PLANT POETICS AND POLITICS OF THE WEST USAMBARAS: Power and Memory of Narrative Botanical Science in Kizanda, Sagara, and the Mazumbai Forest Reserve

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PLANT POETICS AND POLITICS OF THE WEST USAMBARAS

Power and Memory of Narrative Botanical Science in Kizanda, Sagara, and the Mazumbai Forest Reserve

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ABSRACT

This is a story about people and plants. About the power of relationships between floral organisms and human lives. Using narrative botanical science as a methodological framework, this study highlights the power of local people’s ecological knowledge from the villages of Kizanda and Sagara in the West Usambara Mountains. Building from semi-structured interviews and personal conservations with thirty residents of these villages—voices of local healers, farmers, and forest guides—this work unfolds through a series of vignettes. Its aim is to identify both the precise yet diverse ways in which these people have developed botanical knowledge of their local environment. From these individual voices emerges a cultural botany in which plants are the substance of ecosystems, of local knowledge, and of life. This study also traces the historical roots of plants—both generational botanical knowledge and patterns of plant regulations. The cultural botany of the present is a product neither apolitical nor detached from past human-plant relations. Thus, this study also incorporates archival material from a Swiss family of tea plantation owners who helped produce the Mazumbai Forest Reserve that exists today between Kizanda and Sagara. In short, this study is a human-plant geography that is simultaneously poetic and political.

Keywords: Local ecological knowledge, West Usambaras, ethnobotany, history
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The green leaves of low-lying bushes blanket the hillsides of the West Usambara mountains in Northern Tanzania. Upon closer inspection, one can see young leaves sprouting from central stems, their glossy surface reflecting the sunlight. These leaves push aside older, darker ones that droop toward the ground. Old leaves will not make the harvest. They are left to die. Look closer, at a single leaf. Veins arch across the fibrous surface, minute streams for transporting nutrients and water to the plant’s flesh. There are, however, more than biological layers to this leaf. This leaf is an archive. It contains layers of human voices emanating from two villages in the Usambaras, Kizanda and Sagara. It contains a multitude of entangled histories: of family, of community, of colonialism. This leaf is just one string of a web of stories wound across the Usambara mountains—a web bound by the plants shaping the bodies, livelihoods, and identities of human beings.
INTRODUCTION

It is the late 1950s. Two young women walk swiftly through the Sagara forest on a narrow path bounded by shrubs and ferns that brush their ankles as they move. They are no more than twenty; their names are Peneli and Mangove. They are friends, en route to Mazumbai estate where Peneli recalls they would be “picking and planting tea and coffee” (April 12). On these walks, Peneli explains, they shared the names of plants they knew. Mangove, she remembers, showed her muula trees, mkuguni, mdongonyezi, mzumbasha. Peneli is now a bibi, a grandmother, residing in the Hondei hamlet of Sagara village. She still uses mzumbasha today, to treat childhood illnesses affecting her grandchildren. Peneli now owns her own farm in Hondei, but during the time of her walks with Mangove decades ago, the farm on which she worked at Mazumbai belonged to European landholders. “We were paid low prices for labor,” she divulged, and for those “who did not participate in colonial activities…you would be punished…you would not get food.”

Peneli’s story reflects a broader process of botanical geographies unfolding in Sagara, the neighboring village of Kizanda, and what is now the legally-protected forest reserve of Mazumbai. Plants mapped the spatial pathways of her community, helped forge the bonds between her and Mangove, and, fifty years later, now heal the bodies of her grandchildren. The medicinal properties of the individual mzumbasha plant, along with its emergent quality as forming part of a forest ecosystem, reflect the botanical geography described by Russell Hitchings and Verity Jones. Plants do not merely exist within a landscape. They create it.¹

Knowing this landscape became an embodied experience for Peneli; she did not merely learn botanical insight, but lived it.

It is a form of knowledge situated within a local context that draws upon the power of biological observation, personal experience, and memory. Moving beyond a framework of ecology as a static body of facts, this indigenous system of local ecological and botanical knowledge reflects a human ecology rooted in organismal and generational relationships. While conservation biologists and environmental policymakers often define this “local ecological knowledge” (LEK) as the “knowledge of the Native people about their natural environment,” indigenous scholars like Canadian Deborah McGregor have, for decades, instead regarded LEK as “both cumulative and dynamic,” “place-based,” and a process “build[ing] upon the experience of earlier generations.”

Such forms of ecological understanding have developed over millennia—from the floodplains of Bangladesh, to the forests of Vietnam, to the farms of Jamaica. Over generations, as ethnobiologist Nancy Turner explains, this “accumulated knowledge, practice, and experience” creates an “ethnosphere” enmeshed with the earth’s biosphere. In the West Usambaras, the extensive knowledge of the endemic botanical species reflects members of a local community not only built upon ecological information of fellow

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“living members, but also on the stories and the things deemed worthy of communicating through many generations.”

Tracing the routes walked by traditional healers, the harvest paths of farmers, and the winding trails of forest guides, this study explores the myriad human-plant relationships of the West Usambaras by highlighting the precision of botanical narratives of the Washambaa people of Kizanda and Sagara. Following geographers Leslie Head and Jennifer Atchinson, who “suggest there is promise in more contingent, embodied and less linear human-plant histories,” these botanical narratives dissolve temporal boundaries—as well as those between the bodies of plants and of people. Like the rings of an old-growth tree, these accounts contain records of and links to the past, thus creating a botanical memory. Plants and their stories are passed from grandmother, to daughter, to granddaughter. So too do plants and their stories radiate out from the familial, as they are shared among friends, neighbors, and communities. This insight into the natural world arguably constitutes what botanical philosopher John Ryan terms “floral poetics,” or the “transgressive vision of the environment and plants in which science and poetics, as conventionally quarantined disciplines, intermingle.”

This botanical landscape, however, is not without conflict. Environmental historians like David Biggs argue that in ecological spaces exploited by imperialism, there is no clean “rupture” between the colonial and postcolonial moment. Rather, “colonial and postcolonial pasts [are]

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continuous pasts inscribed into the landscape.” Like Biggs, I argue that colonial ecological histories are enfolded into the experiences of the present. Mazumbai’s past is entwined with German and British economic botany, along with the tea-plantation era of the Swiss Tanner family. These are histories that today continue to shape human interactions with and knowledge about the plants in the Usambaras. Yet, far from confined by a lens of European imperialism, the voices of Kizanda and Sagara residents reveal the poetics and politics within human-plant geographies with poignant clarity. The voices “vignetted” within the following pages speak to the power and precision of local ecological knowledge—even while living in the echoes of environmental imperialism. They speak with a kind of floral poetry that reveals a deep human interconnectedness with ecosystems that pushes the boundaries of empirical ways of truly understanding the phenomena of life.

**Study Sites of Farm and Forest**

Botanical knowledge in the West Usambara mountains has tied local inhabitants to the landscape for centuries. The Usambaras, reaching elevations of up to 2990m above sea level, form part of the Eastern Arc Mountain range stretching its peaks across eastern Tanzania, up to the southern border of Kenya (Map 1). Though this mountain range experienced “floristic contact” with

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9 Ibid., 10.
the tropical forests of central and western Africa as far back as the Miocene, they would subsequently experience a period of ecological isolation during the Pleistocene era due to topographic and climactic shifts. Now dubbed a “biodiversity hotspot” by contemporary scientists, the West Usambaras boast an array of towering trees like *ficus elastica*, as well as diverse vertebrates like the endemic West Usambara two-horn chameleon (*Fischeri multituberculatum*). The villages of Kizanda and Sagara are part of the Lushoto District in Tanzania’s Tanga Region. At 1900m above sea level, the Mazumbai Forest Reserve (MFR), bordering its namesake hamlet, is 350 hectares of privately protected “natural” forests. In the words of former forest manager Modest Mrecha, “nothing goes in or out.” The reserve is managed by Mr. Saidi Kiparu, under the auspices of Sokoine University of Agriculture (SUA) based in Morongoro. To the north of MFR lies the majority of Sagara’s village hamlets like Hondei and Karange (Map 2). The hillside farms and homes marking the sites of these hamlets are enmeshed with patches of the green foliage of the Sagara Forest, managed by a body of elected officials known as Sagara group. To the east of Mazumbai lies the Baga catchment forest reserve controlled by the central Tanzanian government. Finally, Kizanda lies to the south of Mazumbai, connected by a long road of russet soil. The road cuts through the heart of the forest and is frequented by tea trucks and *pikipikis* (motorbikes).

Early German explorers praised the Usambara montane terrain for boasting “thick, beautiful primeval forest” as travel writer E. Eick noted in 1896. Far from an untouched

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11 Modest Mrecha, personal communication with author, February 26, 2018
wilderness, though, the landscape of West Usambaras, in reality, is a mosaic of forest and farmland. The slopes of the Usambaras have been the sites of human agriculture since the second millennium. As environmental journalist Christopher Conte explained in *Highland Sanctuary: Environmental History in Tanzania's Usambara Mountains*, the region’s dominant ethnic group, the Washambaa,

devolved a pattern of land-use known as *mwitu*, or “forest tradition,” that “tied together forest, farm, garden, and pasture.”¹⁴ Arid soils and steep topography necessitated intimate knowledge of the landscape—and an ability to mold the earth to meet the needs of human survival. The manipulation of the land is also evidenced by the rich botanical vocabulary of the Kishambaa language today.¹⁵ Agricultural activities continue to remain the key livelihood strategy in Kizanda and Sagara, with intercropped foods like maize, beans, cassava, yams, and bananas dominating the cultivated landscape.

Monoculture tea plantations, imported by German and then British imperialists in the twentieth century, remain—especially around Mazumbai hamlet. Tea is the key “cash crop.”

¹⁴ Ibid., 17.
¹⁵ See Katarina Vainio-Mattila, “Wild vegetables used by the Sambaa in the Usambara Mountains, NE Tanzania.” *Annales Botanici Fennici* 37, no. 1 (2000): 59 and Conte, *Highland Sanctuary*, 19. Vainio-Mattila provides an impressive list of the vernacular names of wild vegetables, along with their latinized equivalents. In her study alone, she noted at least 6 varieties of *mchicha* (spinach) and a total of 73 species of wild vegetables across 26 different plant families.
Trucks from the processing plant known as Herkulu Estates arrive in the villages each week to collect bags of tea leaves from farmers lining the sides of the road. Most of the tea farmers living in Kizanda must trek an hour just to reach their farms, as land remains only in small patches for subsistence farming and gardening at the heart of the village itself.

The biological diversity of forested regions also has practical importance for local residents. In Tanzania, where “80% of people rely on plant medicine for healthcare,” the trees and shrubs of the forests also serve as homeopathic resources. The Washambaa of the West Usambaras have taken full advantage of this resources. Indeed, anthropologists Anne Fleuret observed over 78 medicinal plant species in use by 1980. In Kizanda and Sagara, local plant healers are particularly important as the nearest hospital is hours away, and thus costly both in time and money for transport.

Despite these intimate connections to and dependence on the botanical environment, current patterns of deforestation in the region indicate increasing local resource scarcity. Josiah Severre, a botanist well-acquainted with the region through years of NGO work with tree-planting and energy-efficient stoves, estimates the regional annual deforestation to be approximately “300 000 ha-400 000 ha.” Patrolling the boundaries of Mazumbai forest has fallen into the hands of a single individual named Eddy. The concept of forest regulation, however, is also linked to historical trends in separating indigenous farmers from swaths of trees by German economic foresters and scientific “experts.” Further complicating botanical regulations is the presence of the European-funded conservation organization operating in the area known as the Tanzanian Forest Conservation Group (TCFG).

Ethnobotanical Methodologies, Ethics, and Limitations

Such complex human-plant geographies warrant emphasizing diverse voices. Hitchings and Jones note the problematic trend within the realm of botanical knowledge and ethics; that “the heroes of the day are the deep-thinking philosophers,” rather than wider communal groups living with their local plants.19 The botanical world of the West Usambaras is restricted to neither a single strand of theory, nor a single mode of human-plant interactions. Livelihoods, life histories, and familial memory forge bonds between people in flora in different ways; the local healer interacts with plants in ways that may differ greatly from that of a farmer cultivating tea.

Rather than collecting empirical botanical data or merely creating an ethnobotanical catalogue of these communities, I asked people about their personal relations with plants. Resisting a framework of “unbiased” information extraction, I engaged in semi-structured interviews that often unfolded as conservations lasting for more than an hour.

I learned from the residents of Kizanda and Sagara through journeying. Msafiri, my translator, guided me through his home. His name means “traveler” in Kiswahili, so called because he was born en route to the hospital. A resident of Mazumbai, he is well-connected in both villages, moving fluidly between their borders. We journeyed first with twelve local healers from Kizanda and Sagara between April 6th and the 14th. Though only four were women, I spoke with healers within a range of ages—from women over sixty, to men in their late thirties. They invited us into their homes, thanks to Msafiri and other local community members informing me of the well-known healers of village hamlets.

From April 16th through the 22nd, we travelled with farmers. I spoke with cultivators of a variety of crops and met with men and women, young and old. All people who agreed to speak

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with me also signed a consent form that outlined the nature of this study, confirmed their understanding that all questions were voluntary and, at no point would they be asked to resign any rights through their participation. To best represent peoples’ voices, I also asked permission to record interviews—which I later transcribed and received further translation assistance if I felt the initial translation did not fully convey an individual’s story. (Recording only occurred with explicit written and verbal consent).  

Discussions occurred in the mornings (8:00am until 1:00pm), when rain was light and daily responsibilities had not yet drawn people from their homes. Several local healers also agreed to meet with me for a second morning, during which time they physically guided me through their knowledge of medicinal plants in “ethnobotanical walks” through forest paths. Farm and home-garden visits served as further forms of extended interviews. Finally, I ventured into the trees with Mazumbai’s retired forest guide, Francis Kagembe on March 14th, and with Eddy on March 23rd. Key respondent interviews included those with Leonard, the secretary of TFCG, and Julius Mheme, the former chairman of Sagara Group and the father of Msafiri.

Although the bulk of this study flows from these conservations, I also gathered and analyzed local documents with the eye of an historian. Not only does the local history told through documents, add context to people’s voices, but I believe that its incorporation into this study has helped draw attention to the silences—the stories previously undervalued or untold. Not only did I treat the Tanner house as an “archive” itself through the exploration of documents

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20 Some names have been changed to protect the anonymity of individuals who requested it. Each participant was also provided with a 2,000 tsh “Asante” to cover food and transportation costs.
21 This form of “in situ” botanical observation has been noted as the most effective way in which to understand the knowledge of local flora. See Evert Thomas, Ina Vandebroek, and Patrick Van Damme, “What Works in the Field? A Comparison of Different Interviewing Methods in Ethnobotany with Special Reference to the Use of Photographs,” *Economic Botany* 61, no. 4 (2007): 376-384.
22 A second follow-up interview was carried out with Francis on the Mazumbai grounds on April 22nd, during which time we discussed his family history and experience with the Tanner family.
left behind after their departure, but I also contacted Swiss and German researchers in order to uncover the words of Lucie Tanner—contained within the pages of her books, Orchideen-Geschichten; Erinnerungen an Mazumbai (Orchid Stories; Memories of Mazumbai). \(^{23}\)

Words, ideas, and stories were undoubtedly lost in translation. While Msafiri assiduously attempted to help me listen deeply to those interviewed, details inevitably slipped through the cracks because of our language barrier. My illiteracy in the local language of Kishambaa meant that questions were sometimes miscommunicated and, of course, the study period restricted my time with people to twenty days. On a deeper level, the limitation to this study also lies within its very conception—it is told by an American, in English. I recognize that converting narratives from Kishambaa to English risks reinforcing linguistic power dynamics critiqued by Kenyan scholar Ngũgĩ wa Thiong’o, who, in Decolonizing the Mind, wrote that language is a vehicle, that “language transmits the images of the world contained in the culture it carries.”\(^{24}\) Wherever possible, I have attempted to avoid the “literary gymnastics” of forcing Kishambaa into an English mold by maintaining the Kishambaa words originally spoken in the orature (“oral literature”) of the people I met.\(^{25}\)

This study does not, therefore, represent a holistic portrait of the experiences of people living in Kizanda and Sagara. It does, however, aim to highlight the wisdom and power of indigenous voices. It stresses the necessity of listening to such narratives—even across linguistic divides—when considering the biological information of an environment. The following chapters thus trace a theme of interconnectivity between the botanical environment and the

\(^{23}\) I extend my gratitude to the archivists at Winterthur Library for their time and assistance, along with Lukas Meier who generously passed on a digital copy of the physical book to me.


\(^{25}\) Ibid., 8.
myriad voices I had the immense privilege of hearing. Human-plant stories spiral out, simultaneously reflecting the narrative flair of an individual and its relationships to a communal “cultural systemization of knowledge” within the botanical worlds of Kizanda and Sagara.26

PART I: THE HEALERS

Chapter One: Plant Chemistries

Frank was born in Kizanda and has resided there for forty-one years. He is an mtalamu wa miti, a “teacher of the trees.” As a local healer, he specializes in one area of treatment—teeth. We meet him in his home, and he tells us that after falling gravely ill, he travelled to his babu (grandfather) who had moved to Zanzibar. His babu too was a healer, and instructed him, “lie here, under a tree, without eating or sleeping…. I will give you trees and plants and then you will go out and find them and pick them and then I will show you how to make medicine.” Later, Frank explains, “I got a test from babu to treat somebody. After that, I was perfect in treating” (April 10). His babu would eventually teach him to heal tooth pain with a tree called guunzi. Frank remembers they collected bark from an ancient, deep-rooted tree growing near an old house back in Zanzibar. Frank still makes the journey to Zanzibar twice per year, collects a stock of the guunzi tree, and returns to Kizanda where he mixes it with three medicinal plants endemic to the Usambaras: mshegheshi, mdongonyezi, and msambu. He prepares them by taking only the roots, “pounding them with a pistol and mortar and making a powder,” which he then transfers to a storage container known as a tunguli. Frank’s tunguli is a hollowed animal horn; some tunguli are woven from the dried leaves of banana trees, others carved from dried gourds. Frank’s tooth

dawa (medicine) reflects a form of skilled botanical recombination common to the practices of many healers of Kizanda and Sagara. Not only do these men and women recognize the medicinal properties of an individual plant, but they have also formulated precise mixtures of multiple plant species to create emergent medicinal compounds.

Following the slick reddened paths around households and gardens from Frank’s home toward Mazumbai, you will find Fatuma’s home. Fatuma is over sixty years of age, yet appears to have lost little energy over the years. Like Frank, she is a skilled plant chemist. For instance, she collects the pink bark of the muula tree and uses it alone in order to treat back pain and low physical energy. Muula, however, also doubles as an ingredient in a composite dawa recipe that treats coughing. To concoct the mixture, Fatuma boils the bark of muula with that of mshingresha and mdongonyezi (April 6). She leads me out to the garden surrounding her home, where she grows mshingresha and mdongonyezi among cassava, banana, and yams. She gathers the bark of muula—a towering endemic tree—along paths bordering forest patches.

The dawa crafted by both Frank and Fatuma illustrates not only how medicinal preparation fuses the organismal properties of the plants themselves, but also produces a sense of floral fluidity across spatial boundaries. Frank, for example, draws upon ecological knowledge of both Zanzibar and Kizanda, and blends two disparate local environments within his tunguli. Fatuma dissolves the partition of “wild” and “domestic” medicinal plant spaces by combining species she gathered from the forest with those sprouting in her garden. Plant fibers are even mixed with honey produced from the bodies of local bees—creating an ecological web within the dawa that extends even beyond plant matter.

Healers can also employ a single plant for multiple uses by manipulating different parts of the organism. They may change the method of preparation, the part of the plant that is used, or
the dosage delivered to their patient. Mr. Saidi Mtari’s seventy-one years spent among the plants of Sagara have fostered an extraordinary ability to mold trees and herbs to heal the human body. For Saidi, an avocado or *parachichi* tree is not merely a reservoir of fruits. After collecting the young leaves of the tree, he boils them and supplies them to adults and children with asthma. He also derives a powder from the nuts of the fruits that he incorporates into a tea that treats stomach pains (April 14). Saidi’s knowledge of the *parachichi* tree extends to its life history—he tells me that it is only the young, not old, leaves that will be effective for soothing the chest. Another healer explains that the leaves of *mzumbasha* can double as a treatment for a childhood disease known as *mchango* and adult stomach pains. Children only receive a half of a spoonful of uncooked juice, while adults must drink a half of a cup of boiled juices mixed with water. 27 Even the morphological characteristics of plants are utilized for practical human use, illustrated by the use of *mshaka-suwa* leaves as a cleansing toothbrush. 28

The botanical expertise that enables the chemistry of medicinal plants also produces a social chemistry among members of the community. Multiple healers acknowledged that they decided to start practicing medicine precisely because it would allow them to heal the bodies of their neighbors and families. An elder healer and farmer residing in Sagara was clear in this. “I decided to become a doctor because children will usually have to go far away for [hospital] treatment and I did not want them to have to go so far” (April 11).

This experience seemed far from unique. A close neighbor and friend of Peneli in Sagara’s Hondei hamlet, Lidia is a mother and healer for the children of her community. She learned of the trees from her own mother and grandmother. They walked together through the forest when Lidia was just a child, taking her to the same tree that their elders had used before

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27 As described by me by Ramazani during ethnobotanical walk on April 19, 2018.
28 Ibid.
them—the *mzugwa* tree. It also treats *mchango*. Though Lidia explained that many people now seek additional services from the nearest hospital, she continued that “before going to the hospital I use the *mzugwa* tree…. I use local medicine first because I know the [indicators] of *mchango*…so I know I can treat it.” (April 12). Lidia tells me that the symptoms of *mchango* include “a lot of crying, a lot of falling down,” and even “shaking.” The local ecological knowledge of Lidia thus extends beyond the morphological traits of plants like the *mzugwa* tree, and has also enabled her to recognize the organismal properties of the human bodies around her. It is a knowledge that is botanically and biologically precise while reaping practical benefits for the local community.

Chapter Two: A Green Reunion

“Finding these [medicinal forest] plants can be difficult, because any time my believing will call to me…even at night, but I don’t have fear. When I go into the forest at night, I have no problems with animals or patrols. My father and mother passed away, but when I go collecting, the spirit of my mother walks in front and my father walks behind.” Fatuma’s tale of her process of plant-gathering reflects the broader “semantic network” of plants in the Usambaras that creates a web of spiritual, ancestral, and ecological relationships grounded within local healers (April 12).29 Fatuma identifies with what is locally referred to as an *uganga wa jini* or, as Msafiri

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translated, a “witchdoctor.” According to local healer—and now staff member of Mazumbai—Beatrice, waganga wa jini (pl.) usually employ both a tunguli and some sort of “whisk” to “chase away bad spirits” affecting the human body or mind. The waganga, furthermore, are “guided by spirits of the tribe” when finding their plants. For Fatuma, the physical action of gathering plants takes her to a forest that becomes a site for reunion with past generations—the return of familial spirits to the present life. Botanical knowledge of the local plants is thus imbued with a sense of personal emotion. It is a narrative science that does not claim to be unbiased but, in fact, functions in the exact opposite sense, working with human emotion rather than against it.

Fatuma leads me through this emotion, as we walk to a place called shemoshi, a cave beneath a waterfall on the outskirts of Kizanda. Her rainbow umbrella points the way. We descend the roots of a massive ficus tree to reach the entrance to the cave, a space where, according to Fatuma, she slept for twelve days and nights to help “discover” her talent for medicinal plants. She looks around and begins identifying the green lattice around us; mshai, muuka, msoso…. This was the place where her grandparents came for spiritual worship (Plate 1).

For Ramazani, a Sagara uganga and healer in his late thirties, gathering medicinal plants as a child also strengthened intergenerational relationships with his living babu. He remembers his babu would guide him through the forest and teach him to identify and prepare plants such as mjavikali, mshegeshi, mkugumi, and ngoko. Botanical learning with a respected elder produced an emotional connection to the land—the forest itself. I glimpsed this relationship one morning, following Ramazani as he flowed effortlessly through the narrow gaps in a thorny quagmire of shrubs and thorny Acacia trees. “Watch me,” he instructs, “move as I move, crouch as I crouch.”

30 See also Megan Mason’s “The Relationship of Traditional Healers to their Medicinal Plants Through Treatment of Mental Illness in Sagara Village, Tanzania.” (Arusha: School for International Training, 2017) for more details about uganga and the ecology of disease.
Msafiri and I nod, mirroring his movements. He starts to tell a story from his childhood. “I loved the forest…we could use the environment to go collecting medicine…but I also loved the many different species of trees. I would look up and see places with no trees called kibua [canopy gaps], and majabal sites [large rocks] with animals living in them,” he recalled, motioning to demonstrate the different layers of the tree canopy. Ramazani plans to continue the generational connections, passing on the knowledge of these medicinal plants to his own children. “This [traditional healing] is education. I received education from babu…it is education. Are we together?” (April 13). We were.

Seleman Nguzo, an mtalamu wa miti in Sagara, similarly explained that both his parents and grandfather “would take different plants and would say ‘this one here, this tree is used to treat this illness and this one here, is used to treat this one and so on’…” (April 11). For many healers, it seems that plants created a legacy, a continuation of past traditions to ensure the future well-being of the community. Local doctor Mslimu, for instance, is teaching his children medicinal plants so when he “passes away, [his] children will know how to heal the village” (March 13). The forest and its elemental plant species are thus sites of deep time. Time that stretches backward and forward all at once. Time that conjures memories of the past and maps for the future.

For healers doubling as waganga wa jini, plants not only contribute to the fabric of generational, familial ties, but also have the power to remedy communal bonds between neighbors. Ramazani explained that those affected by uchawi or “witchcraft” [sic] “do not go the the hospital,” but instead seek the aid of a local unanga (April 19). Uchawi, while manifesting in various corporeal ailments (even mental illness), also can be traced to a mchawi, a “wizard” who employs trees to harm, even kill. “Mchawi uses trees and uganga uses trees,” Ramazani tells me.
Plants are the vehicles of interpersonal conflict and resolution—their fibers sites for expressing feelings of personal offense. The unanga thus serves as a botanical mediator. The nooksi or “bad luck” brought on through the work of the mchawi is eliminated through the burning of medicinal plants. Ramzani illuminated that by combining and burning three plants; gimbu, mjavikali, and mpalagasha, the nooksi dies and “It does not have work again” (Plate 2). I watched him grind the now charcoaled bodies of the three plants into a black powder, which he then poured through a sieve and into his tunguli. Why do you burn the leaves? “Without burning, there is no treatment.” While Ramazani could not provide an explanation for the preparation of his uchawi medicine, the opposing “plant energies” associated with the doctors and wizards, correlate to a kind of local toxicology. Mchawi, Beatrice informs me, are recognized for working with a tree known as hoko, the fruits of which are highly poisonous to humans.31

Manguku, a respected bibi and healer who lives not far from Fatuma in Kizanda, brought the semantic network of medicinal plants full circle through her own sense of botanical spirituality. “The plants are from God. Jini (spirits) are from God. People are from God. All things are from the lord.”

31 For details, see https://www.pfaf.org/USER/Plant.aspx?LatinName=Phytolacca+dodecandra.
Chapter Three: “Learning as you Journey”-Walking the Woods for Adaptive Ecological Knowledge

“Zamani [long ago], my brother did not know the different kinds of mushrooms. Unfortunately, he saw a poisonous one and fetched it from the forest one day. He brought it home and us two, we cooked it in the soup for the whole family. So the whole family got sick, vomiting. Fortunately, we had medicine to fix it.” Mr. Saidi recounts his brother’s botanical mishap as we walk through part of the Sagara Forest heading toward Mazumbai. He remembers the story as we pass a cluster of white, edible mushroom sprouting from a decaying log evoking the memory. Saidi now easily discerns lethal fungi from edible ones. His unlucky encounter with poisonous mushrooms demonstrates the two-fold nature of local ecological knowledge as substance and process. Learning was a physical experience for Saidi—seared into his memory (and the lining of his stomach).

Saidi’s botanical knowledge incorporates what Turner highlights as a major component of local ecological knowledge systems: “practical knowledge and skills,” including “how to identify species and knowledge of their lifecycles, edibility or toxicity of species.”

Identification of plants does not merely catalogue empirical information, but reflects an applied and embodied form of human-ecology. Survival necessitates knowing. For instance, that hoko will kill you—and “quickly at that,” Saidi adds with a laugh. The forest is not just a romanticized space, but is acknowledged as a force to be reckoned with.

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Recognizing poisonous plants is just one example of how local healers are not merely accessing a body of botanical knowledge—they are, in fact, creating it along with their dawa. Learning occurs through the act of collection and of travelling within botanical spaces. Every local healer who spoke with me collected their medicinal plants personally. Occurring both around the home or near forest paths, collection illustrates what ecologists Iain Davidson-Hunt and Fikret Berkes term “learning as you journey” which links “spatial perception, temporal perception,” and, finally, “memory” through a “sense of traveling and re-traveling in an area.”

The botanical memory among these Usambara healers is not confined to an individual lifetime or experience (like Saidi’s mushroom lesson), but builds upon a shared, social memory. All of the healers with whom I met grew up in Kizanda or Sagara, and their memory of plants is reinforced by the memory of past generations. For instance, Kizanda healer Tukwa divulged the history of the plants growing around his home. “From the beginning of time, elders were growing them and then transferred them to me. My grandfather and father taught me how to be a doctor and use these plants” (April 7). It is also clear that plants have become sites of shared knowledge within the institution of local healing in Kizanda and Sagara. Among the most common of species I heard during discussions included mdongonyezi (coughing, malaria, energy) mshegheshe (chest, teeth), muula (energy, back pain, coughing), mzugwa (malaria, mchango), mzumbasha (malaria, mchango, coughing, asthma, flu), muuka (energy, mchango), mtumbua (stomach), and mkuguni (energy).

Re-travelling an area also ingrains adaptive capacity within botanical and ecological knowledge systems. And it facilitates individual creativity. Multiple healers cited “discovery” as a critical component to plant-gathering. Fatuma’s continual plant “discoveries” led her to new

places, where “Maybe one year I find one or two new plants and the next year I find three more…. Every year adding more” (April 6). Seleman, Tukwa, and Saidi also noted that every year, they have found new, wild species of medicinal plants that they incorporate into dawa. Saidi has also found innovative uses for well-known domesticated plant species—he now boils the roots of maize and uses them to treat children’s stomach pains.

For multiple healers, learning through discovery is again, rooted in spirituality. Manguku opined that “To discover plants is from the lord,” while Mslimu said that although his elders laid the foundation for his botanical education, finding plants also occurs through “emotion.” “Even at night,” he continued, “an emotional sense tells me to go to the forest, to go to the trees” (March 13). Botanical knowledge therefore, is not merely a *multisensory* phenomenon in which morphology of plants is visualized, touched, or even consumed. Learning is also a *multidisciplinary* one, as “knowledge is also gained from vision, ceremony, prayer, institutions, dreams, and personal experience.”

Along the way, learning about plants also develops knowledge about the other organismal components of the landscape—to which these plants also provide life. For Ramazani, *mvuumo* trees are floral beings with valuable ecological functionality. “Mvumo. They are big trees, the trees of Africa. They are important for animals, people, and insects…like hondo-hondo (hornbill) birds and monkeys eat the fruits…. It also produces a milky sap that can be used for medicine.” With a “stake in local resources” of medicinal plants and trees, the healers also demonstrated the desire to conserve the diversity of the ecosystem for future generations of people and other animals. When asked if they intended to conserve botanical resources for

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34 McGregor, “Coming Full Circle,” 388.
future generations of healers, for example, Tukwa responded that he tried to “take only the pieces of bark I need, leaving the rest of the plant. Even with shrubs, I only takes part of the bush and leaves the rest” (April 7). He claimed that the plants he uses do not die at his hand. Similarly, Manguku claimed, “When I go picking, like mkumba, mkumba has seeds so there is a season of seed [when seeds fall], that is when I cut bigger pieces, and then smaller ones will grow in for next generations to use.” While most healers I spoke with did not have a fully developed conservation philosophy—or fully-articulated methods of how to preserve specific species—most stressed a personal desire to maintain sustainable human-plant relationships through their healing practices. Only taking a small piece of bark to heal a child now would allow for generations of children in the future to benefit from the life of a tree.

PART II: THE CULTIVATORS

Chapter Four: Human-Plant Reciprocity and Farm Architecture

“Why do you farm?” “It give me life.” Apolo, a father of thirty-five years, adds nothing more to the question as we talk on the porch of his home in Sagara. He captured the corporeal connection between the agriculturalists of the Usambaras and their crops succinctly, beautifully. Plant-as-crops in Kizanda and Sagara are characterized by a “deep-rooted structural dualism” noted in local, small-holder farming systems across the globe.36 The fruits of harvest provide sustenance for families and capital exchangeable for daily goods and services. These plants thus

36 This system of LEK was noted in Jamaican yam farming. See Clifford Beckford and David Barker, “The Role and Value of Local Knowledge in Jamaican agriculture: adaptation and change in small-scale farming,” The Geographical Journal 173, no. 2 (2007): 121.
transcend the status of “objects” of consumption and instead become a part and process of life itself.

Zuena wished to be a nurse; she graduated secondary education and began medical training. The market for jobs dried up, like the ground during drought. Now she farms in Kizanda, and her crops keep her body and the bodies of her children alive. A means of daily survival, plants build the physical beings of farmers and reflect geographer David Matless’s conclusion that “diet is the key practice by which we enfold that which is beyond the body’s skin-walls, that all diet traces back to earth…that bodies are made of earth whose soil is made of bodies and their wastes.”

A week later, I meet Babu Duka in the Karange hamlet of Sagara. The clock is about to read nine in the morning, and already Duka has traversed his farms. He pushes his body up the hillside with a carved, wooden staff to meet Msafiri and me. We climbed through banana and bean farms clinging to the sides of the mountain for over an hour to reach his home. We sit on chairs perched on a vista nested comfortably among mcabella and parachichi trees, overlooking tops of banana plant leaves and a landscape stretching all the way to Mazumbai. “It is impossible to grow only one species on your farm,” chuckling at the absurdity of my question as to why he grew so many different crops. “You should always grow different kinds of crops to your farm. You know, you can’t eat just one type of food…you have to feed your children with different kinds…maybe today you eat ugali and tomorrow different fruits…each food has its different flavor” (April 22). He remembers, as a child, waking up early in the mornings with his father and “planning ahead for the crops that would give [him] life.” Duka’s income is fueled by food;

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“maharange [beans] to local market….it is better to sell in the local market because I can help my neighbor get crops they don’t have and get money so I can buy from them.”

Dependency on plants for the quotidian biological needs of the human body has resulted in a lifestyle of human-plant reciprocity among the farmers of Kizanda and Sagara. Cultivation is adapted to the Usambara landscape, accounting for a range of local soil, topographic, and climate conditions. Nourished plants give life to nourished humans. Thus, farms become sites of earthen “architecture” in which farmers make decisions about spatial design principles that ensure harvests and survival.

Hadija, for instance, has shaped the slopes of Kwekulo hamlet in Kizanda to benefit both *maize* (corn) and *mayugwa* (yams). We walk with the widowed bibi to her farm, in which she has strategically positioned the *mayugwa* around the edges of a freshwater mountain stream so it flows over the water-dependent roots of the vegetables. She also constructed ditches around the nearby *maize* plants to re-route excess water during rainy seasons to prevent soil erosion.

As Steven Feierman observed in *The Shamba Kingdom*, this local botanical knowledge is precise enough to draw upon the ways in which each individual crop “relates to the others as merely one of a total community of crops”\(^\text{38}\) Hadija’s *mayugwa*, for instance, lie below the canopy of banana trees, which drop their leaves in June and July, providing additional fertilizer for the plants below. Zuena, too, explained: “You can cut the old banana leaves and spread the leaves around the whole farm” (April 16). Furthermore, *boko* or “wild tobacco” is inedible but oft planted around the borders of farms for the sole purpose of naturally enhancing soil nutrition. Fertilizers are thus not merely tools, but the results of synergistic botanical interactions facilitated by human hands. Most farmers preferred plant fertilization to artificial ones found in

the local market, citing that chemicals “lose power” quickly, acidify the soil, and poison the lungs of the farmers breathing in harmful fumes (Hadija, April 18).

Farmers like Apolo and Amina also maintain ecological connectivity between farm and forest. The edges of forests in Sagara, where Apolo resides, are sites of cardamom and wild coffee cultivation. He explained that both are naturally-occurring plants, requiring the slightest touch of human hands. Both follow similar growing cycles and require shade. Farmers have recognized their compatibility and position new plots beneath the thicker canopy of the forest line. Apolo’s knowledge of how these two plants function within a holistic ecosystem also allows him to avoid buying seeds on the market. “Animals like the hyrax,” he expounds, “can take the seeds of coffee and cardamom as food and leave waste in the forest or storing food and soon it grows itself in the forest, so people can also collect their seeds.” (April 20). Amina, a close neighbor of Zuena, experienced the benefits of farm-forest fluidity as endemic “big tree” species like mvumo, mshai, and mkonde produce rich leaf litter deposits that nourish the soils of her nearby farmland.

Emerging from these relationships is a narrowing organismal divide. Between different crops. Between farmer and plant. Between forest and farm. This form of embodied botany, however, is characterized by risk and difficult labor for the cultivators living these processes. Hadija, looking at the remains of maize crops, tells me “I grow a lot of crops so as having success because when you plant only one species it can die and then you have no food…. I separate them because some of them have changalawe [unfertile soil]…. If you have one farm erosion threatens all the crops at once…. I have already had some maize erode due to the rainfall.” Learned farming concepts like “spreading risk” emanates from the visceral of lost harvests and spoiled crops.
“I don’t like farming very much,” says Joseph Shabe who, although famed in Sagara for his plentiful harvests, conveyed the reality of daily agriculture. “Its very hard work.”

Chapter Five: The Passing of the Ghunda and the Cultivation of Time

“The world of yesterday is not the world of today,” Amina says as she looks past me. The mist becomes rain. Her child rests on her back; she is middle-aged and has been farming in Kizanda all her life. “Any human being can see that the seasons are changing,” she continues, noting that in recent years, increasingly sporadic rain patterns lead to both drought and too much rain, ruining harvests (April 16). For Usambara farmers like Amina, producing successful harvests demands knowledge of seasonal rhythms. Even as a young girl, she remembers, “My mother taught me how to plant different crops…. You have to plant like this: hatua kwa hatua [stage by stage; period by period].” Prepare maize in June and July and harvest in December; begin a new cycle of maize planting, harvest in January. And, while Amina syncs the maize-planting routine with that of maharange (beans) because they have compatible nutrient requirements, other crops like nyanya (tomatoes), kabichi (cabbage), and mboga (leafy vegetables) have their own seasonal cycles. These latter vegetables have short seasons and need less rainfall. Amina’s cultivation process thus reflects a broader trend present in the human-plant geography of Kizanda and Sagara. Plants mark time. They produce cyclic patterning. They are the substance of the seasons. They are the markers of longer stretches of generational, linear time. Plants are time.

Local ecological knowledge cannot be theoretically restricted to plants collection and identification of those species deemed “wild.” Though German, British, and even the Tanner family demonized farmers for disregarding and clearing a landscape, cultivation is a form of botanical expertise and interaction. The local knowledge of farming phases among Kizanda and
Sagara residents demonstrate how “traditional food production systems are complex, reflecting generations of careful observations of the agro-ecological and socio-cultural environment…to meet the needs of local peoples.”

A year contains a cycle of seasons, three seasons referred to as mwaka (Jan-May), muati (Jun-Aug), and vuli (Sept-Dec). Farmers’ description of the seasonal changes was ubiquitous; mwaka begins the year with heavy rainfall but by May, the rainfall decreases and the wind picks up, transitioning to muati. Muati is marked by little rain and colder temperatures until vuli arrives—the period for hot weather, the return of rain and thunder. Farmers, adapting to the local climate conditions, have evolved crop cycles within these yearly seasonal changes.

Maize and maharange dominate as they are dietary staples and require continual upkeep. Both are planted three times, synched with the three seasons (Plate 3).

Plate 3. Seasonal cycles observed among Kizanda and Sagara farmers. Produced by the author.

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39 Beckford and Barker, “The Role and Value of Local Knowledge in Jamaican agriculture: adaptation and change in small-scale farming,” 119.
While maharange only take three months to mature rather than the six required for maize, their growing requirements are the same and, thus, they are often intercropped—the slight asynchrony in harvest time ensures year-round food availability. Meanwhile, vegetables like kabichi and nyanya are sown and reaped in continual three-month cycles throughout the year as they can be grown at any time. Thus, these fields are separated spatially from those of maize and maharange. Finally, crops referred to as kudumu or “permanent” include those like parachichi and ndizi trees or cardamom plants that grow in annual cycles and do not require the sowing of new seeds by human hands. Thus, the seasons and growing cycles of plants are layered (Plate 5). The science of the cycles extends to micro-temporal relationships as described by Sagara farmer Risiki: “First I plant maize, then wait until it rises a little and then you can see where to plant the beans to get the spatial arrangement” (April 18).

Farmers have also developed extensive knowledge of how these cycles and “crop time” shift due to topography. For instance, Zuena noted, “I normally harvest maize in September up to October, based it being planted in March…. In other places, they can harvest earlier because the weather conditions are different…in the lowland, normally takes short time [because] conditions are warmer.” These lowlands are locally referred to as nyika. As Zuena explained, maize harvests from vuli occur in February rather than March for Usambara nyika farmers because the plant “ripens very rapidly in the plains, but takes weeks longer to mature in the cool mountains.”

Cycles are enfolded into longer stretches of time. Time that extends back to ancestral roots; to the first cultivators of the Usambaras. I ask Babu Duka about the history of the banana tree. “Zamani,” he pauses for a long time, “A long time ago, there were no bananas here or in the

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40 Feierman, The Shambaa Kingdom, 25.
Usambara mountains. They were far from away and our elders brought them here. That is their history.” Why were they so important? Why are they so important now? “Chakula. Food.”

Bananas or ghunda are a key example of how plants-as-crops are the substance for the passing of local generational knowledge. Christopher Conte estimates that bananas likely arrived in the Usambaras well over a thousand years ago, and their affinity for the tropical climate allowed them to dominate the cultivated landscape.\(^1\) By the nineteenth century, African historian Frans Huijzendveld noted, irrigated banana gardens known as ghunda not only formed the “backbone of the local political economy” but also became sites of burial grounds and “ancestor worship,” and, thus, “played a prominent role in the maintenance of social order.”\(^2\) For the contemporary farmers with whom I spoke, the political and religious importance seemingly disappeared. Despite this social shift, for the people of Kizanda and Sagara, the banana tree arguably still constitutes what ecologist Ann Garibaldi and Turner term a “cultural keystone species,” defined as an organism that “shape[s] in a major way the cultural identity of a people, as reflected in the fundamental roles these species have in diet, materials, medicine, and/or spiritual practices.”\(^3\) The trees not only provide direct nutrition to the people through the flesh of the banana fruits, but cultivators also rely upon the plant’s morphological characteristics to enhance the architecture of their farms. The leaves provide both fertilizer and shade for other plant species. Their bark can be converted to irrigation pipes for creating man-made stream tributaries. Furthermore, the plant’s ancestral ties remain, carried through the “horticultural skill”

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\(^1\) Conte, *Highland Sanctuary*, 23.
that has evolved to produce approximately “sixty varieties of bananas…exclusive to the mountains.”

This is reflected in the mountainsides themselves, a literal bank for a multitude of banana species and the Shambaa system of botanical knowledge that is rooted in innovative, dynamic horticultural practices. The ghundas demonstrate cumulative botanical knowledge—as new bananas species are intercropped with those established by elders. Hadija’s farm, for instance, contains a long list of banana species, including “toke, Zanzibar, mshale, ntindi, kisukari, mshoziwambaasi, and suu.” Each has a particular use for Hadija, for instance, “Zanzibar, toke, mchale, and kisukari are for food” while others are for selling at the market (April 18). While kisukari and suu varieties were “passed down from elders,” the Zanzibar species is a recent arrival. Like the discovery of new medicinal plants among healers, the cultivation of new banana species demonstrates how agricultural memory is constantly re-worked and adaptable. The ghunda exist across a continuum. Time, while punctured by cycles, contains creases that fold the botanical knowledge of past farmers into that of the present cultivators. This is deep time; time that is both round and stretched out over a multitude of lifetimes.

Chapter Six: Mchai - Regulating Tea Leaves, Labor, and Lives

“During that time, elders were the ones working for the bwanamkubwa and children were the ones that stayed on the farms at home. While the children worked for the family farm…they were still young, they could not do extensive work to the family farm so they might only come

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44 Conte, Highland Sanctuary, 24.
45 Another banana farmer from Sagara also noted that the bark of the suu variety of banana is stripped, dried in the sun, ground into a fine powder, and serves as flour for ugali (Mimaeli, April 21). Msafiri later informed me that this ugali is lesser quality than that derived from maize, but helps sustain families lacking the financial resources for maize flour.
back with bananas. The work on the home farm was not done right.” Risiki recalls the experience of his babu, who lived through the agricultural changes wrought by German and British cash crop plantations (April 18). We sit listening to Risiki’s history; the wind is the only sound echoing through his farmland that lies at the highest point of Kizanda’s Kwekulo hamlet. For Risiki’s family, it was the bwanamkubwa, the European overseer of colonial agricultural activities, that dictated farming practices. Now a thirty-seven-year-old father, Risiki continued remembering: “Farmers were told ‘today, you cannot work on your own farm, today you have to go work for mzungu (European).’” Maria, a young woman born in Mazumbai hamlet, similarly recounted that “During colonial periods, the villagers and my family personally were affected because we were not getting human rights and were given hard work from colonialists and also we were not allowed to dig to the farm…picking tea, carrying firewood, farming…we were paid very low prices” (April 17).

Such vignettes demonstrate how political and economic hierarchies became inscribed within the plants and botany of the Usambaras. Mchai (tea) plantations shifted the dynamics of farming for many cultivators of Sagara and Kizanda. European tea managers not only claimed large swaths of cultivatable land for themselves, but altered the functional and social properties of agricultural practice and knowledge. For Risiki’s family, cash crops disrupted subsistence farming through coerced labor and changed the dynamic of generational knowledge transfer—his family farm decayed without elders’ guidance. Colonial agents, furthermore, prioritized botanical knowledge and practices that would maximize tea profits rather than ensure long-term sustainability of smallholder farms. While Risiki’s story cannot speak for the experiences of all residents, it does illustrate how the regulation of cultivated plants arguably leads to the regulation of bodies doing the labor. The historical echoes of these plantations are manifest in
contemporary livelihoods, with tea farms still dominating the botanical landscape and economic means in both villages today. These echoes are traceable back to the late nineteenth century.

Following explorers, missionaries, and geographers like Oscar Baumann—who travelled the Eastern Arc mountains extensively in the early 1890s—German expansionist and violent colonial administrator Carl Peters founded the Germany East Africa Plantation Company or Deutch – ostafrikanische Plantagengesellschaft (DOAG) and received official government sanction to exploit the resources of Tanganyika in 1884. By 1900, DOAG moved into the West Usambaras (Wilhelmstal) which, as Huijzendveld has argued, became a “laboratory for German colonial development…[because] the Germans believed that this highland country would become a true oasis of European settlement and plantation farming.” Ignoring a long history of intimate cultural botany among the Shambaa farmers in these mountains, German environmental imperialists advanced a policy of “economic botany, a branch of science devoted to the advancement of industrial civilization through the development of useful plants.” Foresters in particular, sought commercialized harvests of endemic tree species like mkulo (Ocotea usambarensis) through “massive manipulation…under the auspices of the state” which entailed the seizure of lands “deemed suitable” for these purposes.

By 1896, Germany established its first coffee plantation in the Western Usambaras. The Mazumbai estate emerged as part of the private-owned German West Plant Company based in Tanga. The introduced coffee species, however, quickly succumbed to pests and fungal blight. These botanical “experts” seemed to be lacking in an understanding of the local botanical and ecological conditions. After World War I, Germany surrendered its holdings in the Usambaras.

46 Conte, Highland Sanctuary, 44.
48 Conte, Highland Sanctuary, 57.
49 Conte, “The Forest Becomes a Desert,” 299.
The West Plant Company became known as Amboni Estates—controlled by joint British and Swiss investors. The first on-site manager was a man named Hugo Tanner, who was also the Swiss Consul to Tanganyika. Mazumbai’s dismal failure as a coffee plantation prompted investors to sell 960 hectares of the state to Hugo in 1933. In that same year, the English journal *The Crown Colonist* released a report by Harold Mann. Mann “was requested by the Secretary for the colonies to investigate the suitability of certain areas in Tanganika for the cultivation of tea,” and recommended “three possible systems of land alienation for the purposes of tea growing.” The third among these systems was “small peasant plantings of tea…[with] the peasants selling the tea to central factory.”

When Hugo bequeathed Mazumbai’s estate to his son John in 1951, tea had become the dominant cash crop. John formed Sagara Limited, a tea “cooperative” in 1972. Yet while advancing the rhetoric of “share-holders,” Tanner owned all of the land. Local farmers cultivated the tea which was then exported to a central factory beyond economic control of the villages. From the histories shared by contemporary farmers, it seems that tea plantations also changed the ways in which people built their relationships to the plants they farmed. Rather than drawing from generational knowledge of the landscape created and fine-tuned by elders, tea-farming became codified by the *bwanashamba* who “as supervisor of the crops, had the specific task of teaching people how to plant tea and to control the accuracy of the harvest.” Peniel remembers

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52 Ibid.
that the *bwanashamba* “assisted the colonial agent, sent him the timetables…they [workers] would sign in for labor and then receive payment.” Moreover, the tea plants bound laborers to privatized processing plants like the Indian-sourced Herkulu Tea Estates—which now arrives in Kizanda Sagara to pick up tea leaves every week. ⁵⁴

I met Abdalah, a Kizanda tea-farmer, on one of these collection days. As we spoke, men from the Herkulu truck weighed his sacks of tea and hauled them away. He explained that it was the *bwanashamba* who “taught me to plant lines of chai three feet apart with a tape measure. It was the *bwanashamba* who taught about tea…. I forgot who he was” (April 17). He then expressed his discontent with the prices. “I get 247 tsh per 1 kilo…it is not good because it is not enough to handle services.” History and botany, however, are messy. Feelings about the colonial legacy of tea farming are not ubiquitous. Rojas, a tea farmer whose parents and grandparents grew up in Mazumbai hamlet, views the plant as a reliable source of monthly income. “It brings money quickly,” he shares, as he feels there always will be a market for tea. “All over the world, every human being wakes up in the morning to drink tea, so there is even a global market” (April 22).

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⁵⁴ Herkulu is owned by the Mumbai-based Bombay Burmah Trading Corporation.
INTERLUDE: PLANT PATOIS, PLANT PATHWAYS

The crumbling remains of a fig tree. The center has been hollowed out by fungus; the buttresses of the tree appear like the last remains of a decaying skeleton, struggling to support the dried canopy. Smoke billows from behind it. Behind the tree, a mat of sugarcane carcasses has created an indented platform, pressing into the earth. In the middle is a large wooden crank in the shape of a “T.” Surrounding the sugar skeletons, are rows of live sugarcane plants. These places are called mchao, stretches of land covered only by sugarcane crops. Three men, one old, one middle-aged, one young are feeding sugarcane stems into the T-crank, which serves as a sort of mill, squeezing out the juices of the plant. They explain that they will mix the juice of the plant with yeast to create beer. A local drink.

The Kishambaa language is infused with botany, imbuing floral organisms with a multi-functionality. The mchao is both the plant and the place. Transcending Cartesian spaces, this system of botanical mapping simultaneously describes the practical uses of plants while also constructing a navigable landscape itself. Spatial multi-functionality is also evident in the walkways, the dividers of farms, the paths connecting neighbor to neighbor. Msafiri has memorized the botanical architecture of Kizanda and Sagara. I ask him how he knows the extensive network of shortcuts through farm and forest. The trees, he tells me. In the dark of the night, he looks for the fig trees that mark the entrance of the trail that leads him home. The large ficus trees are the homes to a nocturnal bird known as zevu that feeds on its fruits only in the cover of nightfall. He listens as he walks, for the soft munching of the bird, and knows he has found his tree.
PART III: THE GUIDES

Chapter Seven: Mgaa Sabuni

Mr. Saidi leads Msafiri and me through the Sagara forest. He is not only a local healer, but also a retired forest guide for students. He says these trails were carved out by the German plantation owners years ago—a path to coffee farms. He motions toward medicinal plants as we walk. Mr. Saidi takes a right, off the paved path, and we follow a lightly-travelled trail. We walk deeper into the trees. Soon, we are no longer on a trail, guided only by Mr. Saidi’s machete that brushes aside vines. He has helped students navigate these woods for years, conducting studies on colobus monkeys, chameleons, and innumerable species of trees. About a half an hour passes, and then, through the now pouring rain, we are on a trail again—just a few hundred meters from the Mazumbai estate. I ask Mr. Saidi how he knew to find his way again, how he knew these micro-trails through the forest, how he knows all these plants and their uses. “My Uncle,” he says, “Mgaa Sabuni.”

“Mgaa has been our ranger for many years,” Lucie Tanner, the wife of John Tanner, wrote in Orchideen-Geschichten; Erinnerungen an Mazumbai (Orchid Stories; Memories of Mazumbai). “If I wanted to look further than in my usual ways in the forest, I always went with Mgaa together. Then he led me into unknown areas.... He was able to read every animal trail....
If the path was overgrown or none at all, Mgaa cut a narrow path for us with his machete.”  

(Plate 4). Sabuni, Mr. Saidi’s uncle, was the forest guide for Lucie Tanner and her guests. “If we had private visitors, let alone when the scientists were there, Mgaa went with them through the forest.” As she amassed a collection of various orchid species found in the West Usambara forests, it was Mgaa that led the way—it was only though Mgaa and his intimate knowledge of the forest that she found “new” species. He patrolled the Mazumbai forest reserve and “reported” illegal grazing, tree-falling, and fires directly to the Tanners.

After exiting the forest, Mr. Saidi and I talk on the steps of the garden of Lucie’s former home. “My uncle here was working in the forest, and sometimes working as a karani [office secretary], and also working the farmlands of Mazumbai and collecting the reports of the workers and bringing them to the office.” Saidi explained that Mgaa Sabuni also helped establish the weather station that is stills collects daily rainfall and temperature conditions today. All of the knowledge gleaned through guiding, Sabuni bequeathed to Mr. Saidi—through walks in the woods.

Mgaa Sabuni, it seemed, paid a price for his botanical expertise. “Mgaa was also not popular with those who would have liked to do something forbidden in our forest. He had to live with that, and he sensed it.... It did not even have to be weapons or poison. But curses or demons were just as bad. He then complained to me about the indefinite discomfort on the stomach or in the abdomen, which often struck people and had a special name: Uma ya moyo, which could be translated with heart or soul pain.” Lucie, writing in 1991, closed her excerpt of Mgaa Sabuni with, “What happened...after our departure, I do not know. But for a long time afterward we

55 Lucie Tanner, *Orchideen-Geschichten; Erinnerungen an Mazumbai*, (SW: Winterthur, 1995), 91. Translation is a rough rendition by the author using online software and does not claim to be exact in phrasing.

56 Ibid., 92.
received greetings from Mgaa whenever well-known scientists reported on a visit to Mazumbai. Whether he died in the meantime, I do not know.\(^{57}\)

So what happened to your uncle after the Tanners left? I asked Mr. Saidi. “After Tanner left, my uncle remained in the forest,” Saidi answered. Mgaa Sabuni eventually retired from guiding. While “for me,” says Saidi, “I continue with this work, being a forest guide until other workers came.” Mgaa Sabuni has since passed, but his botanical legacy and knowledge of the forest lives on in his nephew, who heals by drawing upon botanical bonds he created with Mgaa Sabuni as a young boy. Travelling and re-travelling the forest.

Chapter Eight: Francis Kagembe

When Francis was still a child, he would flee into the woods to escape household chores. His \textit{baba} would come after him, shouting “Francis! \textit{Yuko Wapi? Yuko Wapi? [Where are you?]}” (March 14). But Francis remained curled inside the buttresses of massive trees like \textit{Newtonia}, hidden from sight. His father, meanwhile, was employed by colonial administrators to “open the way” for the transport of raw materials out of Mazumbai and the surrounding lands; he and his neighbors labored by crushing rock and clearing woodland by hand (Francis, April 24). By 1978, Francis found himself working at Mazumbai under John Tanner. He helped maintain the livestock and collected fresh milk from the cows with his brother. Francis also worked as a forest guide for students and scientists, beginning in the 1980s. When Modest Mrecha became the first manager of MFR after 1984, he selected Francis as the primary forest guide for visitors. Mr. Kagembe knows the forest intimately. As Msafiri and I walk with him through the Mazumbai Forest Reserve, he lists old-growth trees and medicinal plants alike: \textit{muungu, mdongonyezi},

\(^{57}\) Ibid., 95.
Long ago, without the convenience of the *pikipiki*, Francis had to walk up to four hours to reach the town of Bumbuli for the markets there. The only shortcut, he explained, was through the forest. Years later, as an adult, he expanded his knowledge of the forest plants around him by re-travelling trails with visitors every month. Now he refers to himself as “*babu msitu*” or the “grandfather of the forest.”

Those initial voyages into the forest, however, were not taken alone. On my last day at Mazumbai, Francis and I sit across the table in the dining room of the Mazumbai villa. His brother, Kozi, would accompany him on those long walks to Bumbuli. They eventually developed their own shortcuts. “He has another name,” he explains to Msafiri. What is that? “Sabuni.” Mgaa Sabuni. Two brothers and a nephew. All connected by the fibers of plants, by the web of the forest. Plants create families. Create homes.

Chapter Nine: Eddy

There is only one person who patrols the boundaries of the Mazumbai Forest Reserve today. His name is Eddy. He is twenty-two years old. He walks the boundaries alone, every day, sometimes for five hours at a time. Eddy is employed by the government through the Sokoine University of Agriculture. He attended college to become a primary school teacher of history and civics. There were no jobs, he says, so now he climbs mountains. During the first few months here he recalls “I was attacked by eight dogs, all biting me.” He was near the lower boundaries of the reserve, where avocado trees had dropped their fruits, attracting nearby pets. They came at him, “so I had to cut the branches of a *Dracaena* tree to get them off.” He learned the trails through a former patrolman named Imamu, who learned them from Francis. The trails wind their way through history, connecting new generations of the lone forest caretakers.
Msafiri and I patrol with him one morning, when the fog has not yet lifted. Usually, it is only Eddy and the machete that he uses to clear the debris from these trails. Periodically, students and tourists will also venture onto the paths. I ask if he gets lonely. Yes, he says, I don’t like to be out alone all the time. “Sometimes a man gets crazy alone in the forest,” he continues, “I have bad thoughts that come into my head up here” (April 23). He speaks as we reach the highest point of the Mazumbai reserve, 1900m above see level. We are inside the fog now and the nearest trees are silhouetted against the grey expanse of the sky.

We descend again, rolling across the slick surface of dark leaf litter. We pass mushrooms, that Eddy hacks aside with his machete. “You eat those today, you become the neighbor of the lord,” Msafiri adds. They know the poisonous species all too well. Eddy finds people cutting down trees for firewood and then takes them to the village executor where they must then pay a fine. He’s discovered people travelling alone and in groups of up to five. No one has attacked him. And, at least from what he told me today, he has not experienced Uma ya moyo. We pass a deep hole cut into the flesh of the earth and they tell me an old man comes here and digs, looking for gold left by mzungu. It lies directly below a decaying sign spelling the words “University Forest Mazumbai.”

We pass a kibua that looks to contain successional shrubbery—trying to close the gap. They stop and tell me that this used to be a hamlet called Kwangoto. What happened? “Mzungu moved them all to Kizanda. Even Francis’s parents.” Is there anything left? “Graves.”
PART IV: THE SWISS HOUSE UPON A HILL

Chapter Ten: John

In the dining room of John Tanner’s house sits a table. This is where Francis and Mgaa deposit the milk from their cows in the late 1970s. John enters and places a stack of money on the table. Francis and Mgaa come in the late morning, and set down the cows’ milk, leaving the stack of bills untouched. It was a test, Francis says. After that John thought they were “honest men” and took a great liking to them. “He thought we had good style.” Every Sunday, Francis says, the workers were called to the house and Tanner would pay them.

The Mazumbai villa that John Tanner constructed for his family still stands today; a research station for scientists, students, and foresters. It is an architectural relic to a thorny botanical history. The house is made from the dead fibers of the forest, like one patchwork plant skeleton ossified in time. The floors are mkulo (*Ocotea usambaris*). The office ceiling is mkuguni (*Fagorapsis angolensis*). The living room walls are mkuka (*Ficalhoa laurifolia*). The wood holds the stories of the forest, while the house holds the fading whispers of the Tanners. One can find traces of these trees in the bodies of contemporary residents living around the house; these trees are included in the repertoire among numerous local healers. German books line the shelves, heavy with dust. Cabinets contain rows of the English botanical journal, *Kew Bulletin*. The green volumes date to the 1960s, stamped with “for Mazumbai” in blue ink. A gaudy kitten calendar from 1982 hangs in one of the four bedrooms—the year that the Tanners departed Tanzania forever. (Plate 5).
Francis tells me the day John left, he gathered all of the farmers and Mazumbai workers at the house. Cows were roasted over a fire and a “celebratory” dinner ensued. Julius Mheme, the father of Msafiri, was also present for that meal in November 1982. Now a groundskeeper for Mazumbai, he remembered the last thing John told them before he left. “Make sure you care for the forest. It will bring rain. Make sure you protect it because it will help the tea farms. All of you” (April 23). Francis said he was sad to see him leave.

Chapter Eleven: Leonard

Long before John departed in 1982, he donated 320 hectares of the Mazumbai estate to the University of Dar Salaam (UDSM). According to the “History of Mazumbai” maintained by the MFR managers, John relinquished the section of forest because he could no longer “manage
to control the pressure by local people on the destruction of the forest.”

The Forestry faculty as UDSM, however, eventually established a separate institution, now known as the Sokoine University of Agriculture (SUA), and in 1984, assumed responsibility for Mazumbai.

Accompanying this late twentieth-century era of forest preservation was the narrative of human-plant interactions characterized by decay and destruction. Local peoples were not part of their landscape, but the source of its demise. It was during this period that J.F. Redhead, working under UDSM’s Division of Forestry, wrote in the *African Journal of Ecology* that “The future of the Mazumbai Forest does give cause for real concern. The local farmers, ever short of land, do not appreciate the value of the area to Tanzania: to them the area is *alienated* land.”


Modest Mrecha, the first manager of Mazumbai Forest Reserve under direction of SUA, sought the aid of a non-governmental organization known as the Tanzanian Forest Conservation Group (TFCG). The local secretary of TFCG in Kizanda, Leonard Mshakangoto, explained that “Mrecha helped TFCG to know this place [Mazumbai] by meeting with the officers. They were looking for areas to do their work and Mrecha told them to come to Mazumbai to introduce their program. When they came to Mazumbai they were impressed with the environment” (April 10).

TFCG, thus, arrived in Usambaras in 1997 and have since attempted to initiate a number of forest conservation and compensation projects. For instance, Leonard explained, they have established tree nurseries in order to prevent illegal tree-falling for firewood and timber. Other projects include fostering conservation agriculture and the preservation of water resources. The NGO also helps the village body comprising Sagara Group to maintain the forest regulations by

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facilitating meetings to select those patrolling the borders of the Sagara Forest patches (Leonard, April 10). Following the monetary trail of TFCG funding leads one to the European organization called Gorta. Based in Ireland, Gorta’s maxim reads “self help Africa.” The group funneled over seventeen million euros into numerous African countries in 2016.\(^\text{60}\) The “self help” scheme, according to Gorta, is “leading an international development charity” in which staff is “motivated by injustice, by our expertise in small-scale agriculture and family-farm business, and the opportunity we have to help small farmers.”\(^\text{61}\)

I ask Leonard how he was chosen to be the secretary and point of contact for TFCG in this region of the Usambaras. He told me that TFCG recognized his influenced among community members of the two villages and helped persuade the people to elect him to the position of secretary (April 10). They saw he had a passion for conservation, and hoped he could facilitate the organization’s goal on the ground. When asked of current TFCG operations occurring in the area, he immediately launched into a laundry list of projects like “budding avocado trees, bringing goats and chickens to the people, giving people new seeds like tomatoes, cabbage, vegetable, so on…. Those participating in tree nurseries—nurseries like griveria, eucalyptus, cyrus, and so on—those participating get free seeds.” Nursing these fast-growing exotic species, in theory, should lead to a reduced reliance on the forest for resources like firewood. Providing seeds to farmers at reduced prices would provide further compensation. Yet none of the farmers with whom I spoke had heard of TFCG, and most claimed they bought their seeds from the local market.

Throughout our conservation, however, Leonard continually stressed the importance of environmental education among the local people. I finally asked him why he believed the people


needed this education—were they considered “uneducated” without foreign-funded bodies like TFCG? He talks for a long time. “Without awareness to the people, the way we see the forest now, it will not be the same tomorrow. We thank TFCG for the awareness creation to keep the environment in good condition…. Without the awareness, even Mazumbai Forest Reserve, people could encroach it, cut the trees and sell them to get money and eventually the natural vegetation will be depleted.”

Deforestation, of course, is a real problem. Farmers and healers alike recognize that population increases and the expansion of human settlement in Kizanda and Sagara has led to degradation of soil and foliage alike. Cutting trees for basic needs like firewood for cooking, however, does not correlate with a dearth of ecological knowledge. Nor does expanding farmland to feed families translate to an ignorance of conservation agriculture. Indeed, one farmer, Mimeali, recalled that soil fertility had worsened since the time of her babu because the higher density of people has led to a reduction in farmland for the individual—meaning that farmers can no longer rotate crops and allow fields to lie fallow (April 21). Regulations, while certainly effective in addressing many practical problems of forest destruction, also carry with them a rhetoric of land and botanical alienation. As the land and its composite flora make not only the livelihoods, but social bonds of Sagara and Kizanda, this rhetoric is a problem with which successful environmental policymakers must reckon.
Chapter Twelve: Lucie

It was after Mgaa finished milking the cows with Francis in the mornings that he would venture into the forest with Lucie (Plate 6). When she was not collecting orchid species, Lucie also networked with mothers in the villages. Francis claims that “When wives were pregnant, Lucie would give them goat meat, oil, soap, and sugar for the entire period... she would even provide transportation to the hospital and clothes for the child” (April 24). Despite such praise, Lucie’s is nonetheless a messy history.

In 1982, the year that Lucie left Mazumbai, the *Kew Bulletin* published an article by P.J Cribb and P. Gasson titled, “Unusual Asexual Reproduction in the East African Orchid, Cynorkis uncata.” Cribb and Gasson meticulously dissected the bulb of the orchid—its “vascular tissue,” its “parenchyma cells,” its “raphides.” The plant was an object of study. They rip apart the orchid’s flesh and place it beneath the lens of a scanning electron microscope (Plate 7). “During a recent expedition to Tanzania under the auspices of the Royal Botanic Gardens, Kew,” the authors wrote, “Mrs J. Tanner of Mazumbai in the West Usambara Mts showed one of the authors (PJC) a colony of the orchid, Cynorkis uncata.” Furthermore, the anatomy of the bulb would have to be collected, maintained for preservation,

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for study. “Several bulbils of this orchid,” they wrote, “were sent to Kew by Mrs Tanner where they have been successfully grown, thus confirming their propagative nature.”

The narrative of Cribbs and Gasson is one of dismemberment. They deconstruct the individual biological components of the plant, reflecting what Ryan argues is the scientific process of “dis-assembling the organic unity of plants into coded blocks of information that transcend cultural, regional, and linguistic specificity.” There is no mention of a holistic, semantic network of the orchid—its ecological importance to the West Usambaras or to the people of Kizanda, Sagara, and other surrounding villages. In fact, the only local resident mentioned is Lucie, the colonial collector. In the late 1980s, Cribb would go on to name another endemic orchid species in honor of Lucie, Rhipidoglossum tanneri, or, “Tanner’s Rhipidoglossum.” In the last year of her life, Lucie told a Swiss journalist, Lukas Meier, that “It’s an indescribable feeling when a plant bears your name.”

The narrative of Cribbs and Gasson, however, is also one of omission. It is scientific botany that silences. Where is the voice of Mgaa Sabuni, without whom Lucie would have found herself utterly lost in the thicket of the forest? The man who knew every animal trail, the man

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63 Ibid., 661.
64 Ryan, “Cultural Botany,” 127.
who not only knew plants and their properties, but how to navigate them. Where is the orchid bearing his name?

Flip through the pages of the old, worn guest book for this Swiss house upon a hill in Mazumbai. Names and places scrawled in elegant cursive, line its pages. J. Huber. R. Wingfield. Alistair McCusker. H. Walter. These names are among the long list of botanists, zoologists, geographers, and anthologists from England, Sweden, the United States—even Australia—who conducted research at Mazumbai. Students, like me, follow in their footsteps. Collecting “data” during the day and sleeping in the old bedrooms of the Tanners. How many times did Sabuni, then Francis, and then Saidi guide these men and women into the forest, only to have their names scored from the published, botanical record of Mazumbai?
CONCLUSION

At the end of our conservation, Risiki turned to face me with a single question. “You have just finished collecting our discussion,” he says, “how will you remember us?” On a personal level, I will remember how Risiki and his neighbors so graciously welcomed an outsider into their homes and generously shared their time. I will remember the guttural laugh of Mr. Francis Kagembe and the sound of silence after Ramazani’s medicine soothes the stomach pains of a screaming child outside his home. Remembering, however, can also be an illustrative, empowering act.

While I have merely sketched the voices of a fraction of the population in Kizanda and Sagara, reading pieces of their stories can offer a form of remembering across spatial boundaries, academic disciplines, and politics. These individuals constitute the plant poets of the West Usambara mountains. Inscribed within their voices are mellifluous floral relations. These voices remind those writing for “scholarly” scientific journals like Kew Bulletin, that published data is not the sole indicator of the “validity” of knowledge. It is the community members of Kizanda and Sagara who rely on Ramazani to mend social relationships or seek out Saidi’s aid for creative new herbal remedies. Local families and communities can also “measure” the validity of knowledge systems through their daily dependence upon them.

Thus, when organizations like TFCG and GORTA make public claims to be “developing” agricultural and botanical knowledge through “formal” education, they refract local voices in such a way that benefits “non-profit” narratives of progress. Tree nurseries may, in fact, be a valuable asset to local people. However, it is critical that local leaders of these conservation strategies recognize that outside “development” organization are not operating from a place botanical and ecological knowledge superiority. Quite the contrary. They are operating in
a space where healers have created an oral “textbook” of forest medicine. They are operating in a space where farmers have shaped complex agricultural blueprints, and tracked the seasons for generations. They are operating in a space where forest guides have a shared, mental map of the extensive network of trails winding through the mountains.

Organizations like TFCG, though skilled as they may be in quantifying deforestation rates and recognizing problems, cannot succumb to an ideological conservation “prolepsis.” Assuming that people will continue to be a destructive force to the environment because of some inherent “lack” of “awareness” is arguably unproductive and does not actively seek to learn from and listen to those that have to live with the forest.

In fact, because the people of Kizanda and Sagara are tied so closely to the plants around them, they can monitor environmental change directly, on a daily, seasonal, and yearly basis. Zuena for instance, noted that “there used to be more fertile soil on farms, now there is lower soil fertilization because people will tend to the same farm for ten years…there used to be more crop rotation” (April 16). Mimaeli of Sagara concurred: “between last time and now there is less fertilization because during the time of babu, there was less people and so not all of the land was being used. And now, all of the land is being used” (April 21). Many people observed changes in forest cover, density, and structure, with shrubs replacing thicker stands of old-growth forest.

There are certainly limits to such local knowledge systems—just as there are limits to statistical sciences. For instance, multiple healers, believed, perhaps naively, that simply replacing soil over the remaining roots of medicinal shrubs served as a form of conservation. Many farmers, furthermore, did not identify specific forms of agricultural conservation practices other than the use of natural fertilizers. They rather cited that they did not cut down trees and no longer burned the land to clear shrubs. Even Ramazani, with his astoundingly extensive botanical
memory, told me, shortly after plucking a handful of roots from an *mgimbu* plant used to treat *uchawi*, that he *could not* replace the soil because “that is how it is treated…When you replace the soil the diseases will not be treated” (April 19).

Rather than constructing a hierarchy of botanical knowledge for environmental conservation, institutions with financial power should instead seek solutions that *fuse* the wisdom of local people and international scientific experts. Success with such exchanges of ecological information has been observed in places like the Beaufort Sea of the coast of Alaska in North America. Indigenous fishing villages, which had evolved extensive knowledge of the migratory patterns of whales, worked together with conservation organizations to facilitate whale tagging and tracking for empirical studies aimed to ensure the long-term sustainability of the mammalian species.66 It is precisely because expertise may differ in content and form that they should work together—empowering local voices while contributing to a global movement for sustained ecological health. Conservation strategists should not look to sever indigenous peoples from their homelands entirely, but instead seek to “re-story them” by drawing upon historical mutualism between people and forests and incorporating new ecological lessons into the landscape.67 The plant poetry of the Usambaras is thus not merely an aesthetic art of scientific storytelling. It contains the possibility for future change, adaptive capacity, and botanical resilience.

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EPILOGUE

Peneli and I walk to her home-garden, just beyond the horizon of her courtyard, after a lengthy discussion. Cabbage plants form a light green mantle over the earth. There is also a *parachichi* tree, its branches waving lazily in the breeze. At the far end of the garden, there is a cluster of taller plants. Their stems are long spindles, ending in pointed leaves painted a bright crimson. What are those? *Kabuli*. They are the markers of graves. The graves of Peneli’s husband and children who passed on before their mother. *Kabuli* flowers are the botanical memory of loved ones here. In Kizanda and Sagara, clusters of the flower can be seen interspersed within the thicket of banana gardens. The bodies of the people feed the plants, give the red flowers life. Just as the Earth’s flora gave birth to the people.
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### APPENDICES

Appendix A: Selected List of Plants Cited, with Vernacular and Latin Names

<table>
<thead>
<tr>
<th>KISHAMBAA/KISWAHLI</th>
<th>GENUS, SPECIES</th>
<th>TREATMENT/OTHER USES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baai</td>
<td>Vernonia cistifolia</td>
<td>Uchawi</td>
</tr>
<tr>
<td>Donondo</td>
<td>Pycnostachus umbrosa</td>
<td>Fenceflower (boundary), medicinal</td>
</tr>
<tr>
<td>Guunzi</td>
<td></td>
<td>Exotic, from Zanzibar, teeth treatment</td>
</tr>
<tr>
<td>Hamachuma</td>
<td></td>
<td>Uchawi</td>
</tr>
<tr>
<td>Hoko</td>
<td>Phytolacca dodecandra</td>
<td>Poisonous, used by mchawi</td>
</tr>
<tr>
<td>Mahindi (maize)</td>
<td></td>
<td>Medicine for children’s stomach</td>
</tr>
<tr>
<td>Mboho</td>
<td>Veronia sp.</td>
<td>“wild tobacco” used for fertilizer/farm borders</td>
</tr>
<tr>
<td>Mcabella</td>
<td>Griveria sp.</td>
<td>Timber, firewood, furniture</td>
</tr>
<tr>
<td>Mchai</td>
<td>Thea sinensis</td>
<td>Tea plants</td>
</tr>
<tr>
<td>Mdongonyezi</td>
<td>Toddalia asiatica</td>
<td>Teeth, coughing, low energy, headache</td>
</tr>
<tr>
<td>Mfufu</td>
<td>Cordia abyssinica</td>
<td>Furniture, broken bones</td>
</tr>
<tr>
<td>Mghua/Mchuo</td>
<td>Saccharum officinarum</td>
<td>“Sugarcane;” alcohol</td>
</tr>
<tr>
<td>Mgimbu</td>
<td>Vitex sp.</td>
<td>Uchawi, also means “change of mind”</td>
</tr>
<tr>
<td>Mjaikali</td>
<td>Cleausena anisata</td>
<td>Uchawi, bitter tasting</td>
</tr>
<tr>
<td>Mkonde</td>
<td>Myrianthus holstii</td>
<td>Timber, edible fruit</td>
</tr>
<tr>
<td>Mkuguni</td>
<td>Fagaropsis angolensis</td>
<td>Energy</td>
</tr>
<tr>
<td>Mkumba</td>
<td>Macaranga kilimandscharica</td>
<td>Mental illness, energy, also firewood</td>
</tr>
<tr>
<td>Msambu</td>
<td>Allanblackia stuhlmannii</td>
<td>Teeth treatment, coughing, rheumatism</td>
</tr>
<tr>
<td>Mshai</td>
<td>Albizia gummifera</td>
<td>Endemic tree noted for rich leaf litter deposits</td>
</tr>
<tr>
<td>Mshaka-suwa</td>
<td>Amaralia penduliflora</td>
<td>Toothbrush</td>
</tr>
<tr>
<td>Mshegheshi</td>
<td>Myrica salicifolia</td>
<td>Headache (especially around the eyes), coughing, teeth</td>
</tr>
<tr>
<td>Mshingresha</td>
<td></td>
<td>Mixed with Muula and Mdongonyezi to treat coughing</td>
</tr>
<tr>
<td>Msoso</td>
<td>Ficus holstii</td>
<td>Sacred plant at shemoshi</td>
</tr>
<tr>
<td>Mtua</td>
<td>Solanum incanum</td>
<td>Stomach, headache, insect bites, teeth, worms</td>
</tr>
</tbody>
</table>
Mvumo  
*Ficus thonningii*  
Leaves for fertilization, “milk” for medicine (eye drops); sap traps birds around farms

Mtumbua  
Stomach

Muuka  
*Migroclossa densiflora*  
*Mchango*  
Low energy, coughing, back pain

Muula  
*Parinari excels*  
Mchango

Mzugwa  
*Coleus kilimanschari*  
*Mchango, malaria*  
Malaria, *mchango*, coughing, asthma, flu

Mzumbasha  
*Ocimum suave*  
Bumps on skin

Ngoko  
*Piper capense*  
Stinging plant, poisonous

Pupu  
*Obetia pinnatifida*  
Poisonous herb

Unkulwe  
*Aristolochia densivenia*  
Uchawi

Zongo  
*Crotalaria sp.*

Appendix B: Interview Questions

Interview Guide for Healers

1) How long have you lived in Kizanda/Sangara?
2) Are you a healer for the village or just for your family?
3) Why did you decide to start practicing medicine? Do you enjoy it?
4) How was knowledge of traditional healing passed down to you?
   a. will you share this knowledge with your family or other members of your community?
5) Do you gather the plants you use yourself?
   a. how do you know which ones to collect?
   b. have you noticed any changes in availability or abundance or access over time?
6) Where do you normally collect or harvest the plants you use?
   a. Do you use domesticated, wild plants or both?
7) Do you harvest different plants at different times of the year?
8) Do you have ways that you conserve plants for future generations (ways to prevent overuse?)
9) Are the plants you use connected to your ancestors or previous generations?
10) What kinds of illnesses do you treat with your medicine? Physical? Spiritual?
11) Do the plants you use have any other spiritual or religious importance to you or your community?
12) Do you think access to plants was affected at all by German and British colonial rule? (Do you feel your family was personally affected by this?)

Follow up Questions for Ethnobotanical Walks

1) Where do you usually find the most important plants you use?
2) How do you know where to go? Who taught you how to navigate?
3) Can you tell me what you notice—what you see, hear, smell, feel?

In reference to a specific plant:
1) What is the name of this plant in Kishambaa?
2) What do you use this plant for and why?
3) Is this plant important for other animals and plants? If so, why?

Interview for Farmers
1) How long have you lived in Kizanda/Sagara?
2) How long have you been a farmer? Do you like being a farmer?
3) Do you think farming is important to your community? Why or why not?
4) Who taught you how to farm? Were your parents farmers?
5) What kinds of crops do you grow? Why?
6) How do you organize the different crops in your farm?
7) When do you plant these crops? When do you harvest them?
8) What methods do you use to farm? Why?
9) Do you think your farming practice is ecologically sustainable (for your farm and the forest)?
10) Have you noticed any changes in growing conditions?
11) Where do you think the best farmland is?
12) Do you use irrigation or rain to water your crops?
13) Do you sell your crops or grow them for your family food only?
14) Do you want your children to be farmers as well? Why or why not?
15) Have land or conservation policies affected your farm?
16) Do you know about TFCG? If so, how do you feel about TCFG?
17) Do you feel that German or British colonial policies affected farming for the village? For you personally?

*Note that this guide could vary depending on the types of crops and the familial history of the individual.

Interview Guide for Forest Guides
1) How long have you lived in Kizanda/Shangara?
2) How long have you been a guide and why did you decide to become a guide?
3) How often do you go into the forest now?
4) How do you navigate through the forest?
5) Did you go into the forest as a child?
6) What are the most important plants or trees to you?
7) Do you think there is a need to conserve the forest? Do you think people should live in the forest? Why or why not?
8) Can you tell me a story about the forest?
9) Do you associate the forest with your grandparents, ancestors before them, or the history of your community?