/1/3 of Lushoto Department of Natural Resources (hereafter LF), A.S. Adamson, forester, Shume Station, Safari Reports for 19/12/21 to 23/12/21, 14/8/22 to 19/8/22, 13/7/21 to 18/7/21. Recutting the boundary line involved finding the German markers and clearing the underbrush between them. Sisal, Aloe or Eucalyptus were often planted as markers of the boundaries.

that they were attempting to re-claim the formerly evacuated areas of their range, under the assumption that clearing, bounding and planting crops on land implied ownership. Indeed, Adamson's reports state that the Wambugu around Mshangai, Ndabwa, Longoi, Rangwi, Shume had successfully cleared large tracts for cultivation.[40] Growing crops became a strategy for claiming land, although the forest service did not consider such claims legitimate.

By 1923 the brief respite from colonial control ended for the Wambugu when the British forest service began to reorganize the forest environment for commercial exploitation.[41] Usambara timber was needed to meet the colony-wide demand for fuel (especially for the railroads), building materials, and high grade exports.[42] The Forest Department was charged with ensuring that Tanganyikan timber would be cheaper than imported Burmese Teak.[43] Thus the state determined a forest's value in commercial terms.

The colonial state also defined forest use and access. For R.S. Troup, Director of the Imperial Forestry Institute from 1924-39, local forest use by Africans, which threatened the entire colony's timber supplies, was unjustifiable. Gaining control of forest land was not easy, however. Troup discusses some problems of forest reservation in his classic

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[40]LF 11/B/1/3, A.S. Adamson, Safari Report for Shume Reserve 14/8/22 to 19/8/22, p. 3.

[41]See for example H.M. Gardner, "East Afrian Pencil Cedar," *Empire Forestry Journal* 5 (1926).

[42]Tanganyika Territorry, Third Annual Report of the Forest Deptartment, 1923 (Dar es Salaam: Government Printer, 1923), p. 2.

[43]Tanganyika Territory, Forestry Department Annual Report (1924), p. 4.

Colonial Forest Administration (1940).

> Forest reservation is usually unpopular with the local inhabitants as it imposes restrictions which are seldom understood. The process of reservation is considerably easier where the land belongs to Government than where it belongs to native communities....The difficulty of carrying it out varies directly with the density of the population and the demand for land. In sparsely populated tracts there is usually little difficulty in reserving forest to the extent considered necessary. Here timely reservation, before pressure on the land becomes acute, can be carried out with the minimum of hardship and friction, and at a much lower cost than after rights of user have been established. Where possible, therefore, reservation should proceed in advance of any immediate pressure on the land.[44]

In addition to acting against the interests of Mbugu herders, British forest policy attacked the integrity of the forest community itself. The health of Usambara's forest depended upon a complex association of trees, herbs, creeping vines, orchids and wildflowers. These forest conditions cannot be regenerated artificially. In place of the natural forest, colonial foresters created tree plantations where one species of tree, usually an exotic, replaced hundreds of plants species.[45]

Such a dramatic transformation of nature required an available pool of workers inside the reserve. In Usambara,

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[44]R.S. Troup, *Colonial Forest Administration* (Oxford: Oxford University Press, 1940), p. 127.

[45]Personal communication with A.J. Lubango, forester, Magamba forest station, and M. Mrecha, forester, Mazumbai forest research station, Mazumbai forest reserve; Björn Lundgren, "Soil Conditions and Nutrient Cycling under Natural and Plantation Forests in Tanzanian Highlands," *Reports in Forest Ecology and Forest Soils* 31 (Uppsala, 1978), ch. 2.

the Tanganyika Forests and Lumber Company, a government subsidized timber concession (60,000 acres) which reopened the old German site at Hornrow, almost immediately faced labor shortages. To meet demand, the Forest Service introduced a "squatter system" which kept labor in the forest but allowed no permanent cultivation.[46] Under this plan registered "squatters" were permitted to cultivate in clear felled coupes which had recently been replanted with seedlings, or in areas scheduled for replanting. The squatters moved on to other plots three or four years after seedlings had been planted. In return for permission to cultivate, "squatters" became laborers for the forest service and received a modest wage (11/= per month). By 1927, after several years of operation, the "squatter system" had not yet attracted a sufficient labor force.[47]

Only the Wambugu poorest in livestock chose to become squatters. Because of severe restrictions placed on the number of animals squatters could possess, Wambugu with more than a few animals generally preferred to stay on *raiya* land near the reserve boundary. Grazing licenses were also granted for the forest reserve, but restricted to those deforested zones scheduled for replanting. By bribing forest guards, however, the Wambugu would send their animals into the Government forest.[48] The squatters, on the other, hand

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[46]The "squatter system" was an adaptation of the system popular with the British forestry service in India, called *Juming* or *Taungyar*.

[47]Tanganyika Territory, Forestry Annual Report, (1924), p. 3.

[48]Usambara Mbugu Interview Transcripts (hereafter MUIT), M. Shusha, p. 24.

experienced considerable hardship. They farmed agriculturally marginal areas where relatively cold temperatures and unreliable rainfall led to a precarious existence. A series of crop failures drove squatter families to depend primarily on wages to meet subsistence needs.[49]

Throughout the 1920s and 30s, the Wambugu continued illegally to establish pastures and areas of cultivation inside the forest reserve, though the government attempted, whenever possible, to restrict encroachment.[50]

> Within recent years there has been a large increase in the number of cattle, goats etc. permitted in the Reserve, and the available grazing is quite inadequate for the number allowed with the result that grazing has taken place in many parts of the forest and damage done e.g. trampling and extension of grass areas. This state of affairs can not be allowed to continue and grazing must only be allowed in the open grass glades in charge of herd boys under strict supervision of the forest guards. Forest guards should be instructed to report any case of cattle found grazing in the forest and the owner and his cattle turned out of the reserve. In this way cattle will be reduced or they will starve. As an instance at Kwekangaga there are over 50 cattle and at the moment there is scarcely a blade of grass left in the open glade.[51]

In 1935, related problems led the forestry department to issue, Government Notice 103, which amended the 1933 Forest Rules, prohibiting all grazing in Forest Reserves.[52]

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[49]Tanganyika Territory, Forestry Annual Report (1933), p. 8.

[50]LF 11/B/1/3, Conservator of Forests to the Assistant Conservator of Forests, Magamba, May 27th, 1930, p. 15.

[51]LF 11/B/1/3, Assistant Conservator of Forest to D.A. Fletcher, Forester, Shume, June 19, 1930.

[52]Tanganyika Territory, Forestry Annual Report, (1935) p. 4.

Part II. Disputes over Resources

Boundary Dispute in Kwambugu

Land ownership and use arrangements described above precipitated conflicts over natural resources. Conflicts recorded in the official record of the late 1920s and 1930s show a pattern in which farmers and herders continually tested colonial-imposed boundaries, and the government's interpretations of land ownership and resource use. The disputes described below occurred in a context of population growth, but not exclusively in areas of dense population. What they do show is how, in varying environments, African farmers adapted to the colonial arrangements over which they had no control and, at the same time, forged their own political ecology in an increasingly limited arena of action.

A. Nzeragembe (Central Plateau)

One particular dispute at Nzeragembe[53] (near Mshangai mentioned in Ch. 2) highlights both the shift in Mbugu land use and the philosophical gulf between Mbugu and colonial notions of forest value. In August 1935, a forest guard pointed out to the Forester D.A. Fletcher a portion of the outer reserve boundary where "there is constant trouble with the residents over the boundary line."[54] Fletcher found that the dispute dated from at least 1931, when the last survey had been carried out in poor weather conditions with a

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[53]Actually the name of a tree (wild olive) often used as firewood.

[54]LF 11/B/1/3, D.A. Fletcher, forester, Shume to Assistant Conservator of Forests, Lushoto 30/8/35, p. 64.

'misaligned compass'. Fletcher's own survey of September 1935 determined that 60 acres of maize gardens and pasture used by Mbugu "squatters" belonged to the forest reserve.

Land-use in the so-called "encroachment" area matched general conditions found outside the reserve boundary. Fletcher described the topography as a patchwork of pasture and both primary and secondary forest, a landscape his supervisor in Lushoto believed inimical to the interests of forest protection.[55] Forester Fletcher argued that the Wambugu, as 'excellent exponents of shifting cultivation', could be accommodated on these adjacent 'public lands'.[56]

Certainly the Wambugu of Nzeragembe were not convinced of their farming prowess, and shortly after Fletcher's new survey a delegation met at Malibwi, the headquarters of Jumbe Kidala, with the A.D.O.. The Mbugu representatives stressed that the families at Nzeragembe believed they were within their rights as long-term users of the area. Obviously concerned about the Mbugu land claims, the D.O., in his letter to the Assistant Conservator of Forests, requested that the Wambugu be allowed to remain. He worried that, the Wambugu, as "shifting cultivators," would naturally leave the reserve once restricted from encroaching further.[57] The

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[55]LF 11/B/1/3, Assistant Conservator of Forests, Lushoto to District Officer Lushoto, 17 October 1935. "Boundary dispute at Nzeragembei," p. 70.

[56]LF 11/B/1/3, Forester, Shume to Assistant Conservator of Forests, Lushoto, 16/11/35, p. 69.

[57]LF 11/B/1/3, District Officer R.E. Seymour to Assistant Conservator of Forests, Lushoto, 19/10/34. The D.O. had reason to support Mbugu claims in light of a difficult land dispute between a British settler and Wambugu at nearby Kwai.

Assistant Conservator of Forests at Lushoto, true to the conservationist doctrine of the Forest Service, countered with a strident letter arguing that the Wambugu long had been aware of the boundary and had been reminded of it again during the survey of May 1931, when Fletcher's predecessor had inspected Nzeragembe farms and pointed out the boundary to Jumbe Kidala.

> To condone continued residence until present houses and shambas shall become untenable would, in my opinion, incur unwarrantable delay, whilst it might later be taken as strengthening the native claims by virtue of their still longer establishment....The forester has reported ample ground available on nearby Public Lands for the absorption of these families and I would therefore ask if you can please allow my proposals to be adopted, unopposed.[58]

The Assistant Conservator ordered that Nzeragembe residents quit the reserve after harvesting their crops (by the end of March 1936) and as a concession offered free issues of timber to be used in building their new houses elsewhere.

By claiming that long-term use buttressed their claims to residence at Nzeragembe, the Mbugu contingent at Malibwi made their case in legal terms understood by the colonial government. However, the Forestry Service would only entertain the land claims of those Wambugu who had been living on the same site or near it for more than seven years and who had kept the area under permanent cultivation. For

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[58]LF 11/B/1/3, Assistant Conservator of Forests to D.O. Lushoto, 25/10/35.

the Wambugu, this decision must have set a disturbing precedent, since their evolving land-use system of pastoralism and maize cultivation did not guarantee them usufruct rights under colonial law. Clearly only permanently settled and cultivated land could remain inviolate, while landscapes featuring pastures and forest and impermanent gardens simply invited further reservation by the Forestry Service.

Ironically, Forestry officials failed to recognize the role of forest conservation in Mbugu culture and economy. The Wambugu recognized the forest's ritual importance and its role as protector and keeper of secrets.

> Also when I asked one man who had been the most forward in cutting into the Reserve why the huge stretch [of forest] toward Majiwa was left he told me that it was the chief's portion and was left untouched so that the people could have refuge during the Maasai invasion! It is a far cry to the Maasai invasion and I relate these stories to show with what facts they back up their claims to this part of the Reserve.[59]

That the Wambugu still feared a Maasai invasion seems highly unlikely, especially since during the mid-1920s they had peacefully sold livestock and honey to them at the nearby Kwekanga livestock market.[60] However, the fact that the Sub-Chief Kidala, who controlled access to Public Land, refused

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[59]LF 11/B/1/3, Forester Fletcher to Assistant Conservator of forests, Lushoto, 28/10/35. p. 69.

[60]MUIT, M. Shusha, p. 24 and 27; T. Mganga, p. 17. Mzee Mganga notes that the livestock market at Kwekanga, the main livestock market in Usambara until the 1970s, began in 1928. The *mnada* (livestock market) was regularly attended by Maasai livestock buyers from the plains and during the late 20s the Mbugu began to sell animals for cash.

to allocate a particular forested area for cultivation suggests that forest cover retained importance. Perhaps it was used as a hiding place from tax collectors and census takers, but likely also as a place where important rituals and honey collection could continue.

Since the turn of the century Mbugu land use practices had nevertheless changed dramatically. In the same region where Eick, Baumann, Meyer, and Johannsen had noted little or no cultivation in the 1890s, the government forester saw in 1935 a patchwork of primary and secondary growth forests, pastures, and cultivated fields - an agricultural area, in his opinion, which was largely underutilized.

> There are altogether __ families [number crossed out] and 10 houses approx. in this disputed area. The natives are practically all Wambugu who are excellent exponents of shifting cultivation; the whole of the areas outside the Reserve is a chequered patchwork of pori and "mbuga" [pasture] with a few shambas scattered here and there. There is therefore plenty of room in my opinion for them on Public Lands and I ask that steps may be taken to have them removed form Forest Reserve.[61]

The presence of pastures and secondary forest suggests that Mbugu pastoralism had not yet been completely subordinated to cultivation as a means of subsistence, but that a transition to a more intensive system of land use was in progress. Moreover, colonial land designations actually encouraged this trend and with it deforestation on Pubic

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[61]LF 11/B/1/3, Forester Fletcher to Assistant Conservator of forests, Lushoto, 28/9/35. p. 69.

Lands. Eick's *Wiesen* and *Weiden,* occupied exclusively by herders, had come to be regarded as underutilized farming area inhabited by shifting cultivators.

B. Paranoia at Kwai Farm

Just a few miles from Nzeragembe, Kwai farm set the scene for a bizarre contest over land and water resources. As noted in Chapter 3, Kwai had served as an agricultural research station and a profitable stock farm during the German colonial period. In 1924 J.T. Woodcock bought the 1327 acre farm and leased an additional 756. Over a ten year span between the late nineteen twenties and the late thirties, Woodcock chided and insulted District and Provincial Officers in a copious set of correspondence, which reveals one lonely man's progression toward complete mental breakdown. Woodcock tried continuously to define and defend what he considered to be legally his in a context where boundaries came under contest.

Having spent a "considerable amount of money its upkeep," the Custodian of Enemy Properties decided to sell the farm to a private buyer rather than to the government,[62] thus fueling local resentment by preventing Kwai's reversion to Public Lands. In 1921, the Custodian sold the farm to a Mr. Whiting, who sold Kwai to Woodcock "at a considerable profit."[63]

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[62]TNA 72/21/1, Deceased Estates - Non-Natives. A.D.O. Lushoto to Chief Secretary, Dar es Salaam, 2/8/21.

[63]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock, concerning estate boundaries. D.O. Lushoto (R.E. Seymour) to P.C. Tanga 11/18/36

The new owner requested a government survey, which the Lands Office badly mishandled. First, it sent out an incompetent surveyor who never finished the job. Moreover, he made large errors which required correction by a second surveyor. Next, the Lands Office delayed a decision on the accuracy of the original German survey until 1928.[64] This episode sparked ten years of complaints from Woodcock which continued for ten years.

In 1929 Woodcock's complained that Africans neighbors living above his farm had diverted the Dindila, a stream which rose in the Magamba forest and from which Kwai farm's main furrow ran.[65] Woodcock worriedly wrote, "[the] Natives are taking possession of Kwai lands."

> I now find that there are ten natives with their families and cattle and all declare that the government have advised them and gave them permission to occupy this land, the local Jumbe also tells me the government have given permission through Jumbe Daffa [Native Authority Chief for Lushoto] and then it came to him [through the D.O. Lushoto].[66]

This, and subsequent correspondence from Woodcock, prompted a visit to Kwai from the Lushoto D.O., the Chief, Lushoto, and the Sub-Chief, Kwai, in February 1931. They determined that

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(confidential), p. 67.,

[64]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock, D.H. Hutchinson, Land Officer, "Precis of Papers Relating to Mr. Woodcock's Complaint Regarding Survey of Kwai." p. 81.

[65]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock ,J.T. Woodcock, Kwai to the D.C., Tanga, 1/6/31, p. 1; D.O. Lushoto (R.E. Seymour) to P.C. Tanga, 6/15/36, enclosed Minutes from Water Board meeting, 9/1/32, p. 58

[66]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock, J.T. Woodcock, Kwai to P.C. Tanga, 1/9/31, p. 2.

Woodcock had claimed land beyond his survey boundary by setting up his own boundary markers, charged trespass of African herders, then blamed the Lushoto District Office Lushoto for allowing unauthorized use of what he claimed as his land.[67]

A frustrated Woodcock confiscated 118 cattle and 46 sheep found grazing on his land, even though the livestock owners had a legal contract with him for grazing rights in return for payment in ghee (butter), cash and labor. The District Officer ordered the superintendent of Police to return the animals to their owners and instituted criminal proceedings against Woodcock for theft. His attorney managed to get the case transferred out of Lushoto and correspondence indicate indirectly that Woodcock won the case. In the end, he sued the government for his legal expenses and won £120.[68]

In a move to prevent the return of 756 acres of Kwai's property to Public Lands, Woodcock applied in 1933 to turn his leasehold property to freehold. The lease, due the expire in November 1934, required boundaries to be fenced with wire, hedges, walls or ditches providing they are effective at keeping cattle in or out. Cognizant of these conditions, Woodcock had made minimal attempts to fence 35% of the five mile border by planting Agave (sisal plants), but the cuttings had not taken and the border had been trampled

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[67]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock, D.O. Lushoto (Hartnoll) to P.C. Tanga, 2/26/31, p. 13.

[68]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock, Sub-Magistrate, Lushoto (A.V. Hartnoll) to P.C. Tanga, 5/21/31, First Class case No. 13 of 1931, Rex vs. Mr. J.T. Woodcock, p. 18; Chief Secretary to Mr. Woodcock, 16/4/36, p. 56.

by cattle from Mbugu settlements located on Kwai farm's borders. As far as improvements, about 140 acres (18%) had been conditioned for grazing, presumably by local Mbugu herders who rented from Woodcock. In addition, he had planted 50-60 acres of coffee on the leasehold property, then left it completely unattended.[69] Nevertheless, the D.O., Lushoto recommended in Feb. 1934 that Woodcock be granted freehold rights.[70]

The African population objected, "Generally speaking the Washambaa have every objection to the alienation of land and their dislike of this particular alienation dates from the pre-war days and is still active." However, the D.O. found no legal grounds for the objection.[71] To the Mbugu, who had lost tens of thousands of grazing acres in the nearby Magamba forest reserve, Woodcock's continued occupation of grazing land, which he did not use, must have struck a sour note, especially during the drought year of 1933. Kwai held particular historical significance as the site of a famous late nineteenth century battle in which marauding Maasai had been driven out by Mbugu men and women. The colonial government, which in the early 1920s clearly noted land shortages among African cultivators and had allowed them to occupy European freehold properties, now interpreted

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[69]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock G.W. Lock, District Agricultural Officer, Lushoto to D.O. Lushoto 10/4/33

[70]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock D.O. Lushoto (Callaghan) to Lands Officer, Dar es Salaam, 2/3/34, p. 37.

[71]TNA 4/309/29 Kwai - Complaints of Mr. J.T. Woodcock D.O. Lushoto (R.E. Seymour) to P.C. Tanga 10/19/34, p. 43. Seymour mistakenly uses "Shambaa." Kwai area was in 1933 occupied mostly by Mbugu herders and Pare cultivators.

ownership in favor of European interests.

C. Land and Water Disputes on the Escarpment Edges

On the southern tier, estate owners, African farmers and missionaries began to argue over land and water. On Sisal estates, fiber processing required large amounts of water during decorticating (removing fibers from leaves) and washing.[72] Thus the sisal estates below the W. Usambara escarpment depended on continual and adequate stream flows from the mountains. Meanwhile, above the estates, the mountain farmers opened new gardens, spreading across the hills around Vuga. Although cropping repertoires had changed from the pre-colonial days, farming techniques still incorporated irrigation in dry years.

In his 1925 annual report, the Administrative officer, Mr. W.S.G. Barnes, reported that the year "owing to irregular rains, was a bad one for native agriculture" with 40% of crops lost.[73] In the same year, sisal estates in the plains and African farmers 1000 meters upslope came into conflict over rights to irrigation furrows on the lower Mkuzi river.[74] Responding to complaints from the Mombo estate, the Administrative Officer informed the chiefs of Mombo and Vuga that people without hereditary rights to the water (Mkuzi furrow) had no right to interfere with water going to sisal

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[72]G.W. Lock, *Sisal: Thirty Years' Sisal Research in Tanzania* (London: Longmans, Green and Co., 1962), p. 295.

[73]TNA 1733/11, Usambara District, Annual Report, 1925, p. 9.

[74]TNA 72/5/4 Complaints: Water Supply and Disputes. etc. M. Mailer, Mombo Estate to Admin. Officer in Charge Lushto 11/14/25, p. 22.

plantations.[75]

What the Administrative Officer meant by hereditary rights is not clear. In W. Usambara, one's rights to furrow use depended on continual use of a plot along the furrow and participation in communal furrow maintenance. Farmers opened furrows as a strategy for drought mitigation, so in good years they often went unused, thus reverting to open access. In 1925, a dry year, farmers simply followed time tested mitigation measures by tapping a major irrigation canal.[76]

More complaints regarding depleted water supplies from the Mkuzi irrigation furrow came from the Mombo sisal estate in 1928. The Chief at Vuga, offered the simple plausible explanation that the furrow had been destroyed by heavy rains. Whatever the case, water rights became increasingly important to plains plantation owners and to the Lutheran missionaries as Shambaa farmers living in the vicinity of the Vuga mission expanded the area of cultivation.[77]

Shambaa farmers had begun to reclaim lands bordering the Vuga mission because the presence of mission furrows allowed them easily to incorporate irrigation technology into their farming systems. The missionaries themselves noted concern over their putative water rights, which they had enjoyed

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[75]TNA 72/5/4 Complaints: Water Supply and Disputes A.O. in Charge to Akidas Kayambo and Bernard of Mombo and Vuga, 11/25/25, p. 17.

[76]UIT, Japhet Kalata, Mlalo, December 23, 1991, pp. 1-2; Rajabu Shemzinghwa, Mlalo, Dec. 28, 1991, p 4; Ali Gembe and son, Shemboza bin Shemndola, Mlalo, old town, Jan. 18th, 1992. p. 6; Kasisi Kuambaza Sheiza, Mlalo, January 18, 1992, p 9, et al.

[77]TNA 72/5/4 Complaints: Water Supply and Disputes. etc. M. Mailer, Mombo Estate to D.O. Lushoto 4/12/28, p. 43; Kitala cha Kinyassi, vuga to D.O. in Charge, Lushoto 5/12/28. p. 48.

since 1903, when they tapped the tributaries of the Mkuzi.[78] The mission pastor claimed ownership of the furrow arguing that the Bethel Mission had built the furrow and that the German Colonial Government, in granting leasehold, had also made specific mention that the furrow was mission property.

Farmers claimed, on the other hand, that no rights were ceded because the area's inhabitants were absent when the mission was granted leasehold rights; and now that they had returned, they wished to use one of the two furrows.[79] This simple response masks the complexity of the conflicts at Vuga, the former capital of the mountain kingdom. In 1895 the Germans executed the Kilinidi king and installed a succession of puppets. The third, Kinyassi, leased out huge tracts near Vuga to the mission and coffee planters. Then, in 1896-97, rinderpest wiped out cattle, locusts and drought decimated crops, and many Shambaa either died or left the area.[80] Clearly, the Shambaa sought to reestablish not only their rights to this land, but to the water on it as well.[81] Indeed, in 1932, the A.D.O. found, along the mission furrow, 71 irrigated gardens which served about 200 people. In the same year, at the nearby European estates of Mponde and Sakulla, Africans complained about estate boundaries and asked the government for another survey.[82] In 1936, yet

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[78]TNA 72/5/4 Complaints: Water Supply and Disputes, J. Gleiss, Pastor, Vuga Mission to D.O. Lushoto 7/19/30, p.65; TNA 72/5/4 J. Gleiss to D.O. Lushoto, 10/1/30, p. 66

[79]TNA 72/5/6 Usambara Water Board. D.O. Hartnoll, Lushoto to Hon. Land Officer, DSM 11/6/30, p. 109.

[80]Feierman, *Peasant Intellectuals*, p. 126-27.

[81]TNA 72/5/6 A.D.O. Lushoto to D.O. Lushoto, 5/20/32, p. 190.

[82]TNA 4/107/4 Boundary Disputes, Mponde Estate, 1932, D.O. Lushoto to

another dispute surfaced between Shambaa farmers and the Vuga mission, this time over two acres of land, which the Shambaa believed had been mistakenly included in the mission land.[83]

The droughts of the mid-1930s brought into the administrative view the importance of irrigation to indigenous farming, as well as the difficulties. By 1935, irrigation technology was being employed as an important mitigation technique across the massif. Several letters regarding furrows had reached the Lushoto District Officer's desk. In one, the sub-chief Majita of Mgwashi in 1935 requested permission to tap a stream rising in the Mazumbai forest.[84] Majita consulted the D.O. because the stream passed through a large estate, thus showing cognizance of the division between Public and Private Land.[85] Also in 1935, the District Officer summoned King Magogo, to accompany him to the plains below Mlalo/Mbaramo to observe the construction of a large furrow.[86]

The conflicts on the Southern tier, reveal a measure of ecological stress in the mountains, but not one which would reach crisis proportions so long as farmers could irrigate

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P.C. Tanga, 8/8/32.

[83]TNA 4/107/7 "Boundary Dispute between Vuga Mission and Natives, 1936." D.O. Lushoto to Secretary, Department of Lands and Mines, Dar es Salaam, 3/31/36.

[84]TNA 72/5/30, Water and Irrigations. Zumbe Salim Mjata, Mgwashi to A.D.O. Lushoto, 2/4/35, p. 38.

[85]TNA 72/5/30, D.O. Lushoto (Seymour) to Zumbe KSalim Mjata, Mgwashi 2/5/35, p. 39.

[86]TNA 72/5/30, Water and Irrigations. D.O. Lushoto to Kimweri Magogo, Vuga, 8/8/35, p. 39. Correspondence suggests that this was a large project and that labor consisted of scores of tax defaulters. Milne, in 1937 report cited above, describes large abandoned furrow, 6 ft. deep and 4 ft. across and over a kilometer long.

gardens in dry years. However, to the north at Mlalo, the sheer scale of the irrigation project suggests the necessity of a large extension of food production on the plains kitivos. Furthermore, oral evidence for the 1930s states that the Mlalo Sub Chief seriously considered expelling from the basin people of Taita ancestry.[87]

D. Commercial Agriculture on the Kitivos: A Dispute over Kauzeni

With alluvial lands below the massif's southern side monopolized by sisal interests, the colonial administration and private entrepreneurs explored the possibilities for commercial agriculture on the northern plains. Of course, the permanent residents at Kauzeni, Lunguza, Kitivo, Mngaro, Mnazi, and periodic migrants from the mountains already knew the value of plains cultivation for maize and rice. An argument between District Officer for Lushoto, Callaghan, and the Provincial Commissioner at Tanga over Kauzeni highlights a growing tension in the administration over the future needs of Usambara's African agriculturalists.

In October 1933, an unnamed entrepreneur, who sought to develop a rice plantation along a four mile stretch (1560 acres) on either side of the Mdando river below the Mlola basin, approached the administration for leasehold rights to the former German estate. The Provincial Commissioner balked, citing the future needs of the Shambaa.[88] Further, he

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[87]UIT Ali Gembe and son, Shemboza bin Shemndola, Mlalo town, Jan. 18th, 1992, p. 6.

[88]TNA 4/651/2 "Land Lushoto." P.C. (F. Langland) to D.O. Lushoto

argued that riverine rice cultivation would jeopardize water access for the 30-35 African farmers downstream.[89] In a terse response, his "man on the spot," Callaghan, argued that a little private enterprise would offer employment to natives and increase the availability of cash in an area he believed to be economically backward.[90]

In a decision that notes African interests, the Provincial Commissioner offered the entrepreneur a five year renewable lease for just 250 acres along the river.[91] The Provincial Commissioner believed that a imminent population overflow of mountain people onto the plains necessitated the reservation of all suitable farm land. Official concerns about the future of mountain farming surfaced again in 1937, when the Provincial Commissioner, Tanga and the District Officer, Korogwe (J.W. Bonavia), asked the Amani Institute's soil scientist to conduct a soil survey of Usambara. They hoped to ascertain both the damage to mountain soils due to accelerated erosion and the suitability of the soils below the escarpment for future settlement.[92] The belief among administrators and scientists that there was a problem of overcrowding, erosion, and destruction of valuable watershed resources grew out of a much broader mentality of ecological

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(Callaghan) 10/31/33 "concerning land for lease along the Mlola river." p. 193

[89]TNA 4/651/2, P.C. Tanga to D.O. Lushoto 12/4/33; for presence of Shambaa farmers see, A.D.O. to D.O. 11/28/33.

[90]TNA 4/651/2, D.O. Lushoto to P.C. Tanga, 12/8/33.

[91]TNA 4/651/2, P.C. Tanga to Land Office, Dar es Salaam, no date.

[92]TNA 24732, "Report on a Soil Reconnaissance in the Neighbourhood of Kitivo, Lushoto District, Tanganyika Territory, and in adjacent (West Usambara) highlands, September - October 1937" by Geoffrey Milne, Soil Scientist, East African Agricultural Research Station, Amani, p. 7.

crisis sweeping the empire's scientific and administrative communities.

Part III. The Crisis Mentality

Defining the Problem

Radical change to Usambara's physical and biological landscape had begun during the 1920s, and by the late 1930s the bureaucratic and scientific communities charged with managing these landscapes perceived that change had led to serious ecological problems in the mountains. They constituted, in the colonial mind, a crisis so serious that it threatened the actual survival of the mandate's European interests and the African residents themselves. Moreover, the growing sense of crisis permeated all corners of the colonial landscape in Africa. Tanganyika, and Usambara within it, made up only part of the problem.

Colonial science struggled to understand exactly where the problem areas were and how ameliorative efforts should be carried out. Unfortunately, even among those who had studied aspects East Africa's ecology there was little understanding of how East Africans had used land historically. For example, at an early 1930s meeting of the Royal Geographic Society, a panel on soil erosion in Eastern and Central Africa characterized the core problematic as one of a primitive society confronting the modern world.[93] Panelists,

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[93]Royal Geographic Society meeting 1933, Panelist included Swynnerton, Tan. Terr. director of Tsetse research, Grantham, member of Tan.Terr. Soil Erosion Commission.

with decades of experience in southern, central and eastern Africa, argued that until the *pax Britannica*, wandering tribesmen and women, who "never gave a thought to preserving the productivity of the soil," had carved a path of destruction across Africa's landscape.[94] In the colonial mindset, so long as these intrinsically migratory African farmers remained few in number, nature could, over centuries, repair the damage of "primitive" and "destructive" methods.[95] The colonial epoch witnessed a surge of population growth which had devoured productive lands leaving them permanently degraded.

In East Africa, the historical paradigm blended into a broader picture in which global economic depression, drought and dust bowl imagery fed the political and economic fears of East Africa's settlers, who believed that grants of land to African farmers would be carried out at their expense.[96] Thus in 1933, when the Kenya Land Commission held hearings to collect evidence regarding East Africa's environmental problems, colonial science actually legitimated settler testimony which blamed African husbandry rather than their own mistakes.[97] The Land Commission hearings both publicized the issue and solidified resource conservation in areas of

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[94]A.M. Champion, "Soil Erosion in Africa: A Paper Read at the Afternoon Meeting of the Society on 8 May 1933 by Mr. C.W. Hobley on behalf of A.M. Champion," *Geographical Review* 82 (1933), 135.

[95]Champion, p. 135; C.W. Hobley, "Soil Erosion: A Problem in Human Geography. A Paper Read at the Afternoon Meeting of the Society on 8 May 1933," *Geographical Review* 82 (1933), 140.

[96]David Anderson, "Depression, Dust Bowl, Demography, and Drought: The Colonial State and Soil Conservation in East Africa during the 1930s," *African Affairs* 83 (1984), p. 323.

[97]Ibid., p. 324.

African land use as a overt administrative issue.[98]

As concerns about soil erosion began to surface at the Colonial Office, Tanganyika formed a Standing Committee on Soil Erosion which convened in 1931. Taking its cues from the Ceylon Soil Erosion Committee, the Tanganyika counterpart formulated soil and water conservation recommendations designed to help Agricultural Officers in the field.[99] The committee decided that, in the absence of funds and the support of public opinion, their efforts should be to educate rather than to coerce.[100] As their recommendations filtered down to the District Administrations across Tanganyika, Agricultural Officers and Foresters began to preach the evils of soil erosion and to demonstrate proper land use on small experimental plots.

By the mid-1930s, the attack on soil erosion in Tanganyika had become centered on its highlands. Clement Gillman, a geographer with decades of experience in Tanganyika under both the German and British administrations and a Soil Erosion Committee member, then wrote and spoke widely on the topic.[101] His most influential analysis of

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[98]Ibid.

[99]TNA 4/1071 Minutes of the First Meeting of the Standing Committee on Soil Erosion appointed by His Excellency the Acting Governor. Held at the Secretatiat, DSM, June 15th, 1931. Those present Those present: Dir. of E.A. Research Station, W. Nowell; Dir. of A., E. Harrison; Acting Dir. of Public Works, C.U. Stevenson; Acitng Dir. of Vet Services, H.E. Hornby; Dir. of Geological Survey, E.O. Teale; Conservator of Forests, D.K.S. Grant; Chief Engineer of Railways, C. Gillman.

[100]TNA 4/1071 Soil Erosion, "Memorandum on Soil Erosion," E. Harrison, Director of Agriculture, Tanganyika Territory, 1937. p. 3.

[101]For a complete list of Gillman's scholarly articles and reviews see B.S. Hoyle, *Gillman of Tanganyika 1882-1946* (Brookfield, Vt: Gower Publishing, 1987), pp. 424-428.

Tanganyika's ecological imbalances appeared in his 1936 article, "A Population Map for Tanganyika Territory."[102] His map showed that Tanganyika's population had consolidated itself on and around granitic up thrust mountains and volcanoes. Gillman explained this phenomenon by maintaining that the link between high population density and high elevations could be found in the natural history of mountains where climate had nurtured forest growth and ensured water availability. Thus environment determined a particular population distribution as well as, for those living in the mountains, a higher cultural standard.

> [favorable defensive topography and ample water supplies] have also led to the gradual evolution of a higher cultural standard than that of shifting cultivation as practiced in the surrounding savannas and steppes, including permanent crops such as bananas and coffee, irrigation, stabling of cattle, manuring and the beginnings of individual tenure.[103]

Water availability fostered intensive agriculture despite widely varying mountain soils and the physical difficulties of removing mature forest cover to plant crops. Gillman's deterministic model explained why two thirds of Tanganyika's population occupied 10% of its land. Besides Africans, European planters had clustered on and around these mountain regions where, given the enormous size of some of their farms, they exercised an environmental impacts out of

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[102]Clement Gillman, "A Population Map of Tanganyika Territory," *Geographical Review* 26 (1936), 353-375.

[103]Ibid.," p. 355.

proportion to their small numbers.[104] Tanganyika's congested "oases" raised in Gillman's mind a number of red flags. First, research then current at the Amani Institute in East Usambara had proved beyond a doubt that forest soils, once cultivated, lost fertility within a few years.[105] Moreover, the heavily populated mountain areas carried all of the Territory's forest, which regulated stream flows down slope onto the alluvial plains.[106] Second, forest removal, Gillman argued, led to accelerated erosion which, in turn, changed the stream regime from permanence to intermittence "which means excessive and often destructive floods in the wet and dearth of water in the dry season."[107] Third, decreased water flow diminished the viability of agriculture on the cultivated lands surrounding the mountain blocks.[108] As Gillman's argument took hold in the administration, Usambara emerged as one of the centers of colonial preoccupation with soil erosion and deforestation.

In Usambara official worry intensified as anti-erosion demonstrations proved ineffectual. He requested that the government require in Usambara the adoption of anti erosion rules. In September 1937, the government adopted the

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[104]As mentioned in Ch. 3, Germans had cleared huge tracts of rainforest for coffee plantations.

[105]H.H. Storey, *Basic Research in Agriculture: A Brief History of Research at Amani 1928-1947* (Nairobi: East African Standard, no date); for the actual study see Geoffrey Milne, "Essays in applied Pedology. I.- Soil Type and Soil Management in Relation to Plantation Agriculture in East Usambara," *East African Agricultural Journal* 3 (1938), 7-20.

[106]Gillman, "Population Map". p. 359.

[107]Clement Gillman, "Problems of Land Utilisation in Tanganyika Territory," *South African Geographical Journal* 20 (1938), 14.

[108]Ibid.

following orders:

Section 1:

a. Persons opening up new shambas on sloping land shall whenever the D.A.O. deems it necessary take such measures to prevent erosion as D.A.O. or his nominee may prescribe.

b. Occupier of any existing land under cultivation which in opinion of D.A.O. is insufficiently protected from erosion shall take such measures to stop erosion as the District Agricultural Officer or his nominee may prescribe.

c. Prescribed measures are:

i. contour ridging;
ii. terracing.

d. Soil erosion measures shall be maintained.

e. Cultivation on steep slopes along banks of rivers is to be prohibited by Native Authority where advised by the District Agricultural Officer or the Forest Officer.

f. Penalty: fine not exceeding 40/= or 1 month hard labor; person may be prohibited from cultivating land until anti erosion measures taken.

Section II

a. Where District Agricultural Officer considers that land not in occupation by individuals is in danger of erosion, the chief of the area may, with the prior permission of the Provincial Commissioner, order his people to undertake such work communally as may be prescribed by the District Agricultural Officer. Such work shall be limited to a period not exceeding 7 days at any time and not more than two periods in any one year.

b. Any person not in compliance shall be liable to 40/= or 1 mo. hard labor.[109]

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[109]TNA 4/1071 D.O. (Seymour) Lushoto to P.C. Tanga Jan. 25, 1937, p. 29

Studying the Problem

Several months after the adoption of the rules, Geoffrey Milne, an internationally recognized soil scientist of the Amani Institute, traveled at the request of the Tanga Provincial Commissioner to W. Usambara to reconnoiter its soils. The year before, he had finished putting together a provisional soil map of Tanganyika which resulted from years of research experience in the field.[110] Eschewing the broad geographical determinism of his eminent colleague Gillman, Milne's research focused on intricate ecological relationships at the most basic level, soil chemistry. He noted carefully how cultivation and soil interacted in a variety of settings. Milne's report on Usambara, therefore, represents the careful thoughts of a renowned scholar who had traveled at length in the Territory observing land use and soils. Furthermore, Milne's report on Usambara provides a more nuanced view of land use than appears in any of the Annual Reports of the Agriculture department, whose representative visited Usambara only intermittently.

In his explanation of soil erosion, Milne noted that Usambara's topography determined that farmers had little choice but to cultivate slopes since only a few upland valleys held arable alluvial bottoms broad enough for cultivation.[111] Milne assumed, therefore, "that the greater part of cultivated Usambara has suffered loss of soil in some

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[110]G. Milne, *A Provisional Soil Map of East Africa* (Amani, Tanganyika: East African Agricultural Research Station, 1936).

[111]TNA 24732, Milne, "Report," p. 28-29.

degree, and that losses [were] continuing."[112] He notes further that as cultivation spread, it tended to creep upslope until a hillside and ridge had been completely denuded of trees. This phenomenon occurred particularly around the Umba headwaters, a situation he clearly believed dangerous to river flow.[113]

In contrast to agricultural departments blanket treatment of the problem, mitigation of soil erosion was to Milne a complex endeavor.

> The tactics of defense on each hillside require to be thought out in regard to the particular set of circumstances found there. No simple universal set of soil protection rules is possible, for however well adapted certain measures may be to a given case, they may be ill advised, or even directly mischievous, if applied without discrimination to another.[114]

For example, where the Native Authority rules simply forbade all cultivation along stream banks, Milne saw room for maneuver.

> Principal object is to keep clear water flowing perennially in streams. If cultivation near the banks of streams is compatible with this then a non-cultivation rule enforced dogmatically must be in serious error; for the banks of Usambara streams often carry fertile accumulations of colluvium material that has gathered there by soil creep from the slopes above and has found its stable resting place near the bottom...[115]

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[112]TNA 24732, Milne, "Report," p. 29.
[113]TNA 24732, Milne, "Report," pp. 30-31.
[114]TNA 24732, Milne, "Report," p. 30.
[115]TNA 24732, Milne, "Report," pp. 36-37.

He argued that cultivators should not be evicted wholesale simply in the interest of a rule. Milne also believed that the Native Authority rules had been applied with discrimination in favor of Europeans.

> At Mlalo I saw Mission land being ploughed to the brink of the main stream at the very time that the native-owned stream-side land was being flagged by the instructor for preservation from the hoe under the N.A. rule. Mission ploughing was crude and no precautions against soil loss were evident, so this particular case would cause bewilderment to the native riparian owners and might well alienate goodwill from soil conservation measures generally.[116]

Milne argued that Usambara had experienced accelerated erosion in the vicinity of Mlola, Mlalo, Bumbuli, Kwai, Vuga, Baga, and Gare. In fact, his list included most of W. Usambara's agricultural zones. Milne chided Agriculture Department for not having assigned an assistant to Usambara for at least a decade. He contended that before the government could attempt to mitigate the problem, agriculture assistants and instructors should actually live for a time in the densely populated areas, where ecological problems were most severe.[117] Finally, Milne maintained that with adequate supervision and training, Usambara's highlanders could successfully farm the highlands.

> But the most immediately profitable field of work towards the desired end, namely towards putting the sambaa tribe in permanent possession of enough

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[116]TNA 24732, Milne, "Report," p. 37.
[117]TNA 24732, Milne, "Report," p. 39.

> productive land for their needs, lies on the highland plateau rather than on the arid lowlands.[118]

Milne's report prompted a flurry of correspondence up and down the bureaucratic hierarchy. In a letter to the Chief Secretary, the Provincial Commissioner backed Milne's conclusions that further research be carried out and in this regard, requested a permanent agricultural assistant for Usambara .[119] Harold Gillman (Clement's son), Agricultural Officer for the Northeast Circle, wrote to Usambara's District Officer to dispute Milne's conclusions regarding the efficacy of the Native Authority rules. Milne's report also struck a nerve with the Director of Agriculture, who, when asked to send an agricultural assistant to Usambara, complained with vitriol to the Chief Secretary. The tenor of the letter suggests that the Director of Agriculture resented the fact that the District Officer and the Provincial Commissioner, rather than he, had commissioned Milne's survey. Furthermore, he took issue with Milne's conclusion that the work of his staff had been inadequate.[120] In the light of this controversy, the Secretariat buried the report and decided not to approve an agricultural assistant for Usambara.[121]

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[118]TNA 24732, Milne, "Report," p. 43.

[119]TNA 24732, Provincial Commissioner, Tanga to Chief Secretary, Dar es Salaam, 5/16/38.

[120]TNA 24732, Director of Agriculture to Chief Secretary, June 6, 1938.

[121]TNA 24732, Acting Chief Secretary to P.C. TAnga, June 28, 1938. Milne's report was published in 1944, after his death, see Milne, "Soils in Relation tothe Native Population in West Usambara," *Geography* 29 (1944), p. 107-113.

Although Milne's report lay buried at the Secretariat, colonial science kept the crisis mentality alive.[122] However, the impetus for direct and massive action in Usambara began a few years later, in 1942, with the Mlalo Basin Rehabilitation Scheme. The prophesy of crisis was finally fulfilled in the Mlalo Basin with Njaa ya Chankola, the subject of Chapter 5.

Conclusion

This chapter has examined Britain's early attempts to control the human/environmental dialectic in Usambara. Clearly Usambara formed only one part of a much broader and ever increasing colonial preoccupation with ecological crises throughout the empire.[123] Nonetheless, Usambara emerges as a clear example of how imperial power, commercial capitalists and Western science collaborated in an overt attempt to determine how a particular region's natural resources should be used. The collaborators showed a decided ignorance of African conceptions of nature and ecological practice.

With their arena of action circumscribed, African farmers and herders adjusted land use to new realities. On their Public Lands Africans responded in a variety of ways to changing ecological arrangements under colonialism. Following a trend established in the nineteenth century, farmers continued to incorporate new crops into their farming

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[122]See especially, G.V. Jacks and R.O. Whyte, *The Rape of the Earth*, (London: Faber and Faber Ldt., 1939) and a review by Clement Gillman in Tanganyika Notes and Records 8 (1939), 104-107.

[123]See the essays in John M. MacKenzie ed., *Imperialism and the Natural World* (Manchester: Manchester University Press, 1990).

system. Maize, in particular, began to dominate farmers' gardens because it served both subsistence and cash requirements in the colonial economic context. Nonetheless, new crops were incorporated into a rather persistent farming system which included both intensive and extensive methods and which still operated, at least on the massif's northern side, across ecological boundaries. More radical change occurred on the central plateau, where the forestry service drew a survey line around much of the Mbugu grazing lands. With their relegation to Public Land on the forest margins, the Mbugu began a shift completely out of pastoralism and into farming as a means of subsistence: pastures became gardens. Many contested colonial boundaries, but did so largely within what the colonial administration considered to be accepted avenues of protest.

On Government and Private lands, those which Europeans dominated, a complete reorganization of the nature proceeded. On the Pangani Valley plains tens of thousands of acres of savanna forests were removed and planted with one commercial cash crop, sisal. As the processed sisal fibers moved down to the port of Tanga for shipment abroad, the effluent from plains processing factories poured into the streams flowing from Usambara's mountains toward the Pangani River. The fouled waters contaminated drinking water.[124]

As a European conception of resource control took hold

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[124]TNA 72/5/4 D.O. Lushoto to Manager, Mombo Sisal Estate, 4/23/30, p. 48; D.O. Lushoto to Exec. Water Board, Usambara dist. to manager, Mombo Sisal Estate. 6/16/30. p. 57;

within designated forest reserves, the species diversity of the forest was quickly and consciously impoverished. Unable to regenerate naturally occurring tree species, the Forestry Service sanctioned the clear-felling of indigenous forest communities dominated by camphor, podo and cedar and replanted them with fast growing exotic species such as eucalyptus, cypress and pine. This commodification of the forest ultimately rendered it useless for grazing because clear felling and replanting eliminated forest glades. In addition plantation forestry erased the variety in plant species, contributed to soil erosion and micro climatic drying.[125]

Europe's domination of Usambara's environment could only be completed through a shift in focus to the Public Lands. In West Usambara this incursion began in the Mlalo Basin, where prophesies of crisis were fulfilled in 1942 with the most infamous famine in recent memory, *Njaa ya Chankola* (Chankola's Famine).

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[125]A.J. Lubango, "Report on Forestry in the Usambara Mountains," unpublished, April 1992, p. 7. Mr. Lubango, Chief Forester at Magamba Forest Station, notes the drying factor especially in areas cropped with cypress.

Chapter 5

Conserving the Mlalo Basin: Crises and Change in Farming Systems, 1940-49

Part I. Introduction

This chapter reconciles the varying accounts of the crises in agriculture, politics and ecology on Usambara's northern side during the 1940s. In the oral record, informants remember these years as a difficult time of drought, insect infestation, crop failures and famine which resulted directly from the firing of Mlalo's sub-chief, Hassani Kinyassi. For the colonial government, the 1940s marked the period when the state began to invest substantial sums of money in its attempt to dictate human/environmental relations on Public Lands in northern Usambara's Mlalo basin, which colonial experts believed to be severely degraded through inappropriate methods of husbandry. Thus, the mitigation of soil erosion, perceived by the colonial state as the key element in stopping Usambara's environmental deterioration, became a volatile social, political and economic issue which carried into the 1950s and affected the nationalist push for independence. Below, I argue that a current of misunderstanding swirled around the issue of degradation in Mlalo. It grew from the colonial government's

failure to comprehend the long-term relationship among population growth, indigenous technological innovation in agricultural systems, and environmental degradation. Further, it began a half century of failures in ecological reform in Usambara.

Part II. The Context of Crisis

In his seminal work on Tanganyika's history, John Iliffe has characterized the years between 1929 and 1945 in Tanganyika as a period of general crisis in colonial society. In this broader context, Mlalo's 1940s crisis in political ecology appears as one of several cases of agricultural decline in which downturn in economic activity, changing European perceptions of African agriculture, continuing ecological change, and the special pressures of depression and war contributed significantly to a general malaise. As noted in Chapter 4, colonial officials and scientists saw W. Usambara's Mlalo basin as one of the particularly striking manifestations of agroecological decline in the Territory. The food shortages which struck between 1941 and 1946, reinforced these conclusions in the colonial mind, and justified, in the three years that followed, a massive intervention in local farming systems.

If, as Iliffe has written, "famine was the point at which long-term ecological change met short-term crisis," the 1940s saw the repeated collision of these forces in Tanganyika Territory. Famines, including killing famines,

broke out across the country.[1] Although mild in comparison to the deadly hungers in central Tanganyika, Mlalo's crisis nonetheless offers an instructive example of how ecological change and stress fostered vulnerability to food shortage. However, in this case the evidence argues for a society adapting their farming system relatively successfully, at least over the short term, to significant long-term local population growth and regional political and economic forces infused by colonialism.

Furthermore, the contrast in oral and documentary evidence offers a view into the mentalities surrounding ecological crisis in colonial Usambara. That the indigenous informants see Mlalo's 1942-46 famine as primarily a political issue, affecting, but not caused by ecological conditions, is testimony to their understanding of a powerful connection between politics and the natural world. However, the oral tradition's preoccupation with crisis politics masks the complexity of indigenous responses to drought, insect infestations and food deficits. A deeper look at local coping strategies through the oral testimony and the written record shows clearly that the people of Mlalo had a history of mitigating the effects of natural disasters, a fact the colonial administration would have done well to consider during its attempt to reform agricultural practices in Usambara.

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[1]John Iliffe, *A Modern History of Tanganyika*, (Cambridge: CUP, 1979), p. 351.

The Political Crisis

As noted in Chapter 4, colonial concerns with environmental degradation intensified in the early 1930s. Colonial science and government had concluded that in some areas, such as Tanganyika's Usambara mountains, the situation demanded action. Therefore, even before Milne's 1937 report alerted the district and provincial administration to signs of accelerated erosion at Mlalo, agricultural and forestry officers had been trying to convince farmers via propaganda to alter their cultivation techniques. However, as Milne noted in his report, the lack of even one permanent agricultural officer in the Usambaras showed that government rhetoric went unmatched by financial commitment. Lacking the manpower to enforce conservation government codes, district authorities had granted Native Authorities sweeping powers to control human/environmental relations, an authority, however, they seemed generally reluctant to undertake. Thus, seeking to shake Mlalo's populous out of what they saw as its decline into ecological disaster, but lacking the funds and agricultural expertise for an assault on indigenous agricultural practices, Lushoto's administration chose to manipulate those with legal power over land use, the Native Authorities.

In this light, the Lushoto District Officers' continuous hand wringing over the state of Mlalo's finances becomes clear. Between 1940 and 1942, European officialdom gradually built toward a vendetta against the sub-chiefdom's "Native

Authorities." However, maneuvering local politics in the context of Indirect Rule required subtlety. Beginning in 1940, Fairclough, Lushoto's District Officer, blamed the shortfall in Mlalo's tax receipts on the incompetence of the local Native Administration, headed by Hassani Kinyassi.

> Complaints have been regular and loud since Zumbe Hassani took over in 1935. He is idle and supine generally and that in particular his collection of tax is not all that it should be, that he fails to answer correspondence, that fees for muzzle loading guns are not collected regularly, and that judgments given in his court are not sound. I may add that the Shebuge [i.e. the Kilindi paramount king] is also of the opinion that Hassani is not pulling his weight.[2]

Fairclough's replacement, K.B.A. Dobson, continued to stress the fiscal angle, but linked official inaction to potential political troubles. He worried that Kinyassi's lax attitude toward tax collection and Mlaloans' predilection toward tax dodging "may be converted into...passive resistance."[3] Anxious to avoid any type of resistance, Dobson recommended that Kinyassi be replaced, or, that at least a substantial section of the Mlalo subchieftancy be hived off and placed under the suzerainty of a sub chief at the hamlet of Mbaramo. According to Dobson, the move would ease Kinyassi's tax collection burden, allowing him to concentrate his collection efforts on Mlalo's immediate vicinity.

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[2]TNA 4/6/2, Native Administration, Usambara District, D.O. (Fairclough) Lushoto to P.C. Tanga, Tanga Province 2/30/40, p. 149.

[3]TNA 4/6/2, Assistant District Officer, Lushoto (K.B.A. Dobson) to the District Officer, Korogwe, 8/23/40. p. 173. His fears are not unfounded considering the Mbiru tax revolt in nearby Pare mountains.

While the colonial administration lamented its lost tax revenue, the "Shebuge," had his own political reasons for seeking Kinyassi's ouster. Kimweri Magogo's legitimacy as Paramount Chief depended on his ability to establish hegemony over Mlalo, the district's largest population center and over Kinyassi, a rainmaker with a reputation for success. This meant bringing into line an area which had maintained *de facto* independence from Vuga's rule since at least the late nineteenth century.

Kinyassi resisted the attempts to curb his power. The loss of Mbaramo would deprive him his rights over the distribution of valuable agricultural lands on the plains at Lunguza, where, under temperatures warmer than in the mountains, grain crops matured in three months and, in lean years, supplemented mountain harvests. Any limitation on the amount of kitivo lands Kinyassi could allocate to Mlalo's mountain dwellers would create more pressure on mountain communal lands which, by 1940, were in short supply.[4] In the end, Kinyassi lost Mbaramo and when the District Administration received permission to separate the two chiefdoms, Magogo immediately volunteered to install his choice for sub-chief at Mbaramo.[5]

In January 1942, Dobson again called for the removal of Hassani Kinyassi citing his poor record of tax collection and

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[4]Usambara Interview Transcripts (Hereafter UIT) Hasain Singano Mbuguni, Musa Hasani, Mbwana Omari Shemzighwa at Mlalo, Jan. 3 1992, para. 8, p. 19; Hemedi Ngereza, at Mlalo, March 19, 1992, p 21b;

[5]TNA 4/6/2, D.O. Lushoto (K.B.A. Dobson) to the District Commissioner, Korogwe District, Korogwe, 11/29/40, p. 181.

his inability to round up and prosecute tax defaulters.[6] Kinyassi's reluctance to punish his constituents becomes clear in the light of wartime conditions in which wages were low and money scarce. In spite of Dobson's protests, the Provincial Commissioner remained unconvinced of Kinyassi's incompetence and suggested that the D.O. appoint a commission of inquiry to investigate all of Mlalo's "Native Authorities." The commission consisted of a member of the Paramount Chief's Executive Committee and Dobson's choice of "six of the most intelligent elders of Mlalo."[7] With the elders presumably in his pocket, the commission provided Dobson with the official cover he needed to fire Kinyassi.

By early May 1942 this "Commission on the Jumbes of Mlalo" had finished its work. They recommended that eight of the sixteen Mlalo headmen be replaced, although Hassani Kinyassi did not appear on the list. Dobson reported that immediately after the commission submitted their evaluation, the Mlalo elders ask to meet him in private, away from the Executive Committee appointee, i.e. the Shebuge's observer from Vuga. Dobson stated that during this interview the Mlalo elders expressed concern over the political situation in Mlalo, but refused to implicate Kinyassi directly. Nonetheless, in this meeting they supposedly disavowed their own report. Whatever transpired in the private meeting, the

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[6]TNA 4/6/2, D.O. Lushoto (Dobson) to D.C. Korogwe, 1/5/42, "Administration of Mlalo Zumbeate." p. 206.

[7]TNA 4/6/2, P.C. Tanga (Bonavia) to D.C. Korogwe, 2/7/42, "The Mlalo Subchiefdom," p. 208.

elders likely found themselves caught between the desires of the D.O., the Paramount Chief and Hassani Kinyassi's local popularity. Dobson decided to make further inquiries "in private." His final report to the District Commissioner, based on these "inquiries," states simply that the commission had *intended* to tell him that Hassani's maladministration was at the root of all of their troubles.[8]

The high level of anxiety in Mlalo during 1942, which Dobson argued resulted from a general dissatisfaction with Kinyassi's regime, more likely grew out of difficult agroecological conditions. In 1941 the rains had failed across much of NE Tanganyika, including the Usambara mountains. Resulting food shortages induced the District Administration to invoke the Natives Foodstuff Ordinance, which restricted removal of food from the district without the permission of the D.C. The ordinance also suspended, without permission, the purchase or barter of foodstuffs from Africans for resale in the district. Given the growing importance of regional markets in and around Usambara, this act, if enforced, would have hindered the movement of food from areas of abundance to those of shortage. Oral evidence suggests that marketers disregarded the ordinance, but its imposition nevertheless shows how little the administration at district headquarters understood about regional exchange.

On July 29, 1942, at the height of the dry season

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[8]TNA 4/6/2, A.D.O. Lushoto (Dobson) to D.C. Korogwe, 5/19/42, "Commission on the Jumbes of Mlalo,"p. 224.

following a poor agricultural year, the D.O. informed Hassani Kinyassi, renowned rainmaker, that his services as sub chief were no longer required.

> The natives of Mlalo are in such a chaotic state, all squabbling amongst themselves, that the time has arisen for a native with a strong personality to take charge and endeavor to make them realize that their lazy and indolent habits of the past have been the cause of the present disastrous state of the Zumbeate.[9]

Dobson nominated for the position Ali Mashina (a.k.a. Chankola), the head tax clerk for Lushoto division. Chankola's appointment fits with the then prevailing view in the British Administration that educated clerks best served their conception of effective administration.[10] Dobson thus drew the political battle lines in Mlalo between tradition and modernity, Kinyassi and Chankola. No stranger to Mlalo politics, Chankola was a Kilindi from Dule, a small hamlet about a half hour's walk from the Mlalo chief's compound. He was not, however, a rainmaker, nor did he hold legitimate authority in the eyes of his constituency. Informants recall that when Chankola moved into the Mlalo chief's quarters, the worst drought in living memory began.[11]

9TNA 4/6/2, D.O. Korogwe to P.C. Tanga Province 7/29/42, "Appointment of New Zumbe for Mlalo Zumbeate, p. 233.

10Feierman, *Peasant Intellectuals*, p. 140.

11IT, Japhet Kalata at Mlalo, December 23, 1991, p. 2; Rajabu Shemzinghwa at Mlalo, Dec. 28, 1991, p. 4; Ali Gembe, and son, Shemboza bin Shemndola at Mlalo), Jan. 18th, 1992, p. 6; Kimako, Juma Kingazi, Hoseni Hamsini, Salimu Shekulwavu at Shita, Feb. 13, 1992, pp. 17-18; Athumani Shemweta, joined by Athumani Kikoi, Abeid Athumani and Hasani Mlimnahadala at Kwedeghe, Jan. 21, 1992, p. 71. For an alternative view, see Hemedi Ngereza, at Mlalo, March 19, 1992, p. 21a. Mzee Ngereza argues that Chankola was a scapegoat and that poor farming

Chankola's Famine: Understanding Scarcity in Cultural Terms, 1942-46.

Informants invariably recall the years between 1942 and 1946 as *Njaa ya Chankola*, i.e. Chankola's famine. In the oral record, *Njaa ya Chankola* constituted a crisis with clear causes and an equally clear resolution. Almost without exception, informants recall that the drought which caused the famine began because of the enmity between the deposed chief, Hassani Kinyassi, and his replacement, Chankola. According to one informant, Kinyassi, the rainmaker, offered prayers to God whereupon "the sun increased in intensity and famine came into the country."[12] Another characterized it as "a story of bitterness between Kinyassi and Chankola."[13] In the narrative, not only did Chankola lack the powers of a rainmaker, he also supposedly went so far as to extinguish the perpetual fire kept in the small banda used for the rainmaking ceremony.[14]

In Shambaa cultural discourse, drought, and thus food deficits, grew out of such political turmoil, and thus it logically followed that once the situation had reached crisis proportions, the people of Mlalo moved to remedy food shortages by solving the political problem, the rule of a

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practices caused the famine.

[12]IT Athumani Shemweta, joined by Athumani Kikoi, Abeid Athumani and Hasani Mlimahadala, Kwedeghe, Jan. 21, 1992.

[13]IT Rajabu Shemzinghwa, , at Mlalo, Dec. 28, 1991, p. 4. For other similar arguments for the famine's cause, see Kimako, Juma Kingazi, Hoseni Hamsini, Salimu Shekulwavu, at Shita, Feb. 13, 1992, para. 1, p. 18; Ali Gembe, and son, Shemboza bin Shemdola, at old Mlalo , Jan. 18th, 1992, para. 3, p. 6.

[14]IT Ali Gembe, and son, Shemboza bin Shemdola, at old Mlalo, Jan. 18th, 1992, p. 6;

chief who had no rain.[15]

> Early in April [1946] the people at Mlalo expressed, at a mass meeting of about 6000 people, their dislike of this Zumbe and asked that he should be removed. They were led by a group of men which gained the name of the 'Chama.' Women also demonstrated and nearly ransacked the house of the Zumbe and set it on fire. The disturbance subsided by the end of the day but there ensued a policy of passive resistance to the Zumbe which eventually led to his resignation in June....After careful inquiry this request was finally granted and Hassani bin Kinyassi was installed as Zumbe in August to the general satisfaction of the population of Mlalo....[16]

To informants, the end of the drought coincided with Chankola's removal and Kinyassi's return to Mlalo, whereupon "the rains fell all the way to Europe."[17] But the traditional ruler's triumphant return after four years of exile capped a period in which, in terms of mountain political ecology, everything had changed. By 1946, the colonial government was prepared to make the financial commitment necessary to go beyond the forest reserves and to control the agricultural landscape, beginning with the Mlalo basin. At the same time, indigenous political forces had begun to coalesce in opposition to the Native Authorities and their mentors in the District Administration.

At Mlalo, women played a central role in the opposition. They had demonstrated against Chankola in substantial numbers

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[15]See Feierman, *Peasant Intellectuals*, chs. 3 and 4.

[16]TNA 72/62/6 vol. III. Lushoto Division—Korogwe District, Annual Report 1946, D.O. C.C. de Rosemund, p. 207b.

[17]IT Japhet Kalata, at Mlalo, December 23, 1991, p. 2.

and in a militant fashion.[18]

> Women led the struggle against Chankola because they were very close to the hunger because the stayed with the children. Also they were used to working and meeting together, like when they gathered firewood, or at the market. In fact attendance at markets was mostly by women.[19]

> That was a very rough time. There was hunger and hoards of locusts. Once the hunger became evident, Mashina was to be removed by the strength of the women. The women of Dule, Mwangoi, Mlalo joined hands and drove the protest forward. The women climbed [to] the Kitala, and entered singing....[20]

The women's protest, moreover, reflected a growing confidence, at least in the greater Pangani Valley, that colonial government policies could be resisted. For example, informants claim that Mlalo's Shambaa women joined together with recent Pare immigrants who passed along news of the 1945 *Mbiru* tax revolt centered in the nearby Pare mountains.[21]

Male informants claim that the protest was more of a joint effort.

> The men were behind the women's revolt. Indeed the men of Mlalo, Rangwi, Fwizai, Shume, Mtae, Lushoto, Bumbuli, Mlola...laid a plan to put the women forward and the women were only assistance. The plan was kept a secret at Mwangoi.[22]

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[18]IT Ali Gembe, and son, Shemboza bin Shemdola, at old Mlalo, Jan. 18th, 1992. p. 18; Khadija Mdoe, at Mlalo, Feb. 26, 1992, p. 20; Amina Kitindu Mdoe, at old Mlalo, Jan. 18, 1992, p. 8.

[19]IT Khadija Mdoe, Mlalo, Feb. 26, 1992, para. 6, p. 20.

[20]IT Amina Kitindu Mdoe, , at old Mlalo, Jan. 18, 1992, p. 8. For information on *Mbiru*, see Isaria Kimambo, *Penetration and Protest in Tanzania* (Athens: Ohio University Press, 1992),. ch. 6.

[21]IT, Amina Mdoe, at Mlalo, Feb. 26, 1992, p. 8.

[22]IT Athumani Shemweta, joined by Athumani Kikoi, Abeid Athumani and Hasani Mlimnahadala, at Kwedeghe, Jan. 21, 1992.

Indeed colonial correspondence mentions the presence in the Mlalo basin of the *chama*, or simply, "the party," which actively sought Chankola's ouster.[23]

C.C. de Rosemund, Dobson's replacement, noted the *chama's* presence as a political force "capable of influencing and expressing public opinion."[24] However, even if the *chama's* male leadership played a role in the revolt, women certainly harbored legitimate complaints.[25] Their grievances grew out of their increasingly difficult task of managing Mlalo's agriculture in a milieu of deteriorating ecological circumstances. With increasing numbers of men away working for cash remittances in the cities of Tanga, Mombasa, and Nairobi, women increasingly bore the brunt of producing subsistence.

> The women took these steps because the famine had forced many of the men to go to Tanga, Mombasa and Nairobi to find work. Women had great difficulties at home trying to feed the children and felt bitter about it. Also women generally have more courage than men.[26]

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[23]TNA 72/62/6 vol. III. Lushoto Division—Korogwe District, Annual Report, 1946. D.O. C.C. de Rosemund, p. 207b.

[24]Ibid.

[25]In *Peasant Intellectuals*, Feierman argues that the Mlalo crisis reflects a larger pattern in Usambara's politics in which so-called *intellectuals* begin to challenge Kilindi legitimacy as Native Authorities and to shape the political discouse. There is certainly a great deal of evidence to the effect that the Chama and did participate in resistance to the Mlalo Basin Rehabilitation Scheme (1946-49). Like Feierman, I would argue that the Chama reflected an amalgamation of elders and younger, educated men. However I believe their support grew more from the droughts of the 1940s in northern Usambara than from their "discursive" abilities.

[26]IT Amina Kitindu Mdoe, at old Mlalo, Jan. 18, 1992, p. 8. For information on *Mbiru*, see Isaria Kimambo, *Penetration and Protest in Tanzania* (Athens: Ohio University Press, 1992),. ch. 6.

Nor had the difficult times ended with the return of the rainmaker. The short rains fell in late 1946 after Kinyassi's return, but difficult agroecological conditions continued in northwestern Usambara through 1949. The story of survival and adaptation to the decade-long drought, though not as deeply embedded so the community's collective memory as the metaphors of conflict between Kinyassi and Chankola, show a food production system and a landscape stretched, at times, beyond the absolute limits of its capability to meet the needs of the population.

The Realities of Scarcity: Coping Strategies

Recent research has shown that rural Africans employ so-called "coping strategies" to reduce the impact of recurrent food deficits. Moreover, farmers apparently adopt coping strategies in a particular sequence ranging from more to less palatable alternatives as a shortage intensifies, ultimately resulting in the liquidation of productive assets, migration, and in the worst cases, death.[27] Effective risk reduction often calls for the adoption of a combination of agricultural, economic or political practices already well-known to a community. Further, investigations of famine-prone communities have described very specific potential crisis indicators which can reveal both the potential for

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[27]David Campbell, "Strategies for Coping with Severe Food Deficits in Rural Africa: A Review of the Literature," *Food and Foodways* 4.2 (1990, p. 143-162; "Community-based Strategies for Coping with Food Scarcity: A Role in African Famine Early-warning Systems," *GeoJournal* 20.3 (1990), 231.

famine and its severity at any particular time.[28]

Such "coping strategies" have deep historical roots across East Africa. In Usambara, Mlaloans responded to increasingly difficult ecological conditions, in part, by time tested manipulation of the agroecological production system. However, this, the first major ecological crisis in the context of capitalism and colonial agricultural reform, required that farmers also fashion new responses. In fact, a close look at *Njaa ya Chankola* (1942-46) and its follower, *Njaa ya Maendaleo*, (1948-9) reveals a historical conjuncture between long-term ecological change and short-term crises in politics, climate and economy which marked the beginning of a decided alteration in the operation of farming systems.

Although the official record contains no reference to a famine called *Njaa ya Chankola* in Usambara during the early 1940s, official correspondence indicates that an alarming situation was developing. The imposition of the "Native Foodstuffs Ordinance" in 1941, after the failure of that year's rains, constituted the earliest evidence of official concern. By December 1943, the Provincial commissioner informed the Chief Secretary that food supplies were "dangerously scarce" across much of West Usambara, particularly around Mlalo, Mbaramo, Mtae, and Mlola, where blight had devastated the potato crop and dry weather limited maize harvests.[29] The Provincial Commissioner estimated that

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[28]Campbell, "Community Based Strategies," p. 232.

[29]TNA 13079 P.C. Tanga to Chief Sec., " Report on food position"

39,000 people had been affected and requested 430 tons of food aid. Three months later, in March 1944, the Provincial Commissioner again requested food aid owing to poor short rains and locust depredations. In his Annual Report for 1944, the D.C. noted "severe drought" at Mlola, Mlalo and Mtae, which, along with poor harvests and more locust depredations, continued into 1945 and 1946.[30] Again, in 1949, severe food shortages hit Usambara's northern tier prompting farmers to eat their seed and the District Administration import food aid.[31]

Drought, crop diseases, insect infestations and resulting hunger strained coping mechanisms over the short-term. However, risk reduction strategies, as they played themselves out over the decade, functioned in a context of long-term change in environment, technology and demographics. A look at environmental conditions, especially rainfall, suggests that given the regularity of periodic drought, rainfall during these years, although perhaps below normal, did not fail altogether, nor did it affect as adversely other farming communities on the northern tier such as Tewe and Mbaramo. Mlalo's pre-1940s ecological history argues for rather steady population growth and attendant adjustments in agricultural technologies which temporarily increased the basin's carrying capacity, but which failed, by the early

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12/30/43.

[30]TNA 72/62/6 Vol. III, Reports, District Annual, 1944, 1945 and 1946.

[31]TNA 72/62/6 Vol. III, Reports, District Annual, 1949, no page numbers.

1940s, to mitigate what had been normal periodic rainfall deficits without inputs of food aid.[32]

Demographic Change

Population records indicate that between 1931 and 1945 the Mlalo Sub chiefdom's population had grown dramatically and by 1949, the densities had reached 461 persons per square mile. With extremely steep slopes and rocky outcrops factored out of the area, the density translated into 994 per square mile of arable land.[33] Immigration from regions with long-standing ties to Mlalo, like the Taita hills and Upare, probably accounted for much of the increase.[34]

Table 5. Mlalo Basin and Plains Population by Location, 1931

Mwangoi	Mlalo	Handei	Shita	Dule	Zaizo	Mngaro	Lunguza
2366	3115	2819	285	1135	446	744	N.A

Total: 10,910. 1931 census indicates that 32% of the total population were non-Shambaa.

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[32]For a synopsis of the arguments surrounding population and agriculture see Daniel E. Vassey, *An Ecological History of Agriculture 10,000 B.C. - A.D. 10,000* (Ames, Iowa: Iowa State University Press, 1992), chapter 8; see also Ester Boserup, "Environment, Population, and Technology in Primitive Societies," *Population and Development Review* 2 (1976), p. 21-36.

[33]TNA 4/269/5 Vol I. "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49.

[34]Patrick Fleuret, *Farm and Market*, p. 98-99.

Table 6. Mlalo Basin and Plains Population by Sex, Age, Location, 1945

	Mwangoi	Mlalo	Handei	Shita	Dule	Zaizo	Mngaro	Lungu[35]
men	968	1275	1098	81	435	175	175	145
women	1099	1317	1282	105	518	206	150	123
girls	866	916	1024	59	471	134	80	66
boys	872	1010	944	93	375	186	82	66
totals	**3805**	**4518**	**4348**	**338**	**1799**	**701**	**487**	**400**

Total: 16,396[36]

Population increase placed stress on the system of land tenure operating at Mlalo, which had been designed to assure everyone, including newcomers, enough land to procure subsistence. Each community such as Mwangoi, Shita, or Handei would hold certain lands (*Dezu*) for allocation.[37] *Dezu* grants, often to landless immigrants, were made by the village official known as the *Mdoe*. Upon allocation, *Dezu* became classified as *Ngau*, land held in temporary usufruct only. After two generations of use, *Ngau* land reverted to *Dezu*, and was again liable for reallocation. The system tended maximize available land. For example, if a property owning family emigrated from the basin, their land became

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[35]Lunguza figures taken from TNA 4/6/2 which shows number of taxpayers (adult men) only. Other figures based on percentages of females and children at Mngaro, another nearby plains settlement.

[36]Source for population figures: TNA 72/3/25, "Comparison of population figures for Mlalo Basin 1931 and 1945, p. 24e.

[37]*Dezu* formed part of a broader designation of lineage communal lands known as*Tundui*.

Dezu, i.e. liable for allocation. However, if they returned they could reclaim their former lands once any standing crops had been harvested. Thus families of long-standing residence could be held in trust, though not wasted.[38]

By the mid-1940s, *Dezu* lands were in extremely short supply and in an adjustment to the tenure system, a relatively new system of borrowing fields had come into existence.

> A man who has no land of his own borrows fields for cultivation from neighbours, relatives or friends, who have more than they are using. There are a considerable number of land owners who have more than enough land for their own needs. They are usually descendants of the original settlers or sons of men who acquired land by purchase. By custom an owner cannot refuse to loan his land on the score that it is under fallow.[39]

In 1946, under questioning by the government sociologist, the elders of the Mlalo Basin refused to acknowledge that these changes in land tenure and reductions in fallow had reduced soil fertility and yields. Their refusal, although likely disingenuous, probably reflects both their fear of removal to the plains and the fact that food deficits could still be supplemented by purchases from nearby Mbaramo or by opening fields in Kitivo.[40] In any event, the

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[38]TNA 4/269/6 Mlalo Basin Rehabilitation Scheme. "Addendum to monthly Report for August, 1947," no page number; see also IT Hasain Singano Mbuguni, Musa Hasani and Mbwana Omari Shemzighwa at Mlalo, January 3, 1992.

[39]TNA 4/269/5 Vol. I. Hans Cory "Report on the Position of Mlalo Basin after a Stay of 2 1/2 months," no page numbers.

[40]TNA 4/269/5 Vol. I. Hans Cory, "Report on the Position of Mlalo Basin after a Stay of 2 1/2 months," no page numbers; for a similar arugment see IT, Japhet Kalata at Mlalo, December 23, 1991, p. 2.

prevalence of borrowing undermined the long-fallow system and likely contributed to the kinds of degradation noted by observers during the 1930s and 1940s.

By 1949, on average a family in the Mlalo Basin held 3.43 acres which were split into seven separate fields, all within a half hour's walk from home. However, over 50% of Mlaloans held less than 2.03 acres.[41] Thus for many families, fallow of any kind could not be maintained in good times or bad. All available land had to be used for subsistence, at the very least, and during adequate rains, perhaps a surplus for the local market.

Intercropping

Given their extremely small holdings, farmers on Usambara's northern tier historically sought ways to increase productivity by introducing new cultigens into regional farming systems. At the turn of the twentieth century, bananas, a borrowing from Asia, made up the bulk of caloric intake. During the first four decades of European rule farmers in Usambara had incorporated two European introduced crops, maize and potatoes, which by the 1940s, had replaced bananas as the dominant staples. As documented in chapter 3, farmers had quickly adopted European potatoes, but this innovation backfired during the 1940s when blight attacked the crop. In Mbaramo and Mlalo farmers counteracted potato

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[41]TNA 4/269/5 Vol I. "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49.

shortages by increasing the acreage devoted to indigenous varieties of sweet potatoes, which, although lower yielding than the exotics, proved more drought resistant.[42] Sweet potatoes had been a popular staple during the nineteenth century and in high elevations too cold for bananas, farmers had developed several varieties appropriate to a number of ecological niches and rainfall conditions.[43]

Cassava, another exotic drought resistant, starchy tuber, gained popularity in the Mlalo and Mbaramo area during the 1940s.[44] Largely unknown in Mlalo up to the 1930s, cassava came to account for more planted acreage than bananas or maize.[45] Cassava's growing importance during the 1940s signaled a response to declining soil moisture. During drought, the tubers could remain in the ground in a dormant state until soil moisture again became available. They also flourished in soils low in nitrogen.[46] However, even cassava failed to feed Mlalo in 1948 and 1949, when food imported from the southern side of Usambara provided the bulk of food supplies.[47]

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[42]IT, Japhet Kalata, at Mlalo, Dec. 23, 1991, p. 2; Rajabu Shemzinghwa, Mlalo, Dec. 28, 1991, p. 4; Hemedi Ngereza, Mlalo, January 25, 1992, p. 12; Khadija Mdoe, Mlalo, Feb. 26, 1992, p. 20; Mwanakombo Shechambo and Mama Majuma Lukindo, Mlalo, Feb, 26, 1992, 21 (Mzee notes drought resistant variety as *Mpome ya Kwicho*).

[43]TNA 4/269/5/vol. 1, Annexure IV to "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49, p. 172.

[44]IT Hemedi Ngereza, at Mlalo, January 25, 1992, p. 22; Khadija Mdoe, at Mlalo, Feb. 26, 1992, p. 20.

[45]TNA 4/269/5 Vol I. "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49, p. 146.

[46]Daniel E. Vasey, *An Ecological History of Agriculture: 10,000 B.C. - A.D. 10,000* (Ames, Iowa: Iowa Stae University Press, 1992), p. 52.

[47]TNA 72/62/9B, Monthly Reports for October 1948, p. 29; November1948, p. 29; February 1949, p. 34; March 1949, p. 35; May 1949,

Because farmers recognized that each crop had particular vulnerabilities to climatic or epidemiological conditions, they planted a variety of cultigens in each garden. Know as inter cropping, this agricultural technique had been practiced around Mlalo at least since the late nineteenth century. With land in extremely short supply, wide agricltural application helped farmers make the most of their meager holdings by stretching each garden's productive capacity to the limit. The table below shows the actual acreage devoted to each crop on the average holding of 3.43 acres. The fact that the table acreage adds up to over 5 acres is accounted for by inter cropping and seasonal rotation of the various crops.

Table 7. Acreage Devoted to Major Crops on Average Holding, Mlalo

Bananas	0.90 acres
Cassava	1.23 acres
Sugar cane	0.56 acres
Maize	1.01 acres
Beans	1.27 acres
Sweet potatoes	0.73 acres

Total Acreage = 3.43 acres

p. 35; June 1949, p. 37; July 1949, p. 37; August 1949, p. 37; October 1949, p. 40; November 1949, p. 42. By no means a miracle crop, Cassava proved very vulnerable to attach to "mosaic," a combination of viruses spread by White Fly and common across East Africa. For description of research see: H.H. Storey and R.F.W. Nichols, "Studies of the Mosaic Diseases of Cassava," *Annals of Applied Biology* 25 (1938), p 154.

Clearly, Mlalo's dynamic farming system had evolved in complex ways. Maize and cassava, exotic crops of relative novelty, had been incorporated in response not only to market demand, as was the case with maize, but also as an adjustment to demographic change and alterations in the region's carrying capacity.

Planting in the Swamps

Up until the 1940s, highland marshes (sing. *dau*), were an important element in Usambara's mountain landscape. As water catchment they slowed runoff and helped maintain constant stream flows. The reeds and grasses which grew there provided occasional grazing for livestock and thatching for roofs. Most informants agree that the *dau* became an important feature in arable agriculture only during *Njaa ya Chankola*.[48] In fact, farming in *daus* came to be known as *kija mshare* (delivery from hunger).[49] In his 1944 reconnaissance of the Mlalo basin, F.J. Nutman noted, "The bottom is relatively level, but is by no means flat; and forms a series of hills separating grassy vleis and drained swamps. These latter are traversed by the many rivulets forming the tributaries of the Umba river."[50] That Nutman found drained

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[48]For a few examples, see IT, Mavoo, Mashambo (mpare, c. 90), at Kirete, Feb. 21, 1992, p. 48; Hemedi Ngereza,, Mlalo, March 19, 1992, p. 22; Shechambo, Mwanakombo and Mama Majuma Lukindo, Mlalo, Feb, 26, 1992, p. 21; Kimako, Juma Kingazi, Hoseni Hamsini, Salimu Shekulwavu, Shita, Feb. 13, 1992, p. 17.

[49]IT, Mavoo, Mashambo (mpare, c. 90), at Kirete, Feb. 21, 1992, p. 48

[50]TNA 72/3/25 vol. 1 "A Study of the Mlalo Basin - An Area Forming Part of the W. Usambara Development Scheme," Sept. 6, 1945, p. 14b.

marshes implies that some planting had commenced there. Five years later, J.B. Clegg, the colonial Agricultural Officer charged with Mlalo's rehabilitation, strongly encouraged *dau* cultivation as a permanent feature of agriculture in Mlalo.[51] Indeed, during the late 1940s, headmen allocated these areas to farmers, and at least in the case of Nyassa, a marshland draining into the Umba, the traditional tenure arrangements under *Dezu* and *Ngau* did not apply in the dispersal. Those who got the plots were simply those who could pay the necessary bribes.[52]

Without doubt, the draining of the *dau* lands helped ease the regional hunger, but the long-term ecological effects remained a complete mystery to both Mlalo's farmers and to the colonial agricultural officer.

Irrigation

Farmers of East African highlands had employed irrigation technologies for centuries.[53] Around Mlalo, a

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[51]TNA 4/269/5 Vol I. "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49, p. 16.

[52]IT Salim Saguti, Asmani Mdoe and Juma Msagati, at Nyasa (Mlalo), 1/29/92 (interview not recorded).

[53]W.M Adams, T. Potkanski and J.E.G. Sutton, "Indigenous Farmer-Managed Irrigation in Sonjo, Tanzania," *The Geographical Journal* 160 (1994), 17-32; Patrick Fleuret, "The Social Organisation of Water Control in the Taita Hills, Kenya," *American Ethnologist* 12 (1985), 103-18; David Anderson, "Agriculture and Irrigation Technology at Lake Baringo," *azania* 24 (1989), 89-97; F.T. Masao, "The Irrigation System in Uchagga: An Ethno-historical Approach," *Tanzania Notes and Recorde* 75 (1974), p. 4-8; and J.E.G Sutton, "Sonjo and Engaruka: Further Signs of Continuity," 25 (1990), 91-93, "Irrigation and Soil Conservation inAfricnaAgricultural History: with a REocnsideration of the Inyanga Terracing (Zimbabwe) and Engaruka Irrigation Works (Tanzania)," *Journal of African History* 25 (1984), p. 25-41.

hill-furrow system predominated.[54] The area's major furrow, known as *Hambalawei*, had its off take on the Umba below Mlalo town. It's local fame notwithstanding, groups of farmers from the basin's other population centers also constructed less substantial dams and furrows on the Umba's tributaries.[55] A successfully functioning irrigation system required seasonal labor organization and strict supervision of the construction and maintenance of dams and furrows. Responsibility for control of each particular furrow fell to a particular male elder from an area's controlling lineage. Usually during June, he called out the all-male labor gangs in a ceremony known as *Shashi*, during which workers cleaned the section of the furrow which watered their respective gardens. Failure to turn out for *shashi* would result in sanctions and possibly the withdraw of right to use the furrow.[56] In August 1946, Burrows found Mlalo's irrigation systems in full operation and even suggested that they "be officially sanctioned for water conservation and erosion control."[57]

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[54]See Adams, Ptokansik and Sutton, "Indigenous Farmer-Managed Irrigation in Sonjo," p. 18-19 for discussion of technical terminology.

[55]IT, Ali Gembe, and son, Shemboza bin Shemndola, Mlalo, Jan. 18th, 1992, p. 6

[56] IT, Sheiza, Kasisi Kuambaza Sheiza at Mlalo, January 18, 1992, p. 9; Shechambo, Mwanakombo and Mama Majuma Lukindo at Mlalo, Feb, 26, 1992, p. 12. See also Feierman, *Peasant Intellectuals*, p. 65.

[57]TNA 4/269/5 vol. I. Mlalo Basin Rehabilitation Scheme. Extract from Burrow's report titled, "The Mlalo Basin, A Rural Sociological Survey covering 14 days in the Field." 8/24/46. p. 196.

Markets

Periodic markets have long existed in Usambara, the most permanent of which were located near established towns like Bumbuli, Mlalo, Vuga (Soni) and Gare, i.e. places of regularly assured harvests. The markets linked contiguous ecological zones and served to counteract the rather erratic rainfall distribution within the mountains and between the mountains and plains. The market system assured food availability under climatic conditions in which localized crop failures might occur in any agricultural season.[58] Up to the early twentieth century, this could be accomplished by a relatively small number of mountain markets.

Between 1900 and 1933, in response to population increases and decreases in available arable land, the number of Usambara marketplaces grew from a handful to over thirty. Patrick Fleuret links the increase (from 1900 right up to the late 1970s) to the reduction in the total acreage of household holdings and thus the number of fallow plots (see above). In such constrained circumstances, farmers would be forced to makeup subsistence shortfalls through barter or purchase of foodstuffs in the market.[59] Local administrators recognized the importance of the marketplace system in lessening the effects of local seasonal food shortages and noted that without the market system in good working order, they would be forced to import famine relief supplies during

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[58]Fleuret, *Farm and Market*, p. 165 & 189.
[59]Ibid., p. 183.

poor seasons.[60] Food imports were needed during *Njaa ya Chankola*, which simply overwhelmed the ability of the market complex to meet food needs. One reason for the inability of the market system to redistribute surpluses may have been the invocation in 1941 of Native Foodstuffs Ordinance, which limited the amount of produce which could be moved from one sub chiefdom to another. But it is also likely that the money needed to purchase surpluses was not readily available to people at the economic margins. As Cory reported in 1946, at a

> Weekly *gulio* [market] in Mlalo, held on Wednesdays, at which hundreds of women assemble, large quantities of muhogo (cassava), bananas and other non-staple foodstuffs are bought and sold. The buyers are the wives of wage earners and the sellers come from fertile areas and particularly from irrigable country.[61]

In any event, the mountain market system alone proved inadequate during *Njaa ya Chankola*. Between 1944 and 1946, the colonial government brought to the northern parts of Usambara well over a thousand tons of food relief, with additional imports in 1949.[62] However, the hungry had to purchase this food.[63] Thus, *Njaa ya Chankola* marked the beginning of a period in which cash became one the most

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[60] Ibid., p. 184.

[61] TNA 4/269/5 Vol. I. Hans Cory, "Report on the Position of Mlalo Basin after a Stay of 2 1/2 months." no page numbers.

[62] TNA 72/62/6, vol III, Lushoto Division, Annual Report for 1949.

[63] TNA 72/62/6 Vol. III, Lushoto Division—Korogwe District, Annual Report for 1946. C.C. de Rosemund, p. 207e; IT Rajabu Shemzinghwa at Mlalo, Dec. 28, 1991, p. 4.

important mitigators of famine in Usambara.

Coping with Food Deficits: Moving Further away from Home

Expanding Kitivo Farming

Farmers in Usambara had for generations farmed the lowlands in order to supplement highland harvests, but this practice had clearly intensified on the massif's northern side by 1944.[64] At Mkundi, below Mtae, 1000 acres of maize had been planted. At Mnazi below Mbaramo and at Kitivo below Mlalo farmers had also increased production. Not all of increases had been voluntary. Colonial records imply that in some cases headmen forced some cultivators into plains production to meet grain quotas for the war effort.[65] However, as Milne had explained several years earlier, productive plains lands were limited and environmental conditions difficult.

Increased lowland farming led to health problems. Malaria carrying mosquitoes thrived in the plains swamps and the increase in lowland farming helps explain the drastic jump in malaria cases in Lushoto district during the mid 40s.[66] By the late 40s, a survey at the Mwangoi (?) dispensary showed that, of all patients who walked in for

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[64]TNA 72/62/6 vol. III, Lushoto Division—Korogwe District, Annual Report, 1944, p. 201.

[65]Ibid.

[66]Ibid., pp. 201d and e.

treatment, 21.4% carried the malaria parasite.[67] In addition, as cultivators inexperienced in plains farming became more numerous, ecological degradation began to decrease yields. In the same areas Milne had identified several years earlier as filled to capacity, newcomers opened gardens indiscriminately, especially along the Umba river at a former German rubber plantation, where one informant recalled that deforestation and stream bank cultivation interrupted the river's regular flow and flood patterns.[68]

Day Labor: Working for Food

Another indicator that Mlalo's subsistence farmers could not meet food needs was the fact that increasingly, people, especially women, walked from the Mlalo basin to Tewe and Mbaramo to perform day labor in return for cassava.

> Tewe and Mbaramo still had trees so that mists brought some water to the area. Also folks at Mbaramo and Tewe planted cassava in great quantities even though they didn't know that the drought was coming. This in particular helped the people of Mlalo.[69]

Cory reported in 1946,

> The procedure at Mbaramo is that women from the villages of shortage go to work there as day laborers and are paid in kind. In May and June I

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[67]TNA 4/269/5 Vol I, J.B. Clegg, "Report of the Mlalo Rehabilitation Scheme," 10/29/49, p. 148.

[68]IT, Bakari Panduka (82), Abdallah Mdoe (78), Musa Athumani (70), Ahamadi Rashidi Kidumi (71)at Kitivo, Mng'aro. February 8, 1992, p. 15.

[69]IT Bakari Panduka (82), Abdallah Mdoe (78), Musa Athumani (70), Ahamadi Rashidi Kidumi (71), at Kitivo, Mng'aro. February 8, 1992, para. 6, p. 13.

> saw many women laborers returning daily with their loads of muhogo (cassava) after work at Mbaramo.....It is difficult for the people so long as their supplies are assured, to recognise loss of fertility in any particular area. p. 4.[70]

Working Outside the Basin

Cash remittances from relatives working in urban centers often meant the difference between eating and going hungry. Since the nineteenth century, Mlalo's men had left the mountains to work for wages at seaside towns like Mombasa and Tanga. This practice increased significantly during *Njaa ya Chankola*.[71] One observer concluded that labor was the area's main export and that cash remittances were of vital import.[72] In the absence of young men, the *mashamba ya kigoshi*, i.e. the men's gardens (usually of bananas, and by the 1940s, cassava as well), stood neglected while women and young children found it impossible to carry out all the work in their fields and keep the huts in good repair.[73] Labor for irrigation works would also have been short. A 1949 estimate put the percentage of Mlalo's men working outside the Usambaras at 11.88%.[74] Colonial officials certainly believed

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[70]TNA 4/269/5 Vol. I. Hans Cory, "Report,", p. 4.

[71]Hemedi Ngereza,, at Mlalo, January 25, 1992, p. 12 & 22; Kisimbo, Boseni (62), at Malibwi, Jan. 2, 1992, p. 60; TNA 4/269/5 Vol. I. Hans Cory, "Report on the Position of Mlalo Basin after a Stay of 2 1/2 months,".

[72]TNA 4/269/5 vol. I. M.B.R.S. Extract from Burrow's report titled, "The Mlalo Basin, A Rural Sociological Survey covering 14 days in the Field." 8/24/46. p. 199.

[73]TNA 4/269/5 Vol. I. 1946. Hans Cory, "Report on the Position of Mlalo Basin after a Stay of 2 1/2 months," p. 3.

[74]TNA 4/269/5 Vol I. "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49, p. 152.

this type of labor migration to be socially detrimental, but ongoing contacts with the coast have continued to provide Mlaloans with valuable employment and marketing contacts in Tanga and Dar es Salaam up to the present.[75]

Rainmaking

Some believed that the political action in 1946 against Chankola stemmed from the fact that the farmers of the Mlalo basin felt he, as usurper and a rainless one at that, should be blamed for causing famine. In this sense the protestations for the rainmaker, Hassani Kinyassi's return formed part of the drought mitigation package. Again, the fact that women, by then the major subsistence producers, participated en masse, reinforces the notion. However, when placed in its larger context, the April 1946 action in Mlalo represents part of a broader picture of peasant resistance to colonial intrusions on production, in this case, the Mlalo Basin Rehabilitation Scheme, which had begun in early 1946.

Farmers in the Mlalo basin, like their counterparts across East Africa, had a long history adjusting their agricultural system to meet challenges to their food security. By developing and maintaining a complimentary irrigation system, they had invested in the land's capability over the long-term. By adopting exotic cultigens, they had

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[75]See Graham Thompson, "The Merchants and Merchandise of Religious Change: The New Orthodoxies of Religious Belief and Economic Behaviour amongst the Shambala People of Mlalo, North East Tanzania." Ph.D. dissertation, Clare Hall College, Cambridge, 1984.

shown a willingness to experiment and to innovate in response to ecological and economic conditions. Thus the changes over the two generations of contact with Europeans showed continuity with the past. Nonetheless, population increases and the subsequent decrease in the availability of productive farmland pushed farmers onto marginal lands where successful subsistence production, even in good years, was questionable. Farmers knew there had been degradation, especially deforestation on the hills surrounding the basin.[76] Without the grain imported by the colonial government, the droughts of the 1940s would have killed people. Mlalo's farming system had reached the limits of its resiliency.

Part III. Mlalo Basin Rehabilitation Scheme.

While Mlalo's inhabitants set about making a living under famine conditions prevailing during the war, the colonial government geared up for a post-war push to transform land-use across the Usambaras. Even though Milne's call in 1937 for an intensive effort by the Department of Agriculture had been dismissed by the Director as unnecessary, District and Provincial officers continued to impress upon Tanganyika's central government the immediacy of Usambara's ecological problems, especially at Mlalo. The Chief Secretary's office responded by fending off all requests for project funding.[77] By 1944, however, reports

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[76]IT, Rajabu Shemzinghwa. Mlalo, Dec. 28, 1991, p. 4.

[77]TNA 72/3/25 entitled "Mlalo Basin Scheme Correspondence," see

emanating from Dar es Salaam began to warm to ideas for radical alterations in Usambara demography and ecology. Thus, in 1945, the Tanga Provincial Administration received permission to study Mlalo's agroecological problems and to forward a five year plan for rehabilitation. The Provincial Committee - consisting of the P.C.(Tanga), D.C.(Korogwe), D.O. (Lushoto), Senior Medical Officer (Tanga), Provincial Education Officer, Assistant Conservator of Forests (Lushoto), Senior Agricultural Officer (Lushoto), Provincial Veterinary Officer, and Chief Kimweri Magogo - oversaw the preparations for the scheme and commissioned a series of reports on the position of the Mlalo Basin.

At the behest of the Provincial team, beginning in 1945 and continuing through 1946, European "experts" traversed the Mlalo Basin, formulating reports on husbandry and society complete with suggestions for its reform. As the above discussion of mitigation points out, Mlalo's farmers, responding to a four-year drought had skewed production toward maximum use of all available land. Not surprisingly, European observers argued that the ecological problems they saw stemmed from a Malthusian situation in which population increases had knocked the "traditional" long-fallow farming system out of equilibrium.

F.J. Nutman penned the first of these reports. Nutman had some experience in the Usambaras as a plant pathology

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correspondence between D.C. Korogwe, P.C. Tanga, and R.R. Staples, Chief Botanist.

specialist at Amani in East Usambara and later as the head of the Fibre Board Plant at Shume in West Usambara's forest reserve. His experience notwithstanding, the Provincial Committee for the most part dismissed his report as superficial and inaccurate.[78] Nonetheless, in his suggestions for reform, Nutman cogently argued that the area required a long-term plan for diversifying its economic base. Mlalo's future economy, he believed, should include both agriculture (market gardening, horticulture, wattle plantations) and industry (timber processing, wool production).[79]

In early October, about a month after Nutman submitted his report, Van Rensberg, the Territory's "Pasture Research Officer" arrived at Mlalo. He stayed two days.[80] As a pasture expert, Van Rensberg sought to vindicate the Basin's livestock, which he felt had been unfairly blamed for accelerated erosion. Mlalo's problems, he argued, had been "created by unlimited, uncontrolled and wasteful methods of cultivation; and lack of effort to build up a system of balanced mixed farming where the animal can play its proper role."[81] Erosion control via ridges built along steep slopes,

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[78]TNA 72/3/25 vol. 1, "Minutes of Provincial Committee Convened to Discuss Dr. Nutman's 'Study of the Mlalo Basin.' Held at Lushoto on 10th and 11 December, 1945," pp. 40-51 (numbered from back to front); see also "A Study of the Mlalo Basin - An Area Forming Part of the W. Usambara Development Scheme," F.J. Nutman, September 6, 1945, p. 14 (a-g) (Hereafter "The Nutman Report.")

[79]TNA 72/3/25 vol. 1, "The Nutman Report," p. 14c-f.

[80]TNA 72/3/25 vol. 1, S.A. Linton, Senior Agricultural Officer, Lushoto to the Provincial Commissioner, Tanga, December 3, 1945, p. 21.

[81]TNA 72/3/25 vol. 1, "Land Utilization and Soil Conservation Scheme for the Western Usambaras," H.J. Van Rensberg, November 7, 1945, " p. 17.

in Van Rensberg's view, was the key to successful husbandry.[82]

Both Nutman and Linton (Senior Agricultural Officer, Lushoto) took issue with Van Rensberg's suggestion for ridge construction. Linton wrote that "one might just as well talk of giving demonstrations of hydroponics with a view to the time when there is no soil left on the mt."[83] The objection is particularly significant considering that tie ridging, i.e. building ridges of raised soil along the contour of a hill, subsequently became among Usambara's farmers the most hated aspect of the government's agricultural reform program of the 1950s.

The Provincial Committee met twice during December 1945 to consider Nutman's, Van Rensberg's and an earlier report (Staples), and to decide their view on the conditions and causes of Mlalo's ecological problems. They agreed on the following:

1. 80% of arable land in Mlalo was under cultivation; population density exceeded 500/mi^2; the basin was "grossly overcrowded" with an average holding of 4.48 acres.
2. Crowding resulted in cultivation of steep slopes and reduction of communally owned grazing lands and accelerated erosion.
3. Mlalo's soils were not then, or had they ever been, very fertile.
4. Food imports proved that the population could not produce its own subsistence.
5. In order to procure cash, much of Mlalo's population performed wage labor outside the basin.
6. Mlalo's population did not enjoy a higher standard

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[82]Ibid,. p. 17c. Van Rensberg suggests bench terraces, grass strips planted along stream courses and hill contours, tie ridging.

[83]TNA 4/269/5/ M.B.R.S. vol. I. Sen. Ag. Officer to P.C. Tanga 12/3/45, p. 44-45; see also TNA 72/3/25 "Land Utilization in W. Usambara." F.J. Nutman 12/3/45, p. 18.

of living than other regions in the Usambaras, as Nutman had contended.

7. The population did not understand the seriousness of the erosion problem.

8. Current scientific knowledge could solve the erosion problem.

9. Erosion Control was first priority and any scheme must be enforced with maximum diligence.[84]

Significantly, the report made absolutely no mention of the variety of indigenous farming practices, nor had anyone anywhere actually measured the rate of soil erosion on even one of Mlalo's slopes. To the Provincial Committee overpopulation had overtaxed a farming system without the flexibility or technological capacity to adapt. With this understanding, the committee began to formulate a plan for Mlalo's rehabilitation. Nutman continued to press his opinion that whatever the shape of the scheme, it should include an industrial component based on agroforestry. Thus, Nutman argued, farmers could be removed from the land without having to leave the basin. In the end, the Provincial Committee tossed out Nutman's scheme in favor of the so-called "Staples Plan," which advocated a mixed system of animal and crop husbandry operating under strict erosion control measures on 10 to 15 acre farms. However, given that Mlalo's farmers seldom held more than four acres of widely scattered gardens, the Staples plan clearly would drive substantial numbers of people out of the Mlalo Basin.[85] In

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[84]TNA 72/3/25 "Provincial Committee to Chief Sec. 12/29/45. "Meeting to Discuss Nutman's scheme." p. 22a.

[85]TNA 4/269/5 vol I, "Precis of the various suggested schemes fo the Rehabilitation of the Mlalo Basin 3/16/46, p.42; TNA 72/3/25, F.J. Nutman, "Land Utilization in West Usambara, 3/12/45. p. 18

these preliminary meetings, the Committee never directly addressed the issues of displaced families except in the following vague reference:

> Any scheme which will tend to relieve the population pressure in the Mlalo Basin is to be commended and despite the danger of malaria the Kitivo and Luengera suggestions mentioned in the Report of the Tanga Province Sub- Committee on land for post war development should be considered from this point of view.[86]

In Dar es Salaam, the Colonial Administration accepted the Committee's findings, but expressed concern about the implications of the government actively displacing people, a move central government believed would be resisted. The central government preferred to let economic pressures reduce the numbers living in Mlalo. Thus simply ignoring the issue of population control, the Director of Agricultural Production in February 1946, gave the go-ahead for Hans Cory, the government's sociologist, to begin a demographic and sociological survey and for the soil erosion control measures to begin in July.[87] Rules laying out proper land use were drawn up and the Native Authority empowered to enforce them as well as "to effect the compulsory exchange of land." The Department of Agriculture approved an expenditure of £15,000 over 5 years.[88]

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[86]TNA 72/2/25, Provincial Committee to Chief Secretary, 12/29/45, p. 22a. Kitivo and Luengera are lowland ares directly adjacent to the massif on the northwestern and southeastern sides respectively.

[87]TNA 72/3/25 R.W.R. Miller, Director of Agricultural Production to Chief Secretary, 2/6/46, p. 26a.

[88]TNA 25576 "Tanganyika Territory Soil Conservation Report for 1945-46., p. 46a.

Part IV. The Mlalo Scheme: A Study in Failure

Of the numerous reports and correspondence for 1946 regarding the Mlalo basin's rehabilitation, only one referred to the 4 continuous years of chronic drought, insect and disease infestations of crops, and hunger.[89] That the famine did not figure into the decisions regarding the scheme reveals a clear lack of historical understanding both of long-term changes in mountain agriculture and ecology and the short-term strategies for procuring food during ecological crisis. Moreover, the fact that a new D.O. (Rosemund) had only recently taken over for Dobson probably accounts for the lack of continuity in understanding Mlalo's political turmoil. Whatever the case, in Feb. 1946, Cory entered a hornets' nest. Hunger was prevalent and the opposition to Chankola's rule had begun to surface. As noted above, the April 1946 demonstrations against Chankola represented, in part, a last ditch effort to restore the rains but also a regional reaction to the colonial intervention which Cory represented.

As he began to conduct his survey in February 1946, Cory certainly noticed that something was seriously askew.[90] In fact, he suggested postponing the survey until the "political situation had cleared."[91] By June, Cory sought to leave of Mlalo altogether and accordingly the census and village

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[89]TNA 72/3/25 Extract from Burrows "The Mlalo Basin: A Rural Sociological Study covering 14 Days in the Field," 8/24/46, p. 64a.

[90]TNA 4/269/5 Vol. 1, Cory to Hartnoll, P.C. Tanga 2/6/46, p. 135

[91]Ibid.

surveys were postponed. Without the surveys, Cory's final report read only as a general statement of sociological conditions in the Mlalo Basin.[92] In the light of these difficulties, the P.C. argued for the postponement of unpopular anti-erosion measures because he believed that enforcement "might lead to further agitations which would be embarrassing [to the Provincial Administration]."[93]

In keeping with the Mlalo Scheme's inauspicious beginnings, J.B. Clegg, the newly appointed Agricultural Officer in charge of the project, arrived at Mlalo in July 1946, at the height of the yearly dry season. Making perhaps the most intelligent choice of his tenure at Mlalo, he chose to live in Malindi, a market town located on a mountain ridge on the edge of the basin and away from the vortex of hunger and unrest. Informants remember Clegg as severe, militaristic, and righteous about his mission[94] Clearly the old men of Mwangoi did not like him.

> Some *Wazee* [elders] from Mwangoi came up early on Thursday 7/25/46 and put a curse on the camp site. I have warned the Jumbe Ndodo of Mwangoi that unless he takes adequate action against them, I will run him up before the D.O. for permitting the practice of witchcraft in his village and also permitting his wazee to hinder my work. He seemed

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[92]TNA 4/269/5 Vol. 1, D.C. Korogwe to Cory, p. 137. For Cory's report see: TNA 4/269/5 Vol. I. Hans Cory, "Report on the Position of Mlalo Basin" submitted to the Provincial Commissioner, 8/31/46, or TNA72/3/25 "Report on a Stay of 2 1/2 months at Mlalo." 8/31/46, p 63.

[93]TNA 4/269/5/ A.V. Hartnoll, P.C. Tanga to R.A.J. Maguire Acting Administrative Secretary, Dar es Salaam, July 19, 1946.

[94]IT Hemedi Ngereza, Mlalo, January 25, 1992, para. 6, p. 13; Juma Zahabu,.Handei, March 26, 1992, p. 30; Japhet Kalata, Mlalo, December 23, 1991, p. 2.

to be very worried....[95]

Opening on this note of intimidation, Clegg began the Mlalo Basin Rehabilitation Scheme. The project had two components. The first, a detailed sociological survey would build on Cory's general observations through the administration of a detailed questionnaire designed to provide demographic, agricultural and economic information. The second called for Clegg to lay out a demonstration area on about 1000 acres at Shita, a hamlet a few kilometers from Mlalo. On this experimental farm, labor gangs recruited by local headmen would rehabilitate eroded slopes using contour hedges. Further, to demonstrate proper livestock husbandry, fodder grasses would be planted and livestock confined to stalls.

Almost immediately Clegg encountered resistance.[96] Trying to assuage fears of land alienation, the District Officer organized a baraza, where he and Clegg tried to explain the aims of the scheme to a suspicious crowd of 800 men.[97] The throng wanted information about long-term plans, particularly if the government intended to evict them once the land had been "rehabilitated." If not, why, the men

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[95]TNA 72/62/9B "Mlalo Scheme - Monthly Reports," July 1946, J.B. Clegg. p. 2.

[96]TNA 72/62/9A "Reports - Mlalo Scheme- Quarterly Reports," for the Period ending 12/31/46, p. 1.

[97]TNA 72/3/25 D.O. Lushoto (Rosemond) to D.C. Korogwe, 10/11/46, p. 57. The ex-Jumbe of Shita, the location where the demonstration project would be laid out, claimed that there was no land shortage in the Basin and rejected the government's ideas about agricultural reform. Mlalo, he claimed, had always been eroded.

wanted to know, was precious fallow being planted up with fodder grasses? Why was Clegg measuring homes and gardens at Shita? The D.O. reassured the crowd that nobody would be evicted.[98]

Although the D.O. had promised not to displace residents, Clegg quickly discovered that cultivable land was in such short supply that even the demonstration project's need for 1000 acres would have to be reduced to 650 acres. Moreover, even that could only be gotten through the coerced alienation of communal grazing fields and subsistence gardens.[99] By the end of 1946, Clegg's African staff had encountered stiff opposition to the village survey, especially at Shita and Mwangoi, where resistance to Chankola had been especially strong.[100] Continuing famine heightened the tension, and hundreds who had run out of savings, either cash or livestock, ended up working for wages on the demonstration farm. Meanwhile hundreds of males, some as young as 13, travelled the well trodden path to the coast to find work. In October 1946 Clegg estimated that of males 13 yrs. and upward, 20% were out of the Basin working for cash in Tanga and Mombasa.[101] Even if one had cash, food prices

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[98]TNA 72/3/25 D.O. Lushoto (Rosemond) to D.C. Korogwe, 10/11/46, p. 57

[99]TNA 72/62/9B "Mlalo Scheme - Monthly Reports, August, 1946, J.B. Clegg, p. 3a.

[100]TNA 72/62/9A "Reports - Mlalo Scheme- Quarterly Reports," for the Period ending 12/31/46, p. 1.

[101]TNA 72/62/9B "Mlalo Scheme - Monthly Reports, October, 1946, J.B. Clegg, p. 5A; for outmigration see, TNA 4/269/6, Mlalo Scheme, Annual Report, 12/20/46.

had reached exorbitant levels at the local markets.[102]

During the second half of 1947 the food situation appears to have eased as adequate Vuli rains fell in 1946 and again in 1947. Nonetheless, resistance to the scheme continued, albeit more subtly than in 1946. Many still refused to cooperate with the survey, and farmers dragged their feet when ordered to adopt the anti-erosion rules imposed across the basin in 1947.[103] The resistance appears to have again coalesced around the *chama*, a coalition of former headmen and business-minded farmers, which had helped to garner some of the agitation against Chankola. In 1947, *chama* members had turned their opposition toward the Mlalo Scheme by spreading a rumor that the Shita demonstration area had been purchased by the D.O. and that it would be taken over by Europeans. They had also allegedly threatened the agricultural instructors.[104]

In late 1947, to counter the District Commissioner sent to Mlalo F. H. Jackson, an Assistant District Officer from Korogwe. Clegg organized a baraza at Mlalo town which was attended by about 2000 "taxpayers." The crowd assailed the officers over the demonstration project at Shita, which had to be called the "Bomo Scheme" and prompted Jackson to visit practically every hamlet in the Mlalo subchiefdom (he left

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[102]TNA 72/62/9B "Mlalo Scheme - Monthly Reports, October, 1946, J.B. Clegg, p. 5a.

[103]TNA 4/269/5 vol. 1. Land Utilization Rules, 11/20/46, p. 211-212.

[104]TNA 72/3/25 F.H. Jackson, A.D.O. Korogwe, "Report on Activities in Connection with Mlalo Basin Rehabilitation Scheme 12/8/47 - 6/1/48,", p. 122a.

out the Mbugu areas) in order to undermine the Chama's opposition and to secure cooperation for the scheme. In less than a month, he believed he had succeeded.

> [I]t is difficult to accurately gauge the shift of native opinion in this backward and intrigue ridden area of Mlalo; but I think I may fairly say that I have got the cooperation of the people...and have undertaken a propaganda offensive against the Chama which is bearing fruit.[105]

Jackson's confidence notwithstanding, the rehabilitation scheme's continued to operate under a cloud and Clegg decided to ease the enforcement of the soil conservation rules.

Undaunted, Clegg tried to manipulate political arrangements by appointing to Kinyassi's office a new assistant chief, who "forced the various divisional headmen to produce labor for the scheme." Labor turnout at the demonstration farm increased four-fold while all those voicing opposition were fined heavily.[106] However, Clegg's successes proved short-lived as passive resistance continued, especially at Mwangoi and Handei, where the headman openly allowed livestock to graze on crop stubble, a contravention of scheme rules.[107] Even agricultural instructors began to oppose the scheme surreptitiously.[108] Hassani Kinyassi himself helped precipitate effective resistance. As a local

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[105]TNA 72/62/9B "Mlalo Scheme, Short Interim Report on Activities in Connection with the Mlalo REhabilitation Scheme 11/28/47 - 12/20/47, p. 20.

[106]TNA 4/269/6 Mlalo Basin Rehabilitation Scheme, Progress Report, Jan. 1948. J.B. Clegg, p. 113a, c.

[107]TNA 72/62/9B, Monthly Report for July, 1948, p. 28.

[108]TNA 72/62/9B, Monthly Report for September, 1948, p. 29.

B-court judge, he continually delayed ruling on conservation rule violations which came before him.[109] Farmers knew implicitly that they could circumvent the rules.

Still, Clegg kept pressing. In April 1948, he decided to alter the erosion control measure in the demonstration area. Hehe-style tie ridges replaced what had become a useless system of contour hedges. The so-called "Hehe system," adopted from ridge cultivation practiced in southern Tanganyika, required yearly building up and breaking down of raised mounds of soil and organic matter. When the women of Mwangoi visited the demonstration area and saw the ridges, they objected to the hard work involved. Soon after, the women of Handei arrived at Shita to protest the making of ridges. Clegg blamed the Jumbe of Mwangoi for putting the women up to the protest, arguing that the Jumbe knew that if the complaint were made by the women, they would not be punished. Fines were, however, handed out.[110]

By March 1949, drought had ruined the Vuli plantings of 1948 and some areas of the basin were again experiencing severe food shortages. Weevils attacked the banana gardens left unkept by farmers away working at the coastal towns. By May the food shortages had become general and only cassava, staved off starvation.[111] By June 1949, most of the cassava

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[109]TNA 4/269/6 Mlalo Basin Rehab. Scheme Report for year ending 12/31/48.

[110]TNA 72/62/9B Mlalo Scheme, Monthly Reports, April, 1948, J.B. Clegg, p. 25.

[111]TNA 72/62/9B, Monthly Reprot for March 1949, p. 35; TNA 72/62/9B, Monthly Report for May 1949, p. 35, J.B. Clegg; TNA 72/62/9B, Monthly Reprot for June 1949, p. 37, David Mwakosya.

crop had been harvested and eaten so that during October and November preparations for the all-important short rains plantings slackened as the able-bodied population searched for food. Some went so far as to feed on the plantings formerly used to establish the contour hedges. Those living adjacent to the demonstration areas broke down tie ridges and dug up and destroyed elephant grass plantings to make room for cultivation. Some relief came when the 1949 short rains fell, albeit weeks late. Fortunately by May 1950, the end of the Mlalo Basin Rehabilitation Scheme, farmers in the Mlalo basin were once again harvesting crops. What saved them was their own mitigation system rather than the rehabilitation envisioned by the Scheme's planners.

Nonetheless, Clegg's final report on the Mlalo Scheme read like a story of complete success.[112] His "before" picture painted the usual negative view of an overcrowded, eroded and deforested landscape complete with a farming system in danger of complete collapse. The demonstration farm (650 acres) used land in radically different ways than the Basin's farmers had seen.

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[112]Discussion of Clegg's final report comes from: TNA 4/269/5 Vol I. "Report of the Mlalo Rehabilitation Scheme," J.B. Clegg 10/29/49, pp. 145-52.

Table 8. Acreages Devoted to Major Crops, Old System/New System, Mlalo Basin

Type	Acres-Old System	Acres-New System
Forest	5	130
Bananas	50	130
Cultivated Land	295	330
Pasture	285	10
Fodder Crops	nil	30
Roads	nil	5
Villages	15	15
Total	650	650

Under this arrangement, Clegg argued, milk yields had increased four-fold, streams around Shita ran clear and neither flooded nor dried up during 1949 and yields on ridges had increased.

Although, according to Clegg, the demonstration project had succeeded, in general, he lamented that land use in the Mlalo Basin had continued to degrade the environment. He warned that fertility must be raised and maintained through the addition of organic matter and thus the application of "Hehe ridging." Moreover, Clegg believed that successful agriculture in Mlalo depended on the permanent expansion of annual cropping to swamps, which had only been used during times of dearth. He also recommended that the irrigation system be limited to terraced, ridged or flat land. Under

the new system the area available for food would increase by 36% (1.25 acres per family). However, even considering successful adoption of the new farming system, Clegg argued that "when...the annual increase of population of 2.54% is taken into consideration the conclusion is inescapable, "...a portion of the population should be moved." The most likely area seemed to Clegg to be the Lwengera Valley east of the massif.

Finally, Clegg's experience with the Native Authorities had taught him that they could not oversee soil conservation. He advocated stricter measures than heavy fines and imprisonment.

> The penalty for non-compliance with rules for land utilisation, could then be movement of the offending family out of the area, assuming of course that a suitable period for propaganda has been allowed.

Part IV. Conclusion

During the 1940s successive and overlapping crises in politics and production struck the Mlalo basin. They stemmed from a convergence of long- and short-term trends in land use, land tenure, and demography which colonial officials understood poorly, if at all. Nonetheless, in the spirit of the post-war impetus toward modernization and development, the colonial government moved ahead with its efforts to reform human/environmental relations in the Mlalo basin. The result was utter failure.

The crux of the problem lay in the timing of the

colonial initiative and the assumptions which underpinned it. Although evidence points to the presence of ecological stress by the mid 1940s, one of the most convincing markers being *Njaa ya Chankola* itself, African farmers had historically coped with stress and altered the farming system when need be. The reform planners - Nutman, Linton, Van Rensberg, Staples, et al. - viewed African agriculture as static and technologically backward. They wrote without comprehending that the farming system had maximized production in response to drought, insect infestations and plant diseases. They did not grasp the subtleties of coping behavior. Furthermore, inits porrly timed atack on the rainmaker, Hassani Kinyassi, the colonial government alienated the one person who probably understood the dynamics of the situation and who could have tempered the ill-informed colonial intervention with sound advice on reform.

The approaches to Mlalo's problems reflect what Piers Blaikie has identified as the "classic approach to soil erosion and conservation."[113] That is, the government identified degradation as primarily an environmental problem with environmental solutions. Thus, in the Mlalo case, mitigation meant simply hedge planting and terrace building. The Provincial team saw a picture of too many people destructively mining too little land, rather than a group of knowledgeable farmers adapting an agricultural system to

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[113]Piers Blaikie, *the Political Economy of Soil Erosion in Developing Countries* (New York: Longman, 1985), p. 53.

changing environmental, demographic and economic realities. In an extremely complex situation, governmental action remained simplistic and inflexible. For example, at the political level, Clegg and the district administration manipulated the offices of sub-chief, and below that headman, to secure cooperation. To its credit, the scheme's planners did seek to understand social organization through Cory's sociological survey, but the current of political unrest made his task impossible in 1946, as it did subsequently for Clegg's team.

The resistance which the rehabilitation scheme unleashed was complex and much remains to be learned about it. As far as current research allows, it can be divided into two phases. The first phase, culminating in the April 1946 riots in Mlalo town, when hundreds of women threatened to kill Chankola, represents, I believe, a desperate effort to mitigate the effects of the ongoing famine. It occurred in response to Chankola's failure to carry out his responsibilities as Mlalo's paramount, traditionally an office held by a powerful rainmaker. In other words, he had violated the system of reciprocity.[114] The oral evidence suggests that the movement in the Pare mountains helped provide some impetus to this protest as well, but this intriguing link requires further investigation.

The second phase constitutes a more subtle and organized

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[114]For a discussion of reciprocity in peasant societies see James Scott,

type of resistance to the government's attempt at environmental control. It included noncompliance conservation rules, sabotage, ritual curses, as well as vocal protest.

Referring to the scheme, Edward Twinning, Tanganyika's governor, noted in 1949:

> There at a glance you see an example of everything in the armoury o f the jargon of the Imperial College of Agriculture put into practice. It may indeed be an agricultural masterpiece. It is certainly a psychological blunder. It seems that those methods which can only be described as a return to direct rule, without perhaps the ruthlessness which the Germans would have used.[115]

Although Clegg claimed success on the 600 acre demonstration plot, farmers effectively undermined attempts to incorporate conservation measures into their farming system. In addition, famine conditions forced Clegg to open the marsh lands to permanent cultivation. Finally, the Mlalo scheme embittered peasant farmers' toward any type of state intervention in local land use practice.

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[115]From TNA 33049, "Psotwar Reconstruction: Developnenmnt of the Western Usambaras," vol. iv, note by his Excellency the Governor on his visit to Mlalo, 8/31/49, quoted in Steven Feierman, *Peasant Intellectuals*, p. 149.

Table 9. Rainfall and Comments, Mlalo 8/46 - 12/49

Month	Rainfall
July/46	"Only very local showers"
August	"A little light rain, but nothing useful
September	"It has been raining hard very nearly every day fo the last eight days. Before this a number of light showers.
October	"Since 10/22/46 there has been plenty of rain. According to local rainmakers, it should have started a week earlier.
November	Month has been dry, but fortunately the rain came at the end of the month just in time to save the young maize.
December	Fair amount of rain during the first half of the month followed by sporadic rains during the second.
January/47	Rain on 8 days during the month
February	2.14" on 3 days
March	3.43" on 11 days
April	10.61" fell on 20 days
May	5.63" throughout the month.
June	0.51" between 1st and 9th, rest of the month ws cold and dry.
July	Very dry and cold, no rain
August	0.505" during first half of the month, after that, nothing.
September	0.316" fell during the month. Weather cold and wet. On a number of days, though no rain has fallenit has been very wet and misty.
October	0.88" fell during first and last weeks of the month. total 27.12" since beginning of yr.
November	3.75" fell on 9 days during the first half of the mo. and 3 days during the last half.
December	Very wet, 9.87" fell making 41.32." for the year.

Table 9 (continued).

January 1948	2.73". Most fell during first 3 wks.
April 1948	7.67" fell on 19 days. 14.38 so far this yr. Mbaramo wet throughtout the month. Mtae, except for 4 days during end month there was no rain.
May	2/38" fell on 23 days Lighter rains at Mbaramo, Mtae.
June	1.29 on 9 days
July	0.06 on 3 days.
August	0.52 on 3 days
Sept.	0.01 on 1 day
October	0.71 on 3 days
November	2.11 on 11 days
December	9.98 on 13 days
January 1949	1.10 inches of rain
February	1.54"
March	0.31" The whole of the period from the end of the short rains proper, in December, has been extremely dry.
May	1.69" Slight Showers during the early half of the month.
June	nil.
July	slight showers during early part of month. total o.74"
August	0.008" Frost above 6000ft.
September	0.830" Dry and Cold w/ occassional clouds.
October	One day of rain at 0.095" Dry and Cold with slight frosts above 6000 ft.
November	Rain at Malindi, 11 days at 2.68" Satisfactory rains in Mbaramo, in Mlalo and Mtae, rain has been patchy and insufficient for planting. Nov. rainfall abnormal.
December (general)	6.41" good rains fell at Mlalo, Mtae and Mbaramo. Short rains have started abnormally late.

Chapter 6

Ecological Reform and Transition

Introduction

Between 1964 and 1966, peasant farmers from across northern Usambara cut and burned approximately 35,000 acres of Usambara's plateau forest transforming over 50 mi^2 of woodland into farmland. The Forestry Department referred to this sudden and striking alteration in mountain ecology as the "Lukozi excision." Although only one of a series of such excisions during the 1950s and 1960s, Lukozi was by far the largest and generated serious long-term environmental side-effects. The destruction of the Lukozi forest marked a conjuncture of long-term demographic, economic, political and ecological trends. Moreover, it indicates a pattern of ecological stress which still plagues the region. This chapter explains how, during the 1950s, colonial imperatives regarding natural resource conservation and exploitation, market forces and local politics contributed to ecological change. Further, it charts the environmental costs of degradation.

The early signs of ecological stress appeared in the guise of the 1940s famines. Farmers mitigated their difficulties, in part, by relying on long-tested practices like temporary cultivation of valley bottoms, plains farming,

irrigation etc., and some of these land use patterns continued into the 1950s. In terms of exchange, periodic markets continued to link mountain regions which produced different commodities, or which depended on different seasons for agricultural production. Thus, for example, maize, manioc or sweet potato surpluses from the southern side of the massif could be marketed in the north. At the same time, rice from Kitivo plains below the northern slopes found its way to the southern communities. However, as noted above, the proliferation of periodic markets in W. Usambara marked the increase of localized food shortages and an increasing dependence on cash for subsistence food purchases. In addition, the evidence for the 1950s shows clearly that the post-war period ushered in a broadening of the scale of exchange, now inextricably tied to the wider East African and global economies.

Increased trade the mountain's periodic markets, coincided with a boom in demand for vegetable produce in the coastal cities of Tanga and Dar es Salaam. Growers throughout Tanganyika's highlands, including Usambara, responded by producing thousands of tons of cabbages, tomatoes, onions, carrots and other horticultural crops. Moreover, a steady rise in world sisal prices in 1951 and 1952 led to a growth of profits and production on the Pangani Valley estates. More than ever before, males from the West Usambara mountains chose to join the ranks of migrant workers on the sisal plantations, creating a demand on the estates

for foodstuffs.[1] Usambara's cash crop producers thus joined other Tanganyikans in producing cash crops on an unprecedented scale.[2]

Few, however, reached affluence. As suggested by the expansion of the market system, rapid population increases in Usambara between 1931 and 1957 had squeezed some farmers onto plots so small or so infertile that they could no longer produce a subsistence, let alone surpluses for the growing market. Furthermore, thousands of impoverished and landless farmers worked in the forest reserve as "squatter" labor. Others moved out of the mountains completely seeking either wage labor or land in other districts. Finally, although the precise character of rural differentiation is difficult to dertermine, it clearly had a gender bias. Women increasingly bore the brunt of subsistence production as men either took up market gardening, or travelled to the plains to cut sisal, in itself a particularly unpleasant and dangerous prospect.

In this context of rural economic complexity, the British administration extended the soil conservation principals of the Mlalo Basin Rehabilitation Scheme to the rest of the mountains beginning in 1950. Between 1950 and '57, the rural population successfully resisted the rehabilitation effort with a variety of strategies, but constant threats of fines and imprisonment fueled a palpable

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[1]TNA 72/62/6, vol. III Lushoto Annual Report, 1951, no page number (hereafter npn); TNA 72/3/2 vol. IV, Lushoto Monthly Report, Agriculture, July 1956, A.O. Lushoto (Silcocks) to Provincial Agricultural Officer, Tanga, npn.

[2]John Iliffe, *A Modern History of Tanganyika* (Cambridge: Cambridge University Press, 1979), ch. 14.

bitterness among the rural population toward the colonial government and especially the Native Authorities responsible for enforcement. Adding fuel to the fire, European settler-farmers, seeking to benefit from favorable producer prices, moved into the mountains and bought up many of the former German estates which the Custodian of Enemy Properties had held since the 1938 expulsion of German nationals.[3] As African farmers sought new areas to cultivate, sharp disputes over land broke out across the mountains accompanied by anti-European feelings, which stemmed from the large tracts of unworked estate lands bordered by concentrations of land-hungry Africans.[4]

The 1950s and 1960s also marked an uprecedented assault on Usambara's forests. Forest "squatters," living in the Shume/Magamba forest had benefitted little from their tenure as shifting cultivators working for the forest service acted to secure permanent rights to land as a settled population. Mbugu herders living just outside the forest reserve, transformed one and for all into farmers and sold off most of their livestock. No longer able to conserve the forest/pasture environment, they cut what forest remained on Public Lands. Inside the forest reserve, private concerns, African and European, capitalized on high timber prices by quickly cutting out mature specimens of Usambara camphor and podo. In fact, timber became Usambara's most lucrative cash

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[3]TNA 72/62/6, vol. III Lushoto Annual Report, 1950, npn.

[4]TNA 72/US/53 Usambara Scheme, "Progress Report," June 1951, R.H. Gower D.O., npn.

crop export. In response, more foreigners, this time Kenyans of Kisii district, streamed into the moutains to cut trees with hand saws.

The stresses and strains on mountain farmers and natural resources became important aspects of national politics. Just as in other East African regions, access to productive land became an increasingly contentious and overtly political issue tied, in the Tanganyikan case, to the nationalist politics the Tanganyika Afican National Union (TANU) led by Julius Nyerere. After independence, the TANU government distributed to peasant farmers huge swaths of forest reserve land. The most famous of these, the Lukozi excision, was only the most obvious case. Although the newly available land benefitted peasant farmers in the short run, massive deforestation and the more creeping tendencies toward severe ecological degradation in the agricultural zones have had serious repercussions over the long-term.

I. Cash Cropping: Winners and Losers

Since the late nineteenth century, Usambara's farmers altered agriculture in response to trade opportunities and subsistence needs. The trend continued in the 1950s when the sisal boom and the growth of urban markets for food in Dar es Salaam and Tanga stimulated an unprecedented expansion of cash crop production in the mountains. In West Usambara, cabbages, onions and tomatoes, foods alien to local diet, led

the list of legally exported crops.[5] In 1953 alone, 700 tons of vegetables left the mountain markets bound for coastal markets. Unlike the agricultural expansion of the 1920s and 30s, where farmers reopened abandoned lands, the market gardening of the 1950s involved cultivation of the *dau*, a swampy valley bottom in the mountains where the presence of abundant ground water and fertile alluvial soils suited the moisture needs of the vegetables.

Because of the labor involved in clearing and draining them, daus had historically served as famine reserve lands cultivated only during emergencies prior to Njaa ya Chankola.[6] But the 1940s food shortages prompted the agricultural officer at Mlalo to order that they be opened permanently to subsistence production.[7] However, once a regular bus service cheaply linked dau lands to the main roads running to Tanga and Dar es Salaam, market gardening became profitable. Production simply took off around Mlalo, and especially in the vicinity of Soni.[8]

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[5]TNA 72/62/6, vol. III Lushoto Annual Report, 1950, npn.

[6]Usambara Interview Transcripts (hereafter UIT), Sabuni Mbilu and John Mntangi Epiphan at Kwemashai, Feb. 23, 1992, p. 43.

[7]See chapter 5, p. 47; UIT Hemedi Ngereza, Mlalo, March 19, 1992, p. 22.

[8]TNA 72/62/6, vol. III Lushoto Annual Report, 1950, npn.

Table 10. Exports from Native Authority Markets, W. Usambara Mountains 1955-57 (in kilograms).[9]

month/year	vegetables	potatoes	beans	onions	tobacco
5/55	43,067	93		669	
11/55	124,830	3,292		3,411	6,091
12/55	49,248	9,737	500	4,816	
2/56	55,080	8,374	10,100	3,252	2,864
6/56	38,716	23,613	6,700	332	1,150
7/56	24,034	7,392	21,315	1,357	
5/56	40,203	5,366	100	4,821	1,053
9/56	30,371	8,467	4,430	943	686
11/56	39,435	15,438		16,219	570
12/56	77,130	8,617	100	10,077	1,132
2/57	51,165	13,514	18,740	9,403	1,583
3/57	84,151	23,936	43,186	6,278	1,270
4/57	164,767	17,109	5,670	1,610	1,117
6/57	37,933	14,340	4,944	46	645

Market demand also increased the value of maize and rice in coastal cities and on sisal plantations. However, trade in these grains was risky because in response to the food shortages of the 1940s, the Lushoto district administration permanently forbade the export from the mountains of maize and beans, and periodically, rice. Most of the trade in these commodities, therefore, was channeled through a thriving unofficial market.[10] Trade in these commodities, although less lucrative than vegetables, benefitted more farmers because, with the exception of rice, they could be grown on hillsides.

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[9]Figures derived from Monthly reports of the Usambara Scheme, TNA 72/US/30 volumes II and vol. III.

[10]UIT, Rajabu Shemzinghwa at Mlalo, Dec. 28, 1991, p. 5; TNA 4/962/15 Annual Report, Agriculture, Tanga Province, 1954, p. 137; TNA 4/962, D.C. Lushoto to Provincer, Tanga, 1/23/57, p. 17; TNA 72/3/2/vol.IV Monthly Reports, Lushoto District, July 1956, January 1957, June 1957; TNA 72/3/2 vol.IV Annual Report, Lushoto District, June 1958, p. 78.

The prosperity in mountain commodity production had a spatial component in that it usually occurred where lines of efficient transportation intersected alluvial soils. In the Mlalo basin for example, those who had participated in the 1949 land grab at Nyasa dau, or had riverine plots along the Umba, or who had plots at Kitivo could cheaply send their produce to market via the bus line operated by Tanganyika railways, and later, by private entrepreneurs. Similarly the profitable dau lands around Lushoto, Soni, and Ubiri lay near the main mountain road which wound down to the railway depot at Mombo. Road construction in the plains spurred farmers in the plains between 1949 and 1953 to expand to 4000 acres the area devoted to rice, a 200% increase.[11] By the late 1950s, hundreds of thousands of kilos of rice left the Usambaras through official and unofficial channels.[12]

For farmers short in land, lacking access to dau plots, or living further from the main roads, survival as a peasant farmer became a very precarious business. Population growth in Usambara between 1931 and 1957 reached 3% further undercutting the viability of peasant farming. Poorer peasant families, already squeezed onto marginal hillside lands, had to make tough choices regarding the amount of labor and acreage they devoted to production for subsistence

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[11]TNA 72/61/6, vol. III Lushoto Annual Report for 1953, p. 84.

[12]TNA 72/3/2 vol. IV, Agricultual Reports, Lushoto, Field Officer (McGregor) to Provincial AGricultural Officer, Tanga 6/28/56, npn, notes 189,700 kilos of rice sold on local markets in June alone; in same file, see also, Monthly Report, Lushoto District (Plains), July 1956 (E.C. Green), npn, Green reports 147,842 sold on local markets, "with considerable quantities sold outside official markets."

(increasingly cassava) vs. the market (maize and vegetables).[13] Land shortages in Mlalo had limited access to the point where even the time-honored tenure arrangement under which the land poor could borrow fallow fields as a hedge against hunger became increasingly difficult.[14] Moreover, the 1957 census sex ratios, in contrast to the 1931 numbers, suggest that women increasingly bore the brunt of agricultural production as men moved out of the mountains to find wage labor.

Table 11. Population in West Usambara by Location, 1957[15]

area	adult males	adult females	children	total
Lushoto	3,076	4,250	7,996	15,322
Vuga	4,772	6,203	12,224	23,199
Gare	1,430	2,067	3,676	7,173
Mlola	3,646	5,373	8,966	17,985
Mlalo	6,568	10,410	18,261	35,239
Mtae	2,472	3,775	6,922	13,169
Bumbuli	4,985	6,342	12,237	23,564
Mgwashi	2,015	2,266	4,357	8,638
Lush. town	391	235	369	995
total	29,355	40,921	69,008	145,284

In the Mlola basin, where 60 years earlier, Bauman had been so inhospitably received, the agricultural system collapsed altogether. Three years of rainfall deficits and

[13]By the 1950s hybrid maize strains had appeared in Usambara. They yielded more per acre, but were less drought resistant than local varieties. See UIT Kasisi and Kuambaza Sheiza at Mlalo, 1/8/92, p. 8; Khadija Mdoe, Mlalo, 2/26/92, p. 20.

[14]UIT Juma Zahabu, Handei, March 26, 1992, p. 28.

[15]From Tanganyika Population Census 1957, East African Statistical Bureau. See also Fleuret, "Farm and Market," p. 100.

insect infestations had destroyed maize harvests in the late 1940s. By 1951, the area had run out of cassava reserves. When adequate rains did fall hungry peasant farmers could not wait for their crops to mature. They ate their immature crops and supplemented their diet with white ants. Those with cash could purchase imported government food supplies, while the less fortunate walked to Lwengera or East Usambara in search of food. Entire families began to abandon their farms and migrate to Upare.[16]

In the plateau regions of Mlola subchiefdom, Mbugu herders completed the shift from pastoralism to agriculture. By the early 1950s, most of the productive Public Land had been allocated.[17] Many Wambugu sold off their herds altogether, leaving them without an important hedge agains periodic drought.

Thus as thousands of kilos of food – vegetables, maize, beans, rice and livestock – left Lushoto district, emergency food supplies had to be imported to supplement subsistence crop losses in vulnerable farming areas.[18] . Even beans, normally a subsistence crop, were black marketed outside the district in 1951, a year when 200 tons of food imports were required to meet shortages in January and February alone.[19]

Under these difficult circumstances more and more

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[16]TNA 72/US/28 Usambara Scheme, Safari Reports, Gower, 11/12/50 and 1/29/51, p. 16.

[17]UIT Hamza Joho and Gadi Togolai at Kireti, 3/4/92, p. 59. Mzee Joho notes that borrowing fields began in earnest around 1950.

[18]TNA 72/61/6, vol. III Lushoto Annual Reports for 1950, 1951, 1953 and 1954.

[19]ibid., 1951.

farmers sought opportunities outside the mountains. In addition men working temporarily outside the mountains to suppplement family income at home, by 1957, a substantial number of Washambaa (33,000) men, along with their wives and children lived permanently in districts outside the mountains.[20]

As Shambaa families moved out of W. Usambara, new European settlers moved in. They leased sections of former German estates around Soni and Lushoto, or purchased outright patches of freehold land still available. District authorities also opened to purchase estates of several hundred acres at Mkuzi in the Magamba forest reserve.[21] The sales to European settlers must have unsettled Africans who found it difficult to borrow fields from neighbors, or who had to leave the mountains to find work. Non-residents also entered the mountains as laborers on tea estates, where "large bodies of squatters" had begun to cultivate on them, much to the chagrin of the local Shambaa population and the district administration.[22]

II. The Usambara Scheme

The Usambara Scheme's implementation coincided with these changes in mountain agricultural economy. Following directly on the principals of the infamous Mlalo Basin

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[20]Ibid., 1950, D.C. notes "slow drain of population from West to East Usambara;" Fleuret, "Farm and Market," p. 100.

[21]TNA 72/61/6, vol. III Lushoto Annual Reports for 1950; Personal Observation, most of the estates I saw in the area had ranged from 100 acres. The homes built on them are minitures of English estates.

[22]TNA 72/61/6, vol. III Lushoto Annual Reports for 1950.

Rehabilitation Scheme, the Lushoto District Development Committee, which planned and oversaw the Usambara Scheme, sought to completely alter the region's agroecology in order to conserve the region's soil and water and to reverse the environmental degradation which had already occurred. Clearly, the reams of paper generated by the Agricultural Officers assigned to the scheme showed its implementation to be a tragic miscalculation by the District Administration.

The Usambara Scheme operated under the assumption that a substantial percentage of the population would eventually have to take up permanent residence on the plains below the massif. Thus agricultural reform in the hills depended on simultaneously perfecting a plan designed to expand plains agriculture.[23] In this regard, the District Committee created a two-pronged plan: implementation of conservation measures in the hills and experiments and opening of large acreages in the plains to mechanized cultivation. Planners anticipated some resistance:

> Although the people of W. Usambara are being forced by hunger and propaganda to [a] growing awareness of their difficulties, there is no certainty that they will move voluntarily into even the best prepared settlement areas in the plains. They love their hills; they are less hardy than the Wapare, indolent and politically minded. On the other hand there seems no alternative to movement but swiftly

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[23]TNA 72/US/63 Chant (D.O. Lushoto) and Drennan (A.O. Lushoto) Report 2/7/53, npn. Report estimates that 43,000 acres of mountains available for the African population. Given the 2.5% rate of population increase, authors argue that only mass emigration of people and livestock to uninhabited territories, or the transformation of peasant cultivators to industrial laborers will solve the long term problems in the Usambaras; see also TNA 72/US/53 "Origins, Principals and Progress, 1950" D.C. Lushoto (W. MacMillan), npn.

> advancing denudation of the hills and destitution of the people. The enforcement of the Rehabilitation Scheme is bound to displace some hundreds of families and if the first resettlements [in the plains] are a patent material success and above all, not too far removed form the worst areas of overpopulation the mind of the people is very likely to change.[24]

Enforcement of scheme rules and prerogatives rested ultimately with the Native Authority courts and the sub-chiefs' councils, a brain child of the district administration seeking to difuse chiefly power. The District Commissioner asserted that the Native Authorities be thoroughly identified with the scheme.[25] This created a sticky political problem for the Native Authorities because just as the district administration worked to legitimate them by forming advisory councils, these newly formed political bodies had to enforce unpopular conservation measures and attempt to push some families out of the mountains altogether.

Everyday Resistance in the Hills

Scheme rules required that all slopes between 10° and 15° be ridged using the "Hehe system."[26] This involved building up an earthen ridge along the contour of a hillside and connecting the ridge to the hillside at every two paces.

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[24]TNA 4/269/12 Ruvu-Pangani Agricultural Plan, D.C. Lushoto (MacMillan) to P.C. Tanga, 1/3/50, npn.

[25]TNA 72/US/53 "Origins..."

[26]For discussion of Hehe ridging see: A.H. Pike, "Soil Conservation among the Matenge Tribe," *Tanzania Notes and Records* 6 (1938), pp. 79-81.

In practical terms, field preparation under the new rules required the cultivator to face downhill on a rather steep slope and to hoe the soil toward herself. Once constructed, cultivators could plant sweet potatoes or legumes on the ridges. After the harvest, Scheme rules prohibited the usual practice of allowing livestock to graze the crop stubble, nor could fields be burnt in preparation for the subsequent planting season. Before the next planting, the ridges had to be broken down and rebuilt with the left over organic matter buried inside. The mulch, rather than animal dung or ash, would theoretically build up the fertilitiy of the soil. As an anti-erosion measure on steeper slopes, between 15° and 25°, farmers were required to plant lines of banana trees and fodder grasses along the slope contour. Slopes over 25° were banned from any kind of cultivation and planted up with tree crops, especially wattle, an agroforestry favorite which provided firewood and some income.[27]

These regulations operated uniformly across a region with a multitude of ecological conditions a number of land tenure and land use arrangements. Milne had described the diversity of land use in the 1930s. Gibbon, an Agricultural Officer attached to the Scheme noted a similar situation in 1951:

> The two areas visited (Bumbuli and Mgwashi) were of a vastly different character and it is difficult to imagine an overall scheme fitting both. A regional survey should be carried out to better suit the

[27]Wattle tree bark was sold for use in the manufacture of tanin, a product used in leather tanning. Once cut it regenerates from coppices.

scheme to particular areas.[28]

Gibbon had found erosion control unecessary at Mgwashi and needed urgently at Bumbuli.

A patchwork of hundreds of gardens of varying size and composition dotted Usambara's hillsides. Rules required farmers to ridge 1/2 acre at a time, and although many farmers' property usually exceeded that, land tenure arrangements had evolved into a complex division of plots wherein one person held several small (often less than one half acre) gardens several miles from each other. Furthermore, many of the gardens covered slopes greater than 15°. In addition to the onerous work of ridging and the fact that gardens on steep slopes would have to be uprooted, implicit in the scheme objectives for hillside cultivation was the replacement of maize with bananas in the crop repertoire.[29] The maize exclusion constituted a direct assault on household income because maize sales provided one of the main sources of household income. In fact the most vocal opposition emanated from this requirement.[30] Another Scheme requirement,a moritorium on streambank cultivation, struck at market gardening. Thus the most productive land use arrangements directly violated the rules.

Largely ignorant of local diversity in land use, the

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[28]TNA 72/US/34 Usambara Scheme, Field Reports, Gibbon, 12/51, p. 1.

[29]TNA 72/US/53 Usambara Scheme, "Half Annual Report for June 1953," C.S. Kernahan, executive director, Usambara Scheme, npn. Kernahan notes here the intention of converting from maize to banana cultivation on sloped land.

[30]Ibid.; TNA 72/US/41 Usambara Scheme, "Report on the Usambara Scheme," A.O.Chant, no date, but likely 4/10/52, npn.

Agricultural Officers assigned to the scheme began to circulate throughout the mountains in order to explain the scheme rules to farmers. They met with immediate and vocal resistance, especially from women. On September 26, 1950 at Mlola, the Agricultural Officer noted that he was besieged in the government rest house by 1000 angry protestors.

> "The women here (mostly Wapare) were as ill-mannered as we have met anywhere.... Future bad behavior must be quickly and sharply punished to avoid the impression that bad manners and much noise from women is tolerated and condoned by authority."[31]

Eleven days earlier the Mbaramo baraza had been interrupted by two women who claimed that everyone knew that Shita (center of the Mlalo Pilot Scheme) had been given to Europeans. And on the same day (9/18/50), Gower forbade 90 women to attend the meeting at neighboring Tewe.[32]

The ubiquity and sharp tenor of the womens' protests notwithstanding, much of the resistance took on a more subtle tone. For example, in compliance with scheme rules, farmers at Shita dutifully planted banana trees above the 15° contour, but planted maize among them, a contravention of the rules. In 1951, at Vuga, banana trees marking the 25° were uprooted as were the grasses which had been planted along the streambanks. The D.C. described these and other acts of non-compliance as a "mass civil disobedience campaign."[33] Subsequent reports from Vuga, Soni and Bumbuli document a

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[31]TNA 72/US/28 Usambara Scheme, "Safari Notes," 9/21/50, Gower, p. 2.
[32]Ibid.; see also TNA 72/62/6, vol III Lushoto Annual Report, 1950.
[33]TNA 72/US/53 Usambara Scheme, Annual Report, Gower, 1951.

clear pattern of passive resistance culminating in a 1956 womens' protest at Vuga which led to a group of women trying to mob the District Officer's car.[34] Early resistance also coalesced in northern Usambara in the Mlalo, Mtae and Mbaramo subchiefdoms.

In the face of ongoing passive resistance, the staff pressed on with the difficult task of supervising farmers. African agricultural staff carried out much of this work. In the early years they seem to have believed in the Scheme. They came from all over Tanganyika to receive a six week training course at Lwandai Middle School (Mlalo) or at the Bomo School at Malindi. The District Committee also hired as an Agricultural Officer, David Mwakosya, a Tanganyikan from Unyankusa who had been trained in colonial agriculture at Makerere College in Uganda.[35] Hemedi Ngereza, a former instructor now living at Mlalo, explained that despite unpopularity of the scheme, the African instructors had been at their training indoctrinated to appreciate the dangers of soil erosion and the state of degradation which threatened the Usambaras.[36] The effectiveness of their training is reflected in a dramatic rise in criminal prosecutions: 1953

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[34]TNA 72/US/41 Usambara Scheme, "Implementation of Scheme Rules," see especially D.C. Lushoto to Dr. Friberg, Lutheran Mission, Bumbuli, 9/1/53, p. 1; D.C. Lushoto to MR. R. Bolstad, Vuga Mission Press, 12/14/55, p. 20; Mr. R. Bolsted to D.C. Lushoto, 12/17/55, p. 22; "Extract from Minutes of the District Committee," 2/6/56, p. 23. TNA 72/US/45 Usambara Scheme, "Safari Reports," Kaplanga, 1/52 - 6/54, see reports for 2/29/52, 3/27/52, April 1952, May 1952, npn; TNA 72/US/30 vol. III, Usambara Scheme, "Monthly Reports from April 1956 to June 1958," Silcocks, A.O. see reports from 9/4/56, 12/7/56, npn.

[35]UIT Hemedi Ngereza at Mlalo, January 25, 1992, p. 13.

[36]Ibid., p. 12.

(1349), 1954 (2177), and 1956, when Native Authority courts heard over 3000 cases, most of them violations of Scheme rules.[37] Nonetheless, because the instructors worked closely with farmers they also understood the difficulties and harassment they experienced.[38] By the late 1950s, a number of the African field staff began to participate in the resistance by not enforcing ridging or non-burning requirements, or by simply looking the other way, and, at times, by accepting bribes for doing so.[39] By 1956 many staff had decided to end their participation altogether and requested retirement or simply resigned.[40]

With the acquiescence of many staff assured by 1956, acts of resistance extended beyond foot dragging and partial compliance. In November and December of 1956, cultivators in northern Usambara openly violated Scheme rules by burning large tracts of natural forest in order to plant crops. At Soni, farmers grazed their livestock on crop stubble in harvested gardens. In Vuga, Gare, and Vugiri, cultivators purposefully flattened out ridges and planted crops. In spite of threatened prosecutions from the Native Authorities, on July 30, 1957, all penal sanctions on "non-compliance" were lifted.[41] A year later the D.C. referred to Hehe ridges

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[37]TNA 4/962 Lushoto Division Annual Reports for 1954 and 1956, pp. 94 and 6.

[38]UIT Hemedi Ngereza, 1/25/92, p. 12

[39]UIT Rajabu Shemzinghwa, p. 4, Mshirhiri Hippoliti at Gare Mission 12/31/91; TNA 72/US/68 "Usambara Scheme Staff," Senior Field Officer to Mr. Raymond Shemhunge, Field Assistant, Mbaramo, npn.

[40]TNA 72/US/68 "Usambara Scheme Staff," see entire file which contains numerous letters from instructors requesting leave, retirement, and transfers.

[41]TNA 72/US/30 vol. III Usambara Scheme Monthly Reports from April

as museum pieces.[42]

The Plains Fiasco

Nobody associated with the Usambara Scheme managed to persuade large numbers of families to move permanently to the plains. Part of the failure stemmed from the fact that in the planning phase, the District Committee showed little understanding of plains demography or ecology. They believed that around the Usambara massif, attractive plains areas could be productively exploited. Further, they believed that the offtake regions could be ready for settlement in 3-4 years.[43]

The District Committee failed on all counts to read properly the Scheme's chances for success in the plains. In 1938, Gregory Milne had clearly explained the difficulties of resettling mountain families on the plains below the northern and western sides of the massif. His published report argued that limited water supplies and cultivable soils, endemic malaria, high temperatures, and unreliable rainfall created a quite undesirable living situation. All suitable soils were already exploited either by mountain farmers dropping daily to work their rice fields, or by the several hundred permanent residents of the small hamlets of Mngaro, Lunguza, and Mnazi among others. Nonetheless, the district administration remained adamant that "only mass emigration of

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1956 to June 1958, pp. 10b, 11, 14, 21, and 23.

[42]TNA72/3/2 vol. IV. Usambara Scheme Annual Report 1958, npn.

[43]TNA 72/US/53 "Origins."

people and livestock to unoccupied territories" would alleviate the threat of ecological breakdown posed by then current agricultural practices in West Usambara.[44]

By July 1953, Lushoto's district officers had identified 29,000 acres at Mkundi below Mtae on the western side of the massif, 200,000 acres between the Pangani Valley railway and the Pangani river. These areas proved subsequently to be either already occupied or unuseable.[45] District Committee members also suggested resettling Shambaa farmers in the Lwengera valley between East and West Usambara and on a block of land which encompassed "scores of miles" in Northeast Handeni district.[46] Although infested with tsetse flies and lacking in any sources of permanent water, the report characterized the area as "excellently suited for cultivation and settlement."[47] To attract farmers from the hills, the plan called for a technological breakthrough which would "set up areas of economic return in the plains to entice Shambaa [families] down from the overcrowded hills." However, mechanical cultivation proved to be "prohibitively expensive" and most of the experimental areas around the base of the Usambara massif proved to consist of saline soils, which to rehabilitate would cost a great deal in both labor and funds.[48] Only at Kitivo did African families agree that an

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[44]TNA 72/US/63 Chant and Drennan Report 2/7/53, npn.

[45]TNA 72/US/56 "Areas for Preservation under Ordinance no. 12/1954," 6/16/54, p. 12

[46]TNA 72/US/63 Chant and Drennan Report 2/7/53; 72/US/62 Usambara Scheme "Plains Expansion and Resettlement Handeni Preserve," p. 6.

[47]TNA 72/US/62 "Report on Inspection of Northern Handeni Area, 6-7 Oct. 1953," p. 6.

[48]TNA 72/US/60 Usambara Scheme "Estimates for 7/1/55 to 6/30/56," no

irrigation scheme would be feasible and beneficial.[49]

The Political Economy of Resistance and Defeat of the Scheme

From the Scheme's inception, Usambara's farmers resisted its imposition. They did this in a variety of ways and for a variety of reasons. Given the favorable market for produce, many farmers, especially women, resented a scheme which forced them to perform onerous work when they were already over-burdened. Furthermore, ridge cultivation was specifically designed for subsitence crops, especially sweet patotoes, at the expense of maize, which was for all intents and purposes, a cash crop.

Steven Feierman asserts that rejection of the Scheme centered on the unpopularity of building ridges, one of the central tenants of the scheme. The ridges, known locally as *matuta*, served as a symbol of resentment for things foreign and allowed those forced to build them to focus their anger on the chiefs, responsible for enforcing the rules. Ultimately, in Feierman's Usambara, the issues boiled down to:

> "the burdens of *matuta*, the problem of a king who had no rain, and the prominence of the chama in leading the resistance. The rain chiefs [like Hassani Kinyassi] follow the Shambaa way; the rainless were accused of serving foreigners. People understood that if the chief controlled rain, the scarcity ofland and lobor would recede as a problem."[50]

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date, npn.

[49]TNA 72/US/75 Usambara Scheme "Irrigation Scheme — Mngaro Area," P.A.O. Tanga (Drennan) to P.C. 5/19/58, p. 20.

[50]Feierman, *Peasant Intellectuals*, p. 189-90.

He contends the defeat of the Usambara Scheme "preserved the guarantee of subsistence land for the poor and slowed down the process by which land became a commodity."[51]

The record shows however, that at least on the northern side of the massif, subsistence could not be guaranteed for those families who left the mountains altogether, or who worked for food during the difficult years of the late 40s and early 50s. This chapter also asserts that large tracts of land in the daus had already become private holdings by the late 40s. The politics of rain present a more difficult issue. My informants often spoke on the issue, but usually asserted that rainmakers and rainmaking disappeared as culture unity broke down, an argument also made for the disappearance of irrigation as an agricultural technique. Their daily acts of resistance at time coasleced into the kinds of disturbances described above, but where Feierman sees the resistance directed against chiefs without rain, the archival record shows acts of defiance directed directly at European administrators and Agricultural Officers.

In any event, the onerousness of the Scheme played directly into the nationalist movement. By the early 1960s, the talk of ecological degradation and reform had been discarded.

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[51]Ibid., p. 203

III. Ecological Change

Farming Regions

Soil erosion control played into the nationalist politics current both in the Usambaras and Tanganyika generally. However, at the point of production, the farmers' fields themselves, the Usambara Scheme did little to stem ongoing land degradation. In fact, it likely poisoned attitudes toward land use for a generation. The evidence for degradation is mixed. Archival and published sources agree that at least since the 1920s accelerated erosion had caused extensive land degradation.[52] This visual evidence, when coupled with the increasing vulnerability of northern communities to food shortages, clearly points to a decreasing productive capacity of the land. Informants born and raised in West Usambara do not agree on degradation.[53] The disagreement may well be attributed to the very controversial Soil Erosion Control and Afforestation Project currently being carried out in Usambara and the differential spatial nature of soil erosion and fertility loss.

The difficulties of the evidence notwithstanding the demographic, agricultural and economic changes discussed above suggest a pattern of degradation on the slopes of the

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[52]TNA 72/US/34 Usambara Scheme, "Field Reports," Gibbon, December 1951, p. 1, (Bumbuli); TNA 72/US/56 Usambara Scheme, "Notes on a Visit to West Usambara by Pasture Research Officer, 3/9/53 to 3/13/53," p. 3a (Mlalo, Mtae); TNA 72/3/2 vol. IV Usambara Scheme, "Monthly Report for August 1958," p. 62 (landslides in vicinity of Vuga); TNA 72/US/41 Usambara Scheme, "Report," 4/10/52, (General).

[53]UIT Kasisi and Kuambaza shezia at Mlalo, 1/18/92, p. 10; Juma Zahabu, p. 26; but arguing for soil erosion see Hemedi Ngereza, 1/25/92, p. 12; Jafeth Kalata at Mlalo, 3/13/92, p. 25.

more heavily populated sub-chiefdoms. Clearly, population increases had induced an extensification of production into formerly unused lands, a diminution of fallows, and an explosion of maize production. Maize, with its shallow root system, exposed soil on slopes to sheet erosion. Farmers drained mountain wetlands, many of which formed the head waters of streams, and informants note that the opening of dau lands quickly dried out many permanent streams and hindered irrigation.[54] Even the Hehe ridges themselves have been cited as agents of soil erosion because they tended to wash away in heavy rains.[55]

These creeping trends toward degradation sometimes met in a conjuncture of tragic proportions. On the night of 23/24 January 1956, an exceptionally heavy rainstorm struck the extreme northern most salient of Usambara Hills and caused extensive damage. At Mbaramo, between ninety and one hundred landslides on either side of the ridge carried thousands of tons of topsoil down the mountainside to the plains. The larges erosion scar measured approximately 150 yards in width and extended down the mountain for over 800 yards. This particular slide carried with it a small hamlet killing 15 of its inhabitants and many of its livestock. It began in a cassava garden planted on a very steep slope.[56]

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[54]UIT Juma Kingazi Kimako, Hoseni Hamsini, Salimu Shekulwavu at Shita, 2/13/92, p. ;Salehe Jambia, , Juma Sebarua and Peter Kaniki at Lukozi, 3/17/92, p. 70; Japhet Kalata at Mlalo, 3/23/92, p. 24; Juma Zahabu, p. 30b.

[55]UIT Japhet Kalata at Mlalo, 12/23/91, p. 25; Domitila Epimark and Mzee Hipoliti at Gare Mission, 1/7/92, p. 35.

[56]TNA 72/US/8 Usambara Scheme, "Landslides, Mbaramo," District Commissioner J.W. Sword, Lushoto to P.C., Tanga 2/4/56, npn.

Not enough data exist to blame the Mbaramo landslides on agricultural practices alone. The rain fell "heavily," but heavy downpours occur with relative frequency in Usambara. Given the large erosion scars evident in the Mlalo and Mlola basins from the 1930s, landslides had been a common thread in the region's human/ environmental relations at least since the early twentieth century. The Mbaramo landslides suggest that degradation in this region moves slowly, at least in the eyes of farmers, who alter land use patterns in response to their immediate needs. Woven together over time, these threads of change lead ultimately to a point conjuncture where disaster strikes suddenly.[57]

The Plateau Forests

Ecological degradation was not exclusive to West Usambara's agricultural areas. The plateau forests experienced a related, but more subtle and insidious form of degradation during the 1950s. A variety of pressures pushed forest degradation along relatively slowly, at least in terms of human history, until the early 1960s when unprecedented deforestation occurred in Lushoto district. The pressures stemmed from commercial forestry practices and policies and African cultivators vying for land. By 1962, the forest reserves had become, in the eyes of many peasant farmers, a

[57]Flood and landslide related disasters have become increasingly common in West Usambara. On January 24, 1993, much of Mlalo town was carried away by a flood of the Umba river. Scores were killed and the entire basin was cut off from the outside. Short rains plantings were ruined and food aid had to be transported in by air for more than six months. Personal communication with Sufian Shekoloa of Mlalo.

symbol of the restrictive land use policies of colonial government. Seeking a clean break with the conservationist mentality of the Rehabilitation Schemes, the independence government sought to solidify its popularity by making available *matunda ya Uhuru* (the fruits of independence) to the citizens of Usambara. With the Lukozi excision (32,000 to 37,000 acres) and other smaller alienations across the mountains, the Ministry of Agriculture opened to farmers a huge expanse of natural forest.

As shown in chapter 4, the colonial government reserved forest lands for two purposes: exploitation for the timber market and conservation of soil and water. Clearly cognizant of its mission, the Forestry Department fought an ongoing battle with herders seeking to graze illegally in the reserve, cultivators encroaching on reserve boundaries and firewood collectors. The creation of Native Authority wattle plantations simply could not meet firewood demand and throughout the colonial period women from heavily populated sub-chiefdoms travelled increasingly long distances to procure it. Women from Handei (1400 m.) in the Mlalo Basin climbed onto the plateau lands at Lukozi and surrounding Mtumbi mountain (c. 1800 m.) to cut firewood. Furthermore, by the late 1940s, people from the Mlalo basin were importing from the same region illegaly cut cedar, which was highly prized for construction purposes.[58] Thus as knowledge of

[58]UIT Juma Zahabu, p. 27. Cedar was prized because of its ability to resist termite infestations.

forest resources pulled people from Mlalo and Mlola to the forest, increasing land scarcities pushed them to stake out claims at the free settlements within the reserve (the *viringo* of German times). These settlements served as nodes of expansion within the forest and were clearly visible from the air.[59]

Forest remaining on Public Lands just outside the reserve was also cut extensively during this period. As noted in chapter 4, the Wambugu of the area around Kwai, Mshangai, and Malibwi had begun to cultivate in earnest during the 1930s as a means of claiming lands subject to reservation by the Forestry Service. This process accelerated during the famine years of the late 1940s, when many Wambugu sold off their herds in order to procure cash for food purposes.[60] Informants also note that East Coast Fever and Rinderpest struck in 1952, further reducing herds.[61] By 1960, much of the area, except for a few small pockets around Mshangai, had been deforested. Interestingly one sub-chief at Mshangai, Kadala Mlimahadala, tried to conserve at least some pockets of forest.[62]

> Zumbe Kadala Mlimahadala refused completely to allow the forest to be cut, especially on the mountains [around Mshangai, Kinko, Kireti, and Kwedege]. When he heard that TANU didn't really

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[59]Ibid., p. 28; for migrations from Malindi to Lukozi see UIT Salehe Jambia, Juma Sebarua and Peter Kaniki at Lukozi, 3/17/92, p. 67; for aerial evidence see, TNA 4/5/4-D Lushoto District Committee, "Minutes of Meeting of the Advisory District Committee," 10/22/54, p. 230

[60]Usambara Mbugu Interview Transcripts (hereafter UMIT) Mz. Paulo Mwavoa and Mz. Mlango Msasu at Kinko, 3/3/92, p. 45.

[61]MUIT Mkanda Shusha at Mshangai, 5/27/93, p. 29

[62]UIT Hoseni Kisimbo at Malibwi, 1/2/92, p. 62.

> care about the forest, he said better he die before independence, he wouldn't like the new government, and sure enough he died in 1959, before uhuru.[63]

In addition to the Public Lands, pressures detrimental to the health of forests built up in the government forest reserves, where the Forestry Department encountered an increasingly complex set of problems. One set of pressures emanated from the so-called "squatter" population, who led a dual existence as legal forest laborers inside the Shume reserve and illegal herders lurking at the margins surreptitiously moving livestock in and out of the reserve.[64] In the context of proper colonial forest management, their job entailed tending young trees in reafforested areas. In return, the forestry service allowed them to cultivate in between the maturing seedlings for three or four years. However, as a laborer in the forest reserve, one could not establish a permanent home, nor could one hold more than nine livestock (3 cows, 3 goats and 3 sheep).[65] In addition to their work for the government, the forest "squatters" often worked as "casual" (temporary) laborers with the timber concessions.

During the early 1950s, when tobacco prices rose, these laborers could at least earn a living and avoid the dangerous work in the saw mills.[66] The manager of the Shagai saw mill,

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[63]UIT Athumani Shemweta, Athumani Kikoi, Abeid Athumani and Hasani Mlimnahadala at Kwedeghe, 1/21/92, p. 72a.

[64]MUIT Mtee Nyangusi at Magamba, 5/92, p. 38.

[65]TNA 4/962/15 Tanga Forest Division, "Annual Report for the Year Ended 31st December 1954," p. 104.

[66]Lushoto File (hereafter LF) 11/B/1/5/2/G Lushoto Forest Office,

no fan of the tobacco boom, suggested disallowing cash crop production and creating a permanent forest population dependent on the timber industry. Indeed, the Forestry Department in 1954 began seek lands in order to build just such settlements.[67] Clearly, forest "squatters" sought a measure of autonomy from the forestry service and from the timber industry. One particularly effective strategy involved moving survey beacons and clearing several acres of trees and cultivating the plot. In 1950, the forestry officer noted serious problems with this type of "encroachment" in the Shume/Magamba forest and boundary disputes continued throughout the 1950s and early 60s all along the forest reserve boundary.[68] The "squatters" won a small victory in 1954 when the government excised 1160 acres from the Shume forest and reclassified it as Public Land.[69] Even after this concession to their needs, most forest laborers continued their precarious existence at the margins. Their disaffection with the colonial government continued up to independence.[70]

Along with the pressure on the Forestry Department to hive off sections of the reserve, Grewal and Co., operators

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Manager, Shagai Mill to Divisional Forest Officer, Lushoto 7/12/50, p. 37.

[67]Ibid.; TNA 4/962/15 Tanga Forest Division, Annual Report for the Year Ended 31st December 1954, p. 90.

[68]Department of Forestry, *Thirty First Annual Report of the Forest Department for the Year ending 31st December 1951* (Dar es Salaam: Government Printers, 1952), p. 24; A.J. Lubango, Chief Forester, Magamba Forest Reserve, "Report on Lushoto District Forests," unpublished, 1992, p. 3.

[69]TNA 4/962/15 Tanga Forest Division Annual Report for 1954, p. 86.

[70]MUIT Mtee Nyangusi at Magamba, 5/92, p. 38.

of the timber concession in the Shume/Magamba and Shagai forest reserves, almost continually cut and milled timber over and above the government quotas. When, in 1950, Lushoto's district forester inspected parts of the Shume/Magamba concession he found the forest "completely devastated in places."[71] The Forestry Department suspected that Grewal and Co., nearing the end of their concession, simply cut out as much marketable timber as possible. They therefore placed maximum milling quotas on Grewal (100,000 cu.ft. over six months).

> I think we should impose a ceiling on the cut. We intend to apply sustained yield working to this forest and the sooner we do so the better; a maximum cut is a step towards this and it also brings home to millers that the old days of laissez faire are numbered. We also do not want another "Kagera" in the shape of a very heavy cut just at the end of the life of a concession and masses of felled logs all over the forest. I therefore urge that a maximum cut be imposed, and endorse the figure of 100,000 cu. ft. suggested by the Provincial Forest Officer.[72]

Grewal agreed, then immediately broke the contract by cutting over the maximum.[73] Overcutting throughout the reserve continued until the Provincial Forestry Office placed an outright restriction on Grewal's operations at Shagai forest in March 1955.[74] Even in the face of restictions, and with

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[71]LF 11/B/1/5/2/G (hereafter LF) Lushoto Forest Office, Divisional Forest Officer C.W.D. Kermode to Conservator of Forests Morogoro 9/21/50, p. 17.

[72]LF Conservator of Forests, Northern Circle to the Chief Conservator of Forests, Morogoro, April 6, 1954, p. 284.

[73]LF Provincial Forest Officer to Grewal Sawmills 1/12/54, p. 222.

[74]LF Provincial Forest Officer to Grewal Sawmills, 11 March, 1955, p. 230.

full knowledge of the Forestry Department's perogatives to restrict over-exploitation of indigenous forest, Grewal requested permission to strip their concession areas of Podocarpus spp., as had been the case with two species of hardwoods by that time extinct in W. Usambara.[75] The Lushoto forester resisted on the grounds that because Podo grew in association with a valuable hardwood (Ocotea Usambarensis, Mikulo, Camphor), its total removal would seriously hinder the regeneration of hardwood species and thus future exploitation.[76]

But in the late 1950s construction increased dramatically across East Africa and thus the philosophy of "sustained yield" in Usambara's forests took a back seat to market demand. In addition to Grewal, whose poor logging practices do not seem to have hindered its ability to receive licenses to log Usambara's indigenous timbers, the Forestry Department issued felling licenses to groups of African loggers from Kenya, known locally as the "Kisii" pit sawers.[77] The Forestry Department sanctioned pit sawing mainly in the Camphor forests at Baga, Mkussu, Bumbuli, Shagai and Magamba. These young men, many merely teens, were highly mobile and expert at their craft. Their logging technique required no infrastructure or milling facilities. Carrying their equipment, they simply walked into selected areas, felled the

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[75]LF Grewal Saw Mills to Chief Conservator of Forests, Morogoro, 6/6/57. p. 339.

[76]LF Provincial Forest Officer, Lushoto to Chief Conservator of Forests, Morogoro. RE: Relaxation of Sustained Yield on Podo in W. Usambara. Concessions at Shume/Magamba and Shagayu, 10/25/57, p. 340.

[77]Lubango, "Report," p. 5.

best specimens, and using platforms built into a hill side, sawed them into rough boards in the felling coupe. They then carried the boards as headloads to the main roads for transport to the large towns. By the early 1960s, they were producing over 20,000 cu.ft. of cut timber per month.[78] Thus, as Agriculture Officers excoriated Usambara's farmers for destructive land use practices, their counterparts on the plateau facilitated the over-exploitation of indigenous forest resources, in the case of Podo, to the point of extinction.

By 1962, the year of Tanganyika's independence, the demand of arable land had become extreme. TANU had promised as much during its campaigns of the 1950s, and so, in 1964, the Minister of Agriculture, Tewa Said Tewa, delivered by authorizing the excision of the Lukozi valley from the forest reserve (about 35,000 acres, or about 55 mi^2). The original plan called for the area to be declared Public Land and divided up among the "squatter" population by Village Development Councils. One of the former VDC leaders explained that by order of the Department of Agriculture, each eligible applicant was to receive 10 acres, with the balance remaining as a multi-use forest zone. He implied that political patronage played a role in the process.

> The district council gave the VDC (village development council) the responsibility to divide

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[78]LF Lushoto Forest Office, Quarterly Report for July-Sept. 1960, Magamba Charge,"Forester, Magamba to Conservator of Forests, Lushoto, 11/18/60; for description of Kisii see MUIT, Musa Paulo at Coasti (Magamba), 4/92.

> the area. VDC was of uneducated people from the villages who had the ability to sing TANU songs and [were] elected as village executive leaders, or TANU chairmen. They had no expertise concerning the forest. They only knew to give out, to divide.[79]

As a former forest guard remarked, "The region was given out to enhance the popularity of the politicians."[80] Things quickly got out of hand. Mzee Mtee continues,

> These folks began to say that the forest was for all, not only the squatters. It should be distributed to all raiya [citizens]. This was a violation of the parliamentary instructions for the division of the forest. VDC received applications from anybody who wanted a shamba. VDC received a lot of applications. Corruption was the order of the day, the dominant system. If you don't give chai [a bribe], no shamba.

Accordingly, the Village Development Councils tabled discussion of Public Lands and distributed the entire parcel. The accounts of bribes seems plausible in the light of testimony given even by those who benefitted from the land grab. The extent and quality of one's grant depended directly on the amount of money one could offer the authorities in charge of distribution.[81]

The evidence suggests strongly that the excision followed the dividing line between the cedar and camphor forest. This makes sense because the new government

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[79]MUIT Mtee Nyangusi of Magamba, 5/92, p. 39.

[80]MUIT Musa Paulo at Coasti (Magamba), 4/92, p. 41-42.

[81]MUIT Salehe Jambia, Juma Sebarua and Peter Kaniki, Lukozi, March 17, p. 67-68. This group proved very elusive: while admitting that bribes played a role in the amount of land one received, they dismissed the idea that anyone in Lukozi came from the Mlalo basin. For a more cynical account see, Mz. Mtee Nyangusi of Magamba, 5/92, p.38-39.

maintained an interest in exploiting valuable camphor.[82] Also clear is the rapid character of the transformation from forest to farmland. Within two years, the entire area, over 50 mi^2, had been completely stripped of forest. Few benefitted financially from the sudden appearance of available timber. Farmers could not obtain pit sawing permits, nor did they posess the expertise to saw the timber into boards. Therefore, most of the trees were simply felled and burnt as firewood, although a small percentage of the wood seems to have found its way to Mlalo markets in the form of charcoal.

IV. Conclusion: The Aftermath

British and German observers of Usambara's forests, since the late nineteenth century, have written about what they believed to be "natural ecosystems," existing outside of human influence. Chapters 2, 3 and 4 show that few, if any, forest stands in West Usambara have been remained undisturbed. Nonetheless, at the advent of German colonialism, the nature of human land use had allowed high rates of biological diversity and the maintenance of forest cover over much of the central plateau. Colonialism's ability to implement its dual philosophy of forest conservation and exploitation undermined the economy of West Usambara's forest based communities and criminalized their

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[82]MUIT Salehe Jambia, Juma Sebarua and Peter Kaniki, Lukozi, 3/17/92, p. 67-68; Mtee Nyangusi of Magamba, 5/92, p. 37-38; and Musa Paulo at Coasti (Magamba), 4/92, p. 41-42.

relationship with the environment.[83] As shown above, this process induced pressure on Public Lands forest to the point where they simply disappeared. Inside the reserves, commercial forestry practices, even in their guise as a "sustained yield" system, served to radically alter forest ecology.

There is no data on the number of people moved into the Lukozi valley in the early 1960s, but the immediate availability of land likely relieved temporarily the pressures on lands in the Mlalo and Mlola subchiefdoms. However, for the forest ecology in the Lukozi cedar forest, the excision constituted a dramatic ecological event with far-reaching implications. A comparison of aerial photos taken in 1947 and 1968 shows the extent of the loss of tree cover. The ecological shock is compounded when considering the changes to the soil itself. Upon clearing the microclimate of the soil surface changes drastically: more rain reaches the soil surface, radiation increases, maximum temperature increases, minimum temperatures decrease, humidity decreases and wind increases. Also, humus decomposition speeds up with increased wetting and drying of the soil. At Lukozi cultivators burned everything, an act which in the short run increased soil fertility, but in the long run decreased the soils nutrient retention capacity. Within two years topsoil structure would have been altered

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[83]For a more genral application if this argument see: "Introduction," in John Richards, and Richard P. Tucker eds., *World Deforestation in the Twentieth Century* (Durham, N.C.: Duke University Press, 1988), p. 8.

completely.[84]

Informants living at Lukozi confirm other long-term repercussions of the clearing with anecdotal evidence. The watershed became subject to dramatic episodes of flash flooding and permanent streams dried out as early as 1970. Mists which used to avail humidity to the valley soils are now rare. Soil fertility decreased rapidly, except in the stream valley, where much of the topsoil from hillside erosion ended up.[85] Although the worst ecological deterioration occurred at Lukozi, similar, though less dramatic changes occurred at similar forest excisions. For example, at the Gare mission forest excision (mostly Camphor/Podo forest), farmers saw yeilds decline radically between 1964 and 1968. As at Lukozi, the only fertile soil remains inside the forest reserve, which farmers continually chip away, and in the stream valley.[86]

Inside the forest reserves commercial practices tended to reduce drastically the forest's biological diversity. The plantation stands cannot support any type of exploitation except commercial forestry, and that condition is likely limited to 2 rotations until productivity decreases to the

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[84]For an account of this process in Usambara's forests see Björn Lundgren, "Soil Conditions and Nutrient Cycling under Natural and Plantation Forests in the Tanzanian Highlands," *Reports in Forest Ecology and Forest Soils* 31 (Uppsala: Department of Forest Soils, Swedish University of Agricultural Sciences, 1978), p. 208.

[85]MUIT Mtee Nyangusi of Magamba, 5/92, p.38-39; Musa Paulo at Coasti (Magamba), pp. 41-42; Salehe Jambia, Juma Sebarua and Peter Kaniki at Lukozi, 3/17/92, pp. 69-70.

[86]This information gleaned from a number of casual conversations with farmers now using the area and from Musa Paulo at Coasti (Magamba), pp. 41-42; Domitila Epimark, and Mzee Hipoliti at Gare Mission, 1/7/92, p. 34.

point where commercial exploitation becomes uneconomic.[87] Before the movement of large numbers of pit sawers into Lushoto district in the late 1950s, commercial firms generally clear cut areas which the forestry service replanted with monoculture stands of exotic species (Almost exclusively species of pine and cypress). Clearing, especially with the aid of heavy machinery, and planting of exotic species decreased the capacity of the soil to maintain nurtient and moisture levels.[88] Indiscriminate cutting, carried out by commercial concerns before and after independence, has led to the virtual extinction of podocarpus (Msee) and entandrophragma (Mbokoko) and their replacement by invader species (Macaranga spp. and Policias spp.) changing completely the species makeup of the logged out area. In other areas poor logging practices have led to the disappearance of sandlewood.[89]

Pit sawing, a much less invasive process than commercial mechanized logging, had its own biological consequences. Pit sawers remove almost exclusively Ocotea Usambarensis because of the high price it fetches. In managed areas where Camphor has regenerated from coppices and root suckers, it has actually become so thick as to choke out the regrowth of many of the grasses and shrubs which grow in association with it. Where pit sawing occurrs illegally in the forest reserve, the young Ocotea saplings are invariably killed by vines and

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[87]Lundgren, "Soil Conditions," p. 227; Lubango, "Report," p. 8.
[88]Lundgren, "Soil Conditions," pp. 227-28.
[89]Lubango, "Report," p. 7.

creepers.[90]

One final phenomenon which seems in some way associated with forestry is the recently rapid spread of Bubonic and Neumonic Plague among peoples who live near forest reserve areas. As of 1992, Dr. Hans Steinmann was trying to determine the relationship between the incidence of plague and plantation forests which harbor large numbers of rats.

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[90]Observation of pit sawing sites in the Mazumbai forest reserve and conversations with Mr. Mrecha, forester in charge of the reserve, April 1992.

Chapter 7

Conclusions: Degradation and Reform

This treatment of Usambara's past century of environmental history asserts that understanding degradation rests in the complex relationship between society and nature. In the case of West Usambara (and other East African highland regions of similar ecological makeup) varying climatic zones and soils have fostered a number of ecological formations which human beings have altered throughout their residence in the mountains. The scale of human/environmental interaction has broadened significantly since colonial times, but even before the nineteenth century, regional demographic, economic, political and social circumstances in Usambara conditioned change. This thesis argues that one of the spin-offs of these interactions has been ecological degradation, that is, the decreasing productive capability of the land.

I. Dissertation Summary

Chapter Two treats Usambara's pre nineteenth century natural and human history asserting that the region's natural history fostered an environment whose resources human communities came to value. The archaeological evidence for intensive human occupation begins about 1500 years ago when

iron working communities began to occupy the mountains. Historians know little about the early patterns of exploitation, but these communities undoubtedly cleared forests and farmed a particular range of ecological zones using iron technology. Usambara was not isolated in its exploitation by such peoples, but formed part of a regional system of production which showed distinct similarities in its iron working technology, settlement patterns and methods of land use. Thus regional patterns of exchange must have been hundreds of years old by the mid-nineteenth century, when a distinct regional political economy can be discerned in the historical record.

By the middle of the nineteenth century, Usambarans had domesticated much of the landscape both on the high central plateau forests, where pasture dotted the dry cedar forest, and lower, along the outskirts of the mountain massif, where banana trees had come to replace the old growth. On the plains below the massif farmers grew sorghums and millets native to East Africa. Political organization centered around both local lineages and a royal lineage, the Kilindi, which commanded tribute in labor, livestock and other local commodities.

Steven Feierman's *Shambaa History* implies that by the early nineteenth century, Usambarans had built up, under Kilindi rule, an ecologically stable system of food production and exchange which offered food security punctuated only by occasional periods of political discord.

Feierman's structuralist paradigm places with the death of Kimweri ye Nyumbai, in the mid-1860s, the beginning of a fall into disarray and famine. However, the very elaborate production system in the mountain pastures, farmlands and lowland plains suggests that the food security system had been developed over the long term and was in fact similar to most other arrangements in the region, where droughts and insect infestations occurred regularly. Moreover, ecological degradation must have occurred. The simple act of clearing new lands and collecting fire wood would have altered forest flora and fauna and accelerated erosion, especially as population increased. Over time, these circumstances would have fostered vulnerability to famine in some areas, like Mlola, where food shortages accompanied shifts in regional patterns of exchange. Rather than a rise and fall paradigm, Usambara's mid nineteenth century ecological history suggests a pattern of production and exchange which had evolved over centuries and which would continue well into the colonial period, albeit with some major disruptions.

By the 1880s, links to the Indian Ocean's compradorial economy centered at Zanzibar had impinged on Usambara's production system. The slave trade, its demand centered on the East African littoral and offshore islands and its supply zone shifting across the East African mainland, linked the entire Pangani Valley, Kilimanjaro and the interlacustrine kingdoms solidly to the regional and global economies.[1] In

[1]For an extensive treatment of this trend, see chapter 5 in Abdul

Usambara, civil war and its attendant violence radiated across the mountains. Chapter 3 shows, however, that there were differentials in the indigenous responses to the upheaval. In zones of heavy production, like Vuga and Bumbuli, the violence left population centers decimated and secondary forest thicket covered what had been the swidden gardens and royal banana groves. Similarly in Mlola, people suffered depredations, while only a few hours walk away, Mlalo's denizens managed to weather the rough times by attracting refugees and intensifying production. On the central plateau, forests afforded the Wambugu protection for themselves and their herds solidifying a symbolic importance of forest cover which would persist in their discussions about nature into the present. The oral evidence also points to the late nineteenth century as the time when the notion of *Njaa* became an important and persistent part of historical discourse in Usambara.[2]

In seeking to dispel Kjekshus and Vail's notion of a precolonial/colonial divide in eastern Africa's ecological history, this examination of nineteenth century ecology also shows that farmers and herders had in precolonial times substantial biological contacts with the European world. European-introduced crops, like maize and rice, had entered the Usambaras decades before European contact and farmers

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Sheriff, *Slaves, Spices and Ivory in Zanzibar: Integration of an East African Commercial Empire into the World Economy, 1770-1873* (London: James Currey Publishers, 1987).

[2]As evident from every informant able to speak with lucidity about the nineteenth century.

there began to adopt them into their agricultural system as supplements. Epizootics and epidemics also stemmed from precolonial European contact. For example, rinderpest, a cattle disease introduced from Europe into the Horn during the 1880s, swept across Somalia, Kenya and Tanzania decimating cattle herds. It reached Usambara just as the Germans began to set up a colonial sphere of influence, but, contrary to what the oral traditions assert, did not stem from their arrival.[3]

Although Usambarans had shown the capacity to rearrange their agricultural system around new sets of circumstances in the late nineteenth century, taken as a whole, the period is marked by a great deal of insecurity, death and dislocation. Just as Usambarans sought to rebuild their lives on a familiar landscape, colonialism established a new set of criteria for the definition and exploitation of natural resources. This constituted the incipient stages of what has become known as "development."[4] Under the Germans and the British, economic development and accumulation meant, from the outset, the cultivation for the regional and world markets of coffee, sisal, rubber, and tea, and later, maize rice, and vegetables. Given tax requirements and their growing material needs, farmers extended production to

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[3]UIT Ali Gembe and his son, Shemboza bin Shemndola at Mlalo, 1/18/92, p. 7. the latter told a story popular in Mlalo, which attributes the droughts, diseases and insect infestations of the 1890s to pastor Wohlrab of the Mlalo mission.

[4]This point made by Juhani Koponen in "Colonialism and Development-The Case of Mainland Tanzania during the German Period," presented at the African Studies Association Conference, November 4, 1994, Toronto.

accommodate this situation. In this sense, colonial development worked to undermine the food security system Baumann saw operating at Mlalo in 1888.[5]

Paradoxically, in the late 1920s and early 1930s, colonial governments became extremely concerned with the long-term conservation of soil, forest and water resources. The colonial preoccupation grew from a world wide concern with the dust bowls of the United States and eroded hills in India, not necessarily conditions in the East Africa highlands.[6] However, when they stopped to look, colonial agriculturalists, trained in British Imperial agricultural academies in Oxford and the West Indies, found degradation.[7] This is not to say that soil erosion and deforestation did not exist in Usambara, but that colonial officials and scientists, with rare exceptions, did not seek to learn about either the local variations in degradation or its wider context of economic and political change.[8] Nowhere does the colonial record indicate that agricultural or forestry officers asked farmers and herders why the acted as they did.

Usambarans came to understand their dilemma early in their colonial experience. The variety of their actions

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[5]For a discussion of the relationship between extensification of production and degradation see, David Anderson and David Throup, "Africans and Agricultural Production in Colonial Kenya: The Myth of the War as a Watershed," *Journal of African History* 26 (1985), pp. 327-345.

[6]See especially, G.V. Jacks and R.O. Whyte, *Vanishing Lands: A World Survey of Soil Erosion* (London, Faber and Faber Ltd., 1939).

[7]See part IV in G.B. Masefield, *A Short History of Agriculture in the British Colonies* (Oxford: Clarendon Press, 1950).

[8]For exceptions see works of Gillman and Milne cited this the bibliography.

shows clearly that even before the overt resistance to colonial conservation programs of the 1950s, farmers and herders struggled to maintain food security in their new guise as peasant farmers and laborers linked to the growing regional market economy. However, as Usambarans were forced to accept colonial definitions of Government, Private and Public lands, they became increasingly constrained in their patterns of production. In forests which colonial specialists defined as government owned natural resources, those who opened them to cultivation or pasturage became criminals. Valuable farmlands in the plains became the province of European owned sisal plantations. Even on lands controlled by indigenous peoples, the Public Lands, maize and European potatoes became part of an increasingly simplified cropping regime designed to meet cash needs. In the face of these changes, farmers and herders continually contested the borders of Private and Government lands seeking to extend their options. Thus border disputes became as much conflicts over definitions as fights over resources.

After World War II, in what has become know as the "second colonial occupation," the British colonial government, acted to extend its power beyond its previously defined domain to include the natural resources on Public Lands.[9] Although the Usambara Rehabilitation Scheme constitutes a particularly well-documented case, the effort

[9]For a description of the "second colonial occupation," see D.A. Low and John Lonsdale, "Introduction: Towards the New Order 1945-1963," in *The Oxford History of East Africa*, D.A. Low and Alison Smith, eds. (Oxford: Oxford University Press, 1976).

was certainly not unique to Usambara, but covered British possessions across Eastern and Southern Africa. Success in the highlands of Kenya, and Tanganyika depended on an alteration in agricultural technology, i.e. ridging hillsides, and planting grass lees and tree crops on very steep slopes. Given Usambara's ecological complexity, the simple uniformity of the plan doomed it to failure whether farmers adopted it or not. Peasant farmers, many of them women, simply could not adopt the new farming technology and meet either subsistence or cash needs.

Those who resisted the new agricultural order of colonial conservation, whether *Chama* members linked to the nationalist cause, or women farmers, recognized it as a local political problem and attacked the Native Authorities vested with scheme enforcement. When, in the early 1960s, the colonial government's imperatives were replaced by the newly formed independence government, a short-lived window of opportunity opened for peasant farmers to extend the borders of Public Lands into the former Government and Private spaces. Unfortunately for the poorest farmers most in need of land, the task of dividing the newly opened lands, like the Lukozi cedar forest, fell into the hands of an emerging elite, who, through their association with the TANU government, managed to subvert the redistribution largely to their own benefit.

II. Discussion

Charting Degradation through Time

Braudel's vision of a temporally layered history is clearly applicable to the differing rates of change of Usambara's natural and human histories. A history which seeks to determine the course of degradation must therefore consider the long term interaction. This study has described hundreds of thousands of years of change in Usambara's biological geography. As noted in chapter two, archaeological evidence suggests that with the arrival, around two thousand years ago, of farmers who possessed iron smelting technologies, human communities have increasingly left their mark on East Africa's highland landscapes. Iron tools allowed farmers to clear more efficiently forest both for cultivation and for fuel to feed iron furnaces. Unfortunately the paucity of archaeological evidence does not yet allow for a sophisticated analysis of change before the past century and a half. Thus the scope of and rate of degradation remains poorly documented, although undoubtedly human societies shaped the landscape in dramatic ways.

Over the past century, West Usambara's indigenous forests zones have undergone dramatic change; they have either been eliminated or transformed biologically into exotic tree plantations. Even on the more clearly domesticated farmlands, radical changes in cultigens and land use patterns supports the argument of accelerated changes in ecological degraded ecological conditions.

This dissertation has argued that, at least for the past several generations, the signs of ecological stress, crisis and degradation are evident in both the documentary and oral evidence. What differs are the perceptions of causes and cures. The official reports of well-schooled observers like Milne and Gillman, as well as less cogent reports of agricultural officers and foresters are often imbued with a view African husbandry as simply primitive, or from a more liberal perspective, unable to respond sufficiently to the demands of the rapid social and economic change which accompanied colonial rule. Ideas about conservation were formed in a context of global concern and thus mitigation followed broadly generalized principles of direct action concentrated at the point of production. Indigenous views, most notably in the politicized traditions of Njaa ya Chankola, also argue that degradation grew from political and social change and manifested itself in the guise of Njaa. Solutions lay in long tested knowledge of local environmental conditions and regional patterns of exchange.

Throughout the late nineteenth and twentieth centuries the regional political ecology in Usambara remained an arena of contention. As this dissertation shows, the contest often proceeded to the detriment of the productivity of the mountain farmers and herders and the landscape they inhabited.

III. Degradation and Development: An Epilogue

Environmental degradation continued to concern development specialists into the independence period. The sub-division of the Lukozi forest proved only a temporary stop-gap measure. The poorest farmers remained on marginal lands, at least in the most populous areas such as Vuga, Bumbuli, Mlalo and Gare.[10] As indicated in the Introduction, Lionel Cliffe, et al. found in West Usambara, grave imbalances in the relationship between population and resources. The crisis stemmed from:

> ...the forms of crop husbandry, the property relations, the socio-political structures and the values prevalent in this society. The institutional features were once capable of supporting one of the most complex and advanced societies in East Africa, but they have now become impediments to the further development of the productive forces....piecemeal solutions have little to offer and some radically different, but integrated, alternative system of productive relations and of institutions is necessary to afford a solution to the development crisis.[11]

In the late 1960s and the 1970s, the decade of populist African Socialism (*Ujamaa*), a new breed of Western trained development specialists prescribed a broadly socialist path for development in Usambara. The new route argued for further alienations of the forest reserve, the use of collective labor and "an external stimulus in favor of selected crops and/or animal products, coupled with new

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[10]Lionel Cliffe, William L. Luttrell and John E. Moore, "The Development Crisis in Western Usambara," in Cliffe et al. eds., *Rural Cooperation in Tanzania* (Dar es Salaam, 1975), p. 169.

[11]Ibid., p. 172.

techniques of production."[12] Ironically the "new techniques" included tie ridging, along with the inputs of hybrid crops and petroleum base fertilizers associated with the "green revolution".[13]

In the face of the skepticism of Usambara's farmers, another more recent approach to agricultural development has been formulated by German specialists who have again brought particular brand of Western style development to the mountains. Contrary to their more doctrinaire predecessors, the Germans contended that Usambara's farmers practice "ecological agriculture," which resulted from "a continuous development of the approved traditional methods."[14] Accordingly, the Germans sought and found ecological correct farmers.[15]

Approaches to development in modern Tanzania show little imagination. Socialist developers of the late 1960s and early 1970s, showing even more zeal than their colonialist predecessors, had tried to completely reorganize production and labor organization and head off a crisis. The Germans, in a corrective measure, assailed what was, even by the late 1970s, a clearly misdirected approach to modernization. However, the German "ecological" school rejected crisis and

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[12]Cliffe, Luttrell and Moore, "Socialist Development in Tanzania Agriculture - its Application to the Western Usambaras," in Ibid., pp. 510-511.

[13]Ibid., p. 514,

[14]Kurt Egger and Bernhard Glaeser, *Politische Ökologie der Usambara-Berge in Tanzania* (Bensheim: Kübel-Stiftung, 1979), p. 234.

[15]See especially Glaeser, *Ecodevelopment in Tanzania: An Empirical Contribution on Needs, Self-sufficiency, and Environmentally-sound Agriculture on Peasant Farms*, translated from German by David Antal (Berlin: Mouton, 1984).

found Merrie Africa.

The German government still invests heavily in Usambara's development. The current Soil Erosion Control and Afforestation Project (SECAP), has determined that degradation constitutes a serious problem in the mountains. With the authority of the government's Provincial Development Team (TIRDEP), they strongly encourage farmers to plant contour hedges as a biological measure to halt erosion, just as their British colonial predecessors did in the 1930s. In compensation, they provide tree seedlings and other free issues to cooperative farmers. Viewed from a distance, some rehabilitated hillsides show impressive flushes of greenery The TIRDEP project is a subject of great debate in Usambara, Dar es Salaam and Germany. The results will likely reveal themselves slowly.

In the meantime, timber has become Usambara's most lucrative cash crop. Usambara Camphor (*ocotea Usambarensis*) from the Shagai (near Mlalo) and Magamba forest reserves leaves the mountains illegally.[16] While the depletion of Usambara's biological diverse rain forests reaches its final stages, natural disasters continue. In 1991, large acreage's of maize and banana fields simply washed away several sections of the district's most important highway link. In April of 1992 around Mgwashi, I drove through numerous gardens which, after the onset of the long rains, had washed

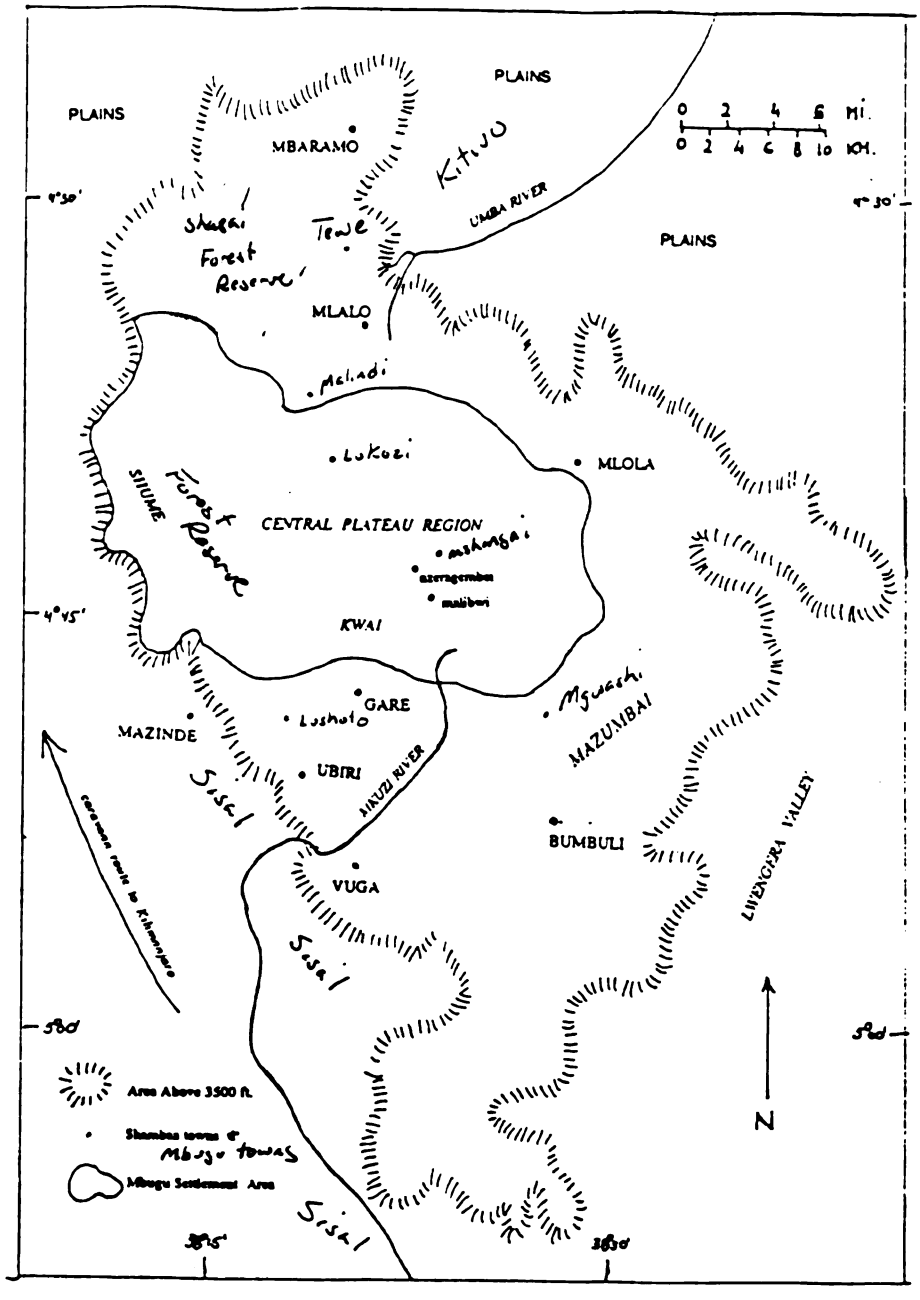
[16]This is general knowledge in Mlalo and in Lushoto. In my numerous hikes through the Magamba forest, I came upon felling coupes. I was shown similar clear fellings in the University forest reserve at Mazumbai in April 1992.

onto the main road. Finally, on the night of January 23/24th, 1993, heavy rains struck the Mlalo basin watershed and the Umba river flooded. By morning, the entire downtown area of Usambara's largest urban community, and more than a score of unfortunate residents, had been washed away. Six of the dead contributed greatly to this study.

APPENDICES

APPENDIX A

West Usambara

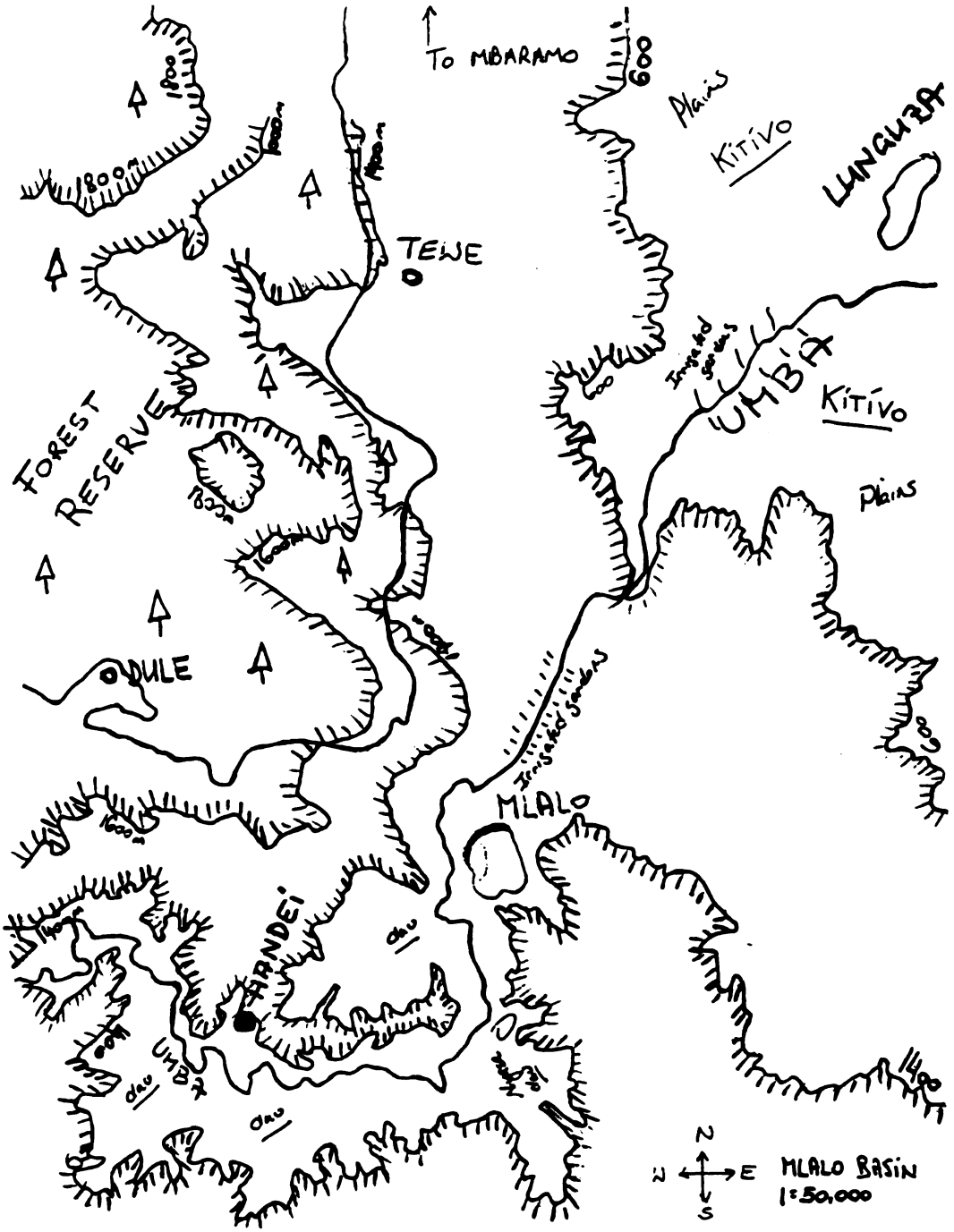


WEST USAMBARA

Adapted from: Steven Feierman, *The Shambaa Kingdom* (Madison: University of Wisconsin Press, 1974), p. 24.

APPENDIX B

Mlalo Basin



BIBLIOGRAPHY

BIBLIOGRAPHY

TANZANIA NATIONAL ARCHIVES

Following is a list of files consulted during October/November 1991 and May 1992. Accession numbers can be found in *Fourth Annual Report of the National Archives of Tanzania, 1967/68* (Dar es Salaam, 1969).

File Numbers	File Names
72/US/5a	Usambara Scheme: Reports and Minutes
72/US/26	Vugiri Subchiefdom
72/US/28	Usambara Scheme: Safari Reports R.H. Gower, Esq., A.J. Chant, and C.S. Kernahan
72/US/29	Newspapers and Broadsheets from other Districts
72/US/30, vol. II	Usambara Scheme: Safari and Monthly Reports. R.B. Silcocks
72/US/30, vol. III	Usambara Scheme: Monthly Reports. Silcocks
72/US/31	Usambara Scheme: Appointment of Field Officers
72/US/32a	Scheme Lorry
72/US/33	Usambara Scheme Survey. Road from Mbaramo to Mnazi
72/US/34	Usambara Scheme: F.O.s Safaris and Reports. Mr. Gibbons for Bumbuli, Mgwashi, Bungu, Lutindi, Korogwe, Vugiri. 12/51 - 9/56.
72/US/35, v. I & II	Usambara Veterinary Reports

72/US/36	Usambara Scheme: Monthly Reports, 3/52 - 6/53
72/US/37	Usambara Scheme: Mombo Experimental Ploughed Lands
72/US/38	Usambara Scheme: Luengera Experimental Ploughed Lands
72/US/39	Usambara Scheme: Rainfall Statistics and Rain Gauges
72/US/40	Usambara Scheme: Plains Scheme, Seeds
72/US/41	Copies of articles and records concerning Usambara Scheme: from other sources.
72/US/41, vol. II	Implementation of Scheme Rules
72/US/42	Usambara Scheme: Matangazo
72/US/43	Usambara Scheme: Mlungu and Wanakitala, monthly reports
72/US/44	Usambara Scheme: Fish Farms and Staff Matters
72/US/45	Usambara Scheme: Safari and Monthly Reports. C. M. Kapalenga
72/US/46	Usambara Scheme: Reports on Mombo Plots
72/US/49	Usambara Scheme: Applications for Work
72/US/50	Usambara Scheme: Water Development Schemes
72/US/53	Annual and Half-Annual Reports of Usambara Scheme
72/US/56	Notes on Soil Conservation, Land Use, Areas for Preservation
72/US/59	Monthly Ag. Reports of T. O. Green, 1953-55. Plains
72/US/60	Usambara Scheme: Financial, Scheme Estimates, 1954-55
72/US/60, vol. II	Scheme Estimates, 1955-56
72/US/60, vol. III	Scheme Estimates 1957-58
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72/US/61	Usambara Scheme: Mkundi Experimental Area
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	Resettlement, Handeni Preserve
72/US/63	Chant and Drennan's Report on the Usambara Scheme, 7/2/53
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72/US/68	Usambara Scheme Staff: Dismissal Threats and Requests for Retirement of Wakauzi
72/US/69	Report on Mlingano Valley Survey 19/5/55
72/US/70	Scheme Officers Safari Reports
72/US/71	West Usambara Trace Element Trials
72/US/72	Makolola/Matarawanda Model Farm Scheme
72/US/73	Usambara Scheme: Social Development Reps.
72/US/74	Usambara Scheme: Luengera Valley Irrigation Scheme
72/US/75	Usambara Scheme: Irrigation Scheme Mng'aro Area
72/3/2, vol. IV	Agricultural Reports. Lushoto, 7/56 through late 50s.
72/3/18	Misc. Reports on Forests, Soil, Native Foodstuffs Ordinance (late 30s, early 40s)
72/3/20	Wartime Rubber Labour
72/3/25	Mlalo Basin Rehab. Correspondence and Reports by Rensburg, Nutman, et al.
72/28/18	Land: German Property Disposal
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72/37/3, vol. I	Medical and Sanitation
72/62/9ff	Correspondence concerning maendeleo ya shambalai.
72/62/9j	Mlalo Scheme: Final Report on Shita Demonstration
72/62/9j	Mlalo Scheme: Field Officer Clegg's Report

72/62/9g	Mlalo Scheme: Regarding Costs and Requirements of Scheme
72/62/9h	Mlalo Scheme: Annual Report for 1948 and Piggot's Report 3/6/49
4/107/4	Boundary Disputes – Mponde Estate, 2 letters
4/107/6	Boundary Dispute: Wambugu in the Shume Forest
4/107/7	Boundary Disputes – Bethel M. Vuga vs. Natives
4/107/10	Boundary Dispute – Soni Estate vs. Natives
4/107/vol. I	Boundary Disputes – District and Provincial
4/269/1	Provincial Development Committee, Tanga Province.
4/269/5, vol. I	Mlalo Rehab. Development Scheme
4/269/5, vol. IV	Usambara Scheme: Misc.
4/269/5b, vol. I	Monthly Reports by the D.O. in Charge. Usamb. Scheme
4/269/6	Mlalo Basin Rehab Scheme, Reports, Monthly and Quarterly
4/269/7	Mlalo Basin Rehab. Scheme, Minutes of Meeting
4/269/12	Ruvu/Pangani Ag. Development Plan
4/269/13, vol. I	Land Usage Schemes, Annual Reports of the Usambara Scheme and Pare and Uluguru
4/551/vol. I	Irrigation, from 1934 and Details Proposed Irrigation below the Pare Hills
4/651/I and II	Land, Lushoto, Mostly Rights of Occupancy for Commercial Plots and Some Attempts to Obtain Freehold
4/651/2 vols.	[unreadable]
4/651/2	Land Files
4/962	District and Provincial Annual Reports

	for 1954
4/962	Annual Reports for Tanga Province and Districts, 1956
4/962/15	1954 Annual Reports by Departmental Officers
4/963/1	Record Books, District and Province
4/1071	Forest Squatters in Shume-Magamba Forest
4/1071	Soil Erosion 1931-38
4/1302/61	Veterinary, Monthly Reports 1933-36.
4/1351/3	Water Supply – Lushoto Division
4/1351/7	Water Supply – Korogwe
4/1351/8, vol. I	Water Supply – Pollution of Water Boards
4/1366	Registration of Enemy Aliens
4/1375/vol. I	Removal of Enemy Aliens to S. Rhodesia: Alien Women and Children
4/1375/vol. II	Removal to S. Rhodesia of Enemy Women and Children
4/1611	Native Tax

SECRETARIAT FILES CONSULTED

22446	Reports on Soil Erosion Measures Taken in the Territory 1934-38
13079, vol. III	Food Shortages
25576	Soil Conservation Reports Tanzania Territory
25576, vol. II	Soil Erosion – Annual Report to the Secretary of State 1937
19685	Advisory Committee on Soil Erosion.
24732	Report on Soil Reconnaissance by Govt. Chemist Milne: "Report on a Soil Reconnaissance in the Neighbourhood of Kitivo, Lushoto District, Tanganyika Territory, and in Adjacent (West Usambara) Highlands, September - October 1937"

INFORMANTS

(Last name, first, place, date)

Athumani, Abeid, Kwedeghe, 121/92.
Baharia, Francis, Magamba (near Mabughai), 12/3/23 and 1/23/92.
Chambua, Amiri, Mshangai, 2/27/92.
Epimark, Domitila, Gare Mission, 1/7/92.
Gembe, Ali, old town Mlalo, 1/18/92.
Hippoliti, Mshirhiri, Gare Mission 12/31/91.
Hamsini, Hoseni, Shita, 2/13/92.
Hasani, Musa, Mlalo, Jan. 3 1992.
Hwai, Teresia, Magamba, 5/14/92.
Jambia, Salehe, Lukozi, 3/17/92.
John, Fatuma, Kwemashai, 2/29/92.
Joho, Hamza, Kireti, 3/4/92
Kalata, Jafeth, Mlalo, 12/23/91.
Kaniki, Peter, Lukozi, 3/17/92.
Kidala, Dominique, Batai, 4/10/92.
Kidumi, Ahamadi Rashidi, Kitivo, Mng'aro. 2/8/92.
Kikoi, Athumani, Kwedeghe, 1/21/92.
Kimako, Juma Kingazi, Shita, 2/13/92.
Kisimbo, Hoseni, Malibwi, 1/2/92.
Lukindo, Mama Majuma, Mlalo, 2/26/92.
Mavoo, Mashambo, Kirete, 221/92.
Mbilu, Sabuni, Kwemashai, 223/92.
Mbuguni, Hasain Singano, Mlalo, 1/3/92.
Mdoe, Abdallah, Kitivo, Mng'aro. 2/8/92.
Mdoe, Amina Kitindu, Mlalo, old town, 1/18/92.
Mdoe, Khadija, Mlalo, 226/92.
Mganga, Terrance, Kwefingo, 3/29/92.
Mjenga, Sefu, Mbwei, 1/16/92.
Mlango Msasu, Kinko, 3/3/92.
Mlimnahadala, Hasani, Kwedeghe, 1/21/92.
Mntangi, Epiphan John, Kwemashai, 2/23/92.
Msanakale, Salim Bakari, Kwekanga, 1/21/92.
Mwavoa, Paulo, Kinko, 3/3/92.
Ngereza, Hemedi, Mlalo, 1/25/92.
Nyangusi, Mtee, Magamba (no date).
Panduka, Bakari, Kitivo, Mng'aro. 2/8/92.
Sabuni, Fatuma, Kwemashai, 2/29/92.
Saguti, Edward Mshangai, 4/2/92.
Sebarua, Juma, Lukozi, 3/17/92.
Sembe, Musa, Lunguza, 2/8/92.
Seuya, Magamba (near Mabughai), 12/3/23 and 1/23/92.
Shechambo, Mwanakombo, Mlalo, 2/26/92.
Shekulwavu, Salimu, Shita, 2/13/92.
Shemndola, Shemboza, old town Mlalo, 1/18/92.

Shemweta, Athumani, Kwedeghe,1/21/92.
Shemzinghwa, Rajabu, Mlalo, 1228/91.
Shemzighwa, Mbwana Omari, Mlalo, 1/3/92.
Shezia, Kasisi Kuambaza, Mlalo, 1/18/92.
Shusha, Mkanda, Mshangai, 2/27/92.
Togolai, Gadi, Kireti, 3/4/92.
Zahabu, Juma, Handei, 3/26/92.

WORKS CITED

Abdallah bin Hemedi'lAjjemy. *Habari za Wakilindi*. Nairobi: East African Literature Bureau, 1963.

Adams, W.M., T. Potkanski, and J.E.G. Sutton. "Indigenous Farmer-Managed Irrigation in Sonjo, Tanzania." *The Geographical Journal* 160 (1994): 17-32.

Ambler, Charles. *Kenyan Communities in the Age of Imperialism: The Central Region in the Late Nineteenth Century*. New Haven: Yale University Press, 1988.

Ambrose, Stanley. "Archaeological and Linguistic Reconstructions of History in East Africa." In *The Archaeological and Linguistic Reconstruction of African History*, ed. Christopher Ehret and Merrick Posnansky. Berkeley: University of California Press, 1984.

Anderson, David. "Agriculture and Irrigation Technology at Lake Baringo." *Azania* 24 (1989): 84-97.

——. "Cultivating Pastoralists: Ecology and Economy among the Il Chamus of Baringo, 1840-1980." In *The Ecology of Survival*, ed. Douglas Johnson and David Anderson. Boulder, Colorado: Westview Press, 1988.

——. "Depression, Dust Bowl, Demography, and Drought: The Colonial State and Soil Conservation in East Africa during the 1930s." *African Affairs* 83 (1984): 321-43.

Baumann, O. *In Deutsch Ostafrika während des Aufstandes*. Wien: Eduard Hölzel, 1890.

——. "Usambara," *Petermann's Geographische Mitteilungen* 35.2 (1889): 41-47.

——. *Usambara und seine Nachbargebiete: Allegemeine Darstellung des nordöstlichen Deutsch-Ostafrika und*

seiner Bewohner auf Grund einer im Auftrage der Deutsch-Ostafrikanischen Gesellschaft in Jahre 1890 ausgefürten Reise. Berlin: Dietrich Reimer, 1891.

Beinart, William. "Soil Erosion, Conservationism and Ideas about Development: A Southern African Exploration, 1900-1960," *Journal of Southern African Studies* 11.1 (1984): 52-83.

Berntsen, J.L. "The Maasai and Their Neighbors: Variables and Interaction," *African Economic History* 2 (1976): 1-11.

Berry, Sarah. "The Food Crisis and Agrarian Change in Africa: A Review Essay," *African Studies Review* 27.2 (1984): 59-112.

Blackburn, R.H. "Honey in Okiek Personality, Culture and Society," Ph.D. dissertation. Michigan State University, 1971.

Blaikie, Piers. *The Political Economy of Soil Erosion in Developing Countries*. New York: Longman, 1985.

Boserup, Ester. "Environment, Population, and Technology in Primitive Societies." *Population and Development Review* 2 (1976): 21-36.

Braudel, Fernand. *The Mediterranean and the Mediterranean World in the Age of Philip II*, translated by Sian Reynolds, 2 vols. New York: Harper and Row, 1966; first published in 1949.

——. *On History*, translated by Sarah Matthews. Chicago: University of Chicago Press, 1980.

Braun, Dr. K."Der Reis in Deutsch-Ostafrika." *Berichte über Land- und Forstwirtschaft in Deutsch-Ostafrika* 3 (1907), pp. 167-217,

Brockway, Lucile H. *Science and Colonial Expansion: The Role of the British Botanical Gardens*. New York: Academic Press, 1979.

Brookfield, Harold, and Piers Blakie, eds. *Land Degradation and Society*. London: Methuen, 1987.

Buchwald, J. "Aus dem deutsch-ostafrikanischen Schutzgebiete. Beitrag zur Gliederung der Vegetation

von West-Usambara." *Mitt. aus den Deutschen Schutzgebieten* 9 (1896), p. 213-233.

——. "Westusambara, die Vegetation und der wirtschaftliche Werth des Landes." *Der Tropenpflanzer, Zeitschrift für tropische Landwirtschaft* 1 (1897): 82-85.

Campbell, David. "Community-based Strategies for Coping with Food Scarcity: A Role in African Famine Early-warning Systems." *GeoJournal* 20.3 (1990): 231-241.

——. "Strategies for Coping with Severe Food Deficits in Rural Africa: A Review of the Literature." *Food and Foodways* 4.2 (1990): 143-162.

Campbell, D.J., and Jennifer Olsen. "The Kite." CASID Occassional Paper no. 10. Michigan State University, 1991.

Champion, A.M. "Soil Erosion in Africa: A Paper Read at the Afternoon Meeting of the Society on 8 May 1933 by Mr. C.W. Hobley on behalf of A.M. Chapmion." *Geographical Review* 82 (1933): 130-39.

Christensen, Norman L. "Landscape History and Ecological Change," *Journal of Forest History* 33.3 (1989): 116-124.

Collett, David Phillip. "The Spread of Early Iron Producing Communities in Eastern and Southern Africa," volume 1. Ph.D. dissertation, Cambridge University.

Conte, Christopher. "Nature Reorganized: Ecological History in the Plateau Forests of West Usambara Mountains c.1850-1935." In *Custodians of the Land: Environment and Hunger in Tanzania*, ed. James Giblin, Gregory Maddox, and Isaria Kimambo. London: James Currey, 1995.

Copland, B.D. "A Note on the Origin of the Mbubu with a Text," *Zeitschrift für Eingeborenen-Sprachen* 24 (1933-34): 241-45.

Cronon, William. *Changes in the Land: Indians, Colonists, and the Ecology of New England*. New York: Hill and Wang, 1983.

——. "Comment: Cutting Loose or Runnng Aground," *Journal of Historical Geography* 20 (1994): 38-43.

——. "Modes of Prophecy and Production: Placing Nature in

History," *Journal of American History* 76.4 (1990): 1122-1131

——. *Nature's Metropolis: Chicago and the Great West.* New York: W.W. Norton and Company, 1991.

Crosby, Alfred. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900.* Cambridge: Cambridge University Press, 1986.

Demerritt, David. "Ecology, Objectivity and Critique in Writings on Nature and Human Societies," *Journal of Historical Geography* 20 (1994): 22-37.

Department of Forestry. *Thirty First Annual Report of the Forest Department for the Year Ending 31st December 1951.* Dar es Salaam: Government Printers, 1952.

Dobson, E.B. "Land Tenure of the Wasambaa." *Tanganyika Notes and Records* 10 (1940): 1-27.

Ehret, Christopher, and Derek Nurse. "The Taita Cushites," *Sprache und Geschichte in Afrika* 3 (1981): 125-168.

Eick. "Berichte über meine Reise ins Kwai- und Masumbailand (Usambara) vom 12. bis 16. März 1896." *Mitteilungen aus dem Deutschen Schutzgebiet* 9 (1896): 184-88.

Ellen, Roy. *Environment, Subsistence and System: The Ecology of Small-Scale Formations.* Cambridge: Cambridge University Press, 1982.

Feierman, Steven. *The Shambaa Kingdom: A History.* Madison: University of Wisconsin Press, 1974.

——. *Peasant Intellectuals: Anthropology and History in Tanzania.* Madison: University of Wisconsin Press, 1990.

Fleuret, Patrick Charles. "Farm and Market: A Study of Society and Agriculture in Tanzania." Ph.D. dissertation, Univeristy of California at Santa Barbara, 1978.

——. "The Social Organisation of Water Control in the Taita Hills, Kenya." *American Ethnologist* 12 (1985): 103-18.

Frontera, Ann. *Persistence and Change: A History of Taveta.* Waltham, MA, 1978.

Gardner, H.M. "East Afrian Pencil Cedar." *Empire Forestry Journal* 5 (1926): 39-53.

Geertz, Clifford. *Agricultural Involution: The Process of Ecological Change in Indonesia*. Berkeley: University of California Press, 1966.

Giblin, James L. *The Politics of Environmental Control in Northeastern Tanzania, 1840-1940*. Philadelphia: University of Pennsylvania Press, 1992.

Gillman, Clement. "A Population Map of Tanganyika Territory." *Geographical Review* 26 (1936): 353-375.

——. "Problems of Land Utilisation in Tanganyika Territory." *South African Geographical Journal* 20 (1938), 12-20.

Goodman, Morris. "The Strange Case of Mbugu," in *Pidginization and Creolization of Languages*, ed. Dell Hymes. Cambridge, 1971.

Gowlett, "Human Adaptation and Long-Term Climatic Change in Northeast Africa: An Archaeological Perspective. In *The Ecology of Survival: Case Studies in Northeast African History*, ed. Johnson and Anderson. Boulder, Colorado: Westview Press, 1988.

Green, E.C. "The Wambugu of Usambara (with notes on Kimbugu)," *Tanzania Notes and Records* 61 (1963): 175-189.

Grove, Richard. "Colonial Conservation, Ecological Hegemony and Popular Resistance: Towards a Global Synthesis," in MacKenzie, ed., *Imperialism and the Natural World*. Manchester: Manchester University Press, 1990.

——. "Scottish Missionaries, Evangelical Discourses and the Origins of Conservation Thinking in Southern Africa, 1820-1900," *Journal of Southern African Studies* 2 (1989): 163-88.

Grove, Richard, and David Anderson. "The Scramble for Eden: Past, Present and Future in African Conservation," in *Conservation in Africa Peoples Policies and Practice*, by Richard Grove and David Anderson. Cambridge: Cambridge University Press, 1987.

Gullebaud, C.W.. *An Economic Survey of the Sisal Industry of Tanganyika*. Third edition. Digswell Place: James

Nisbet and, 1966).

Hakansson, Thomas. "Social and Political Aspects of Intensive Agriculture in East Africa: Some Models from Cultural Anthropology," *Azania* 24 (1989), p. 12-20.

Hamilton, A.C. *Environmental History of East Africa: A Study of the Quaternary.* London: Academic Press, 1982.

——. "The Quaternary History of African Forests: Its Relevance to Conservation," *African Journal of Ecology* 19 (1981): 1-6.

Harms, Robert. *Games Against Nature: An Ecocultural History of the Nunu of Equatorial Africa.* New York: Cambridge University Press, 1987.

Hedde. Report on farm at Mkusu, June 12, 1901 in *Berichte über Land- und Forstwirtschaft in Deutsch-Ostafrika* 1 (1903): 45-46.

Hindorf, Richard. "Die Versuchsstation für Tropenkulturen in Usambara." *Der Tropenpflanzer: Zeitschrift für tropische Landwirtschaft* 5 (1901): 268-69.

Hobley, C.W. "Soil Erosion: A Problem in Human Geography. A Paper Read at the Afternoon Meeting of the Society on 8 May 1933," *Geographical Review* 82 (1933): 140.

Hoyle, B.S. *Gillman of Tanganyika 1882-1946.* Brookfield, Vt: Gower Publishing, 1987.

Iliffe, John. *A Modern History of Tanganyika.* Cambridge: Cambridge University Press, 1979.

Jacks, G.V., and R.O. Whyte. *The Rape of the Earth.* London: Faber and Faber, 1939.

Johnson, Douglas, and David Anderson, eds. *The Ecology of Survival: Case Studies from Northeast African History.* Boulder, CO: Westview Press, 1987.

Kingdon, Jonathan. *Island Africa: The Evolution of Africa's Rare Animals and Plants.* Princeton, 1989.

Kimambo, Isaria. *A Political History of the Pare of Tanzania, c. 1500-1900.* Nairobi: East Africa Publishing House, 1969.

——. *Penetration and Protest in Tanzania: The Impact of the World Economy on the Pare.* Athens, OH: Ohio University Press, 1991.

Kjekshus, Helge. *Ecology, Control and Economic Developmen in East African History: The Case of Tanganyika, 1850-1950.* Berkeley: University of California Press, 1977.

Koponen, Juhani. *People and Production in Late Precolonial Tanzania: History and Structures.* Helsinki: Finnish Society for Development Studies, no. 2, 1988.

Koponen, Juhani. "War, Famine, and Pestilence in Late Precolonial Tanzania: A Case for a Heightened Mortality," *African Economic History* 17 (1988): 637-76.

Krapf, Johann. *Reisen in Ostafrika ausgeführt in den Jahren 1837-1855.* Stuttgart: F.A. Brockhaus Kimm.-Gesch., Abt. Antiquarium, 1964.

Le Roy Ladurie, Emmanuel. *The Peasants of Languedoc,* translated by John Day. Urbana: University of Illinois Press, 1976.

——. *Montaillou: The Promised Land of Error,* translated by Barbara Bray. New York: George Braziller, 1978.

——. *Times of Feast, Times of Famine A History of Climate since the Year 1000,* translated by Barbara Bray. New York: Farrar, Straus and Giroux, 1988.

Lock, G.W.. *Sisal: Thirty Years' Sisal Research in Tanzania.* London: Longmans, 1962.

Lubango, A.J. "Report on Forestry in the Usambara Mountains." Unpublished, April 1992.

Lundgren, Björn. "Soil Conditions and Nutrient Cycling under Natural and Plantation Forests in the Tanzanian Highlands." *Reports in Forest Ecology and Forest Soils* 31. Uppsala: Department of Forest Soils, Swedish University of Agricultural Sciences, 1978.

MacKenzie, John M., ed. *Imperialism and the Natural World.* Manchester: Manchester University Press, 1990.

Mandala, Elias. *Work and Control in a Peasant Economy: A History of the Lower Tchiri Valley in Malawi 1859-1960.* Madison: University of Wisconsin Press, 1990.

Masao, F.T. "The Irrigation System in Uchagga: An Ethno-historical Approach." *Tanzania Notes and Records* 75 (1974): 4-8.

McCann, Jim. "Agriculture and African History," *Journal of African History* 32 (1991): 510-511.

——. *From Poverty to Famine in Northeast Ethiopia: A Rural History 1900-1935.* Philadelphia, PA: University of Pennsylvania Press, 1987.

McCracken, John. "Colonialism, Capitalism and Ecological Crisis in Malawi: A Reassessment," in Anderson and Grove, eds., *Conservation in Africa.* Cambridge: Cambridge University Press, 1987.

McEvoy, Arthur F. *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980.* New York: Cambridge University Press, 1986.

Milne, Geoffrey. "Essays in Applied Pedology. I.- Soil Type and Soil Management in Relation to Plantation Agriculture in East Usambara." *East African Agricultural Journal* 3 (1937), 7-20.

——. *A Provisional Soil Map of East Africa.* Amani, Tanganyika: East African Agricultural Research Station, 1936.

——. "Soils in Relation to the Native Population in West Usambara." *Geography* 29.4 (1944): 107-13.

——. "A Soil Reconaissance Journey through Parts of Tanganyika Territory. December 1935 - February 1936," *Journal of Ecology* 35 (1947): 192-265.

Moreau, Reginald Ernest. "A Synecological Study of Usambara, Tanganyika Territory with Particular Reference to Birds." *Journal of Ecology* 23 (1935): 1-43.

——. *The Bird Faunas of Africa and Its Islands.* New York: Academic Press, 1966.

Neubaur. "Die Besiedelungsfähigkeit von Westusambara." *Zeitschrift für tropische Landwirtschaft* 6.10 (1902): 496-513.

Nicholson, Sharon, and Hermann Flohn. "African Environmental

and Climatic Changes and the General Atmospheric Circulation in Late Pleistocene and Holocene." *Climatic Change* 2.4 (1980): 313-48.

Nurse, Derek. "Bantu Expansion into East Africa: Linguitic Evidence," in *The Archaeological and Linguistic Reconstruction of African History*, ed. Posnansky and Ehret. Berkeley: University of California Press, 1982.

Nurse, Derek. "Extinct Southern Cushitic Communities in East Africa," in Marianne Bechaus-Gerst and Fritz Serzisko, eds., *Cushitic-Omotic. Papers from the International Symposium on Cushitic and Omotic Languages, Cologne, January 6-9, 1986* (Hamburg 1988).

Nurse, Derek, and Tom Spear. *The Swahili: Reconstructing the History and Language of an African Society 800-1500.* Philadelphia: University of Pennsylvania Press, 1985.

Paasche, Herman. *Deutsch Ostafrika.* Grossenworden: Rüsch'sche Verlagsbuchhandlung, 1927.

Richards, John, and Richard P. Tucker, eds. *World Deforestation in the Twentieth Century.* Durham, N.C.: Duke University Press, 1988.

Richards, Paul. *African Environment: Problems and Perspectives.* London: International African Institute, 1975.

Rodgers, W.A., and K.M. Homewood, "Ecological Islands and Their Conservation," Proceedings of the Arusha Symposium, *African Journal of Ecology* 19 (1981): i.

——. "Species Richness and Endemism in the Usambara Mountain Forests, Tanzania." *Biological Journal of the Linnean Society* 18 (1982): 197-242.

Sahlins, Marshall. "Culture and Environment: The Study of Cultural Ecology." In *Horizons of Anthropology*, ed. Sol Tax. Chicago: Aldine, 1964.

Sander. "Usambara." *Der Tropenpflanzer: Zeitschrift für tropische Landwirtschaft* 7.5 (1903): 202-10.

Schmidt, Peter. "Eastern Expressions of the 'Mwitu' Tradition: Early Iron Age Industry of the Usambara Mountains, Tanzania." *Nyame Akuma* 30 (1987): 36-37.

Schoenbrun, David. "We Are What We Eat: Ancient Agriculture between the Great Lakes." *Journal of African History* 34 (1993): 1-32.

Scott, James. *Weapons of the Weak: Everyday Forms of Peasant Resistance.* New Haven: Yale University Press, 1985.

Siebenlist, Th. *Forstwirtschaft in Deutsch-Ostafrika.* Berlin, 1914.

Soper, Robert. "Iron Age Sites in Northeastern Tanzania." *Azania* II (1967): 19-36.

Storey, H.H. *Basic Research in Agriculture: A Brief History of Research at Amani 1928-1947.* Nairobi: East African Standard, no date.

Storey, H.H., and R.F.W. Nichols. "Studies of the Mosaic Diseases of Cassava." *Annals of Applied Biology* 25 (1938): 154.

Sutton, J.E.G. "The Antecedents of the Interlacustrine Kingdoms." *Journal of African History* 34 (1993): 33-64.

——. "Irrigation and Soil Conservation in African Agricultural History: With a Reconsideration of the Inyanga Terracing and Engaruka Irrigation Works." *Journal of African History* 25 (1984): 2-41.

——. "Sonjo and Engaruka: Further Signs of Continuity." Azania 25 (1990), 91-93.

——. "Toward a History of Cultivating the Fields." *Azania* 24 (1989): 98-112.

Sutton, J.E.G., ed. *Special Volume of Contributions to the History of African Agricultural Technology and Field Systems, Azania* XXIV (1989).

Tambila, Kapepwa. "A Plantation Labour Magnet: The Tanga Case." In *Migrant Labour in Tanzania during the Colonial Period: Case Studies of Recruitment and Conditions of Labour in the Sisal Industry,* by Walter Rodney, Kapepwa Tambila, and Laurent Sabo. Hamburg: Institut für Afrika-Kunde, 1983.

Tanganyika Population Census 1957. East African Statistical Bureau.

Tanganyika Territory. *3rd Annual Report of the Forest Deptartment, 1923.* Dar es Salaam: Government Printer, 1923.

——. *4th Annual Report of the Forest Department, 1924.*

——. *13th Annual Report of the Forest Department, 1933.*

——. *15th Annual Report of the Forest Department, 1935.*

Teichmann. "Auszüge aus den Jahesberichten der Bezirksämter und Militärstationen für die Zeit vom 1. Juli 1900 bis 30. Juni 1901, 2. Bezirksamt Wilhelmstal (West Usambara)." *Berichte über Land- und Forstwirtschaft* 1 (1903): 27-38.

Thompson, Graham. "The Merchants and Merchandise of Religious Change: The New Orthodoxies of Religious Belief and Economic Behaviour amongst the Shambala People of Mlalo, North East Tanzania." Ph.D. dissertation, Clare Hall College, Cambridge, 1984.

Troup, R.S. *Colonial Forest Administration.* Oxford: Oxford University Press, 1940.

Tucker, A.N., and M.A. Bryan. "The Mbugu Anomaly," *Bulletin of the School of Oriental and African Studies* 37 (1974): 188-207.

Vail, Leroy. "Ecology and History: The Example of Eastern Zambia," *Journal of Southern African Studies* 3.2 (1977): 130-55.

Vansina, Jan. *Paths in the Rainforest: Toward a History of Political Tradition in Equatorial Africa.* Madison: University of Wisconsin Press, 1990.

Vassey, Daniel E. *An Ecological History of Agriculture 10,000 B.C. - A.D. 10,000.* Ames, Iowa: Iowa State University Press, 1992.

Volkens, G. "Zur Frage der Aufforstung in Deutsch-Ostafrika." *Notizblatt Königlicher Botanischer Garten und Museum Berlin* 2.11 (1897): 12-20.

Waller, Richard. "Ecology, Migration and Expansion in East Africa," *African Affairs* 84 (1985): 347-70.

——. "Emutai: Crisis and Response in Maasailand 1883-1902,"

in *The Ecology of Survival: Case Studies from Northeast African History,* ed. Douglas Johnson and David Anderson. Boulder, Colorado: Westview Press, 1988.

——. "Interaction and Identity on the Periphery: The Transmara Maasai," *International Journal of African Historical Studies* 17 (1984): 243-84.

Warburg, O. "Die Kulturpflanzen Usambaras," *Mitteilungen aus den Deutschen Schutzgebieten* 7 (1894): 131-99.

Watson, John R. "Conservation Problems, Policies and the Origins of the Mlalo Basin Rehabilitation Scheme," *Geographiska Annaler* 54a.3.4 (1972), p. 221-226.

Watts, Michael. *Silent Violence: Food, Famine and Peasantry in Northern Nigeria.* Berkeley: University of California Press, 1983.

White, F. "The History of the Afromontane Archipelago and the Scientific Need for Its Conservation," *African Journal of Ecology* 19 (1981): 33-54.

White, Richard. "Environmental History: Ecology and Meaning," *Journal of American History* 76.4 (1990): 1111-1116.

——. *The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Nabajos.* Lincoln: University of Nebraska Press, 1983.

Worster, Donald. *Nature's Economy: A History of Ecological Ideas.* New York: Cambridge Unviversity Press, 1977.

——. "Appendix: Doing Environmental History," in *The Ends of the Earth: Perspectives on Modern Environmental History,* ed. Donald Worster. Cambridge: Cambridge University Press, 1988.

——. "The Ecology of Order and Chaos," in *The Wealth of Nature,* ed. Donald Worster. Oxford and New York: Oxford University Press, 1993.

Worster, Donald, ed. *The Ends of the Earth: Perspectives on Modern Environmental History.* Cambridge: Cambridge University Press, 1988.